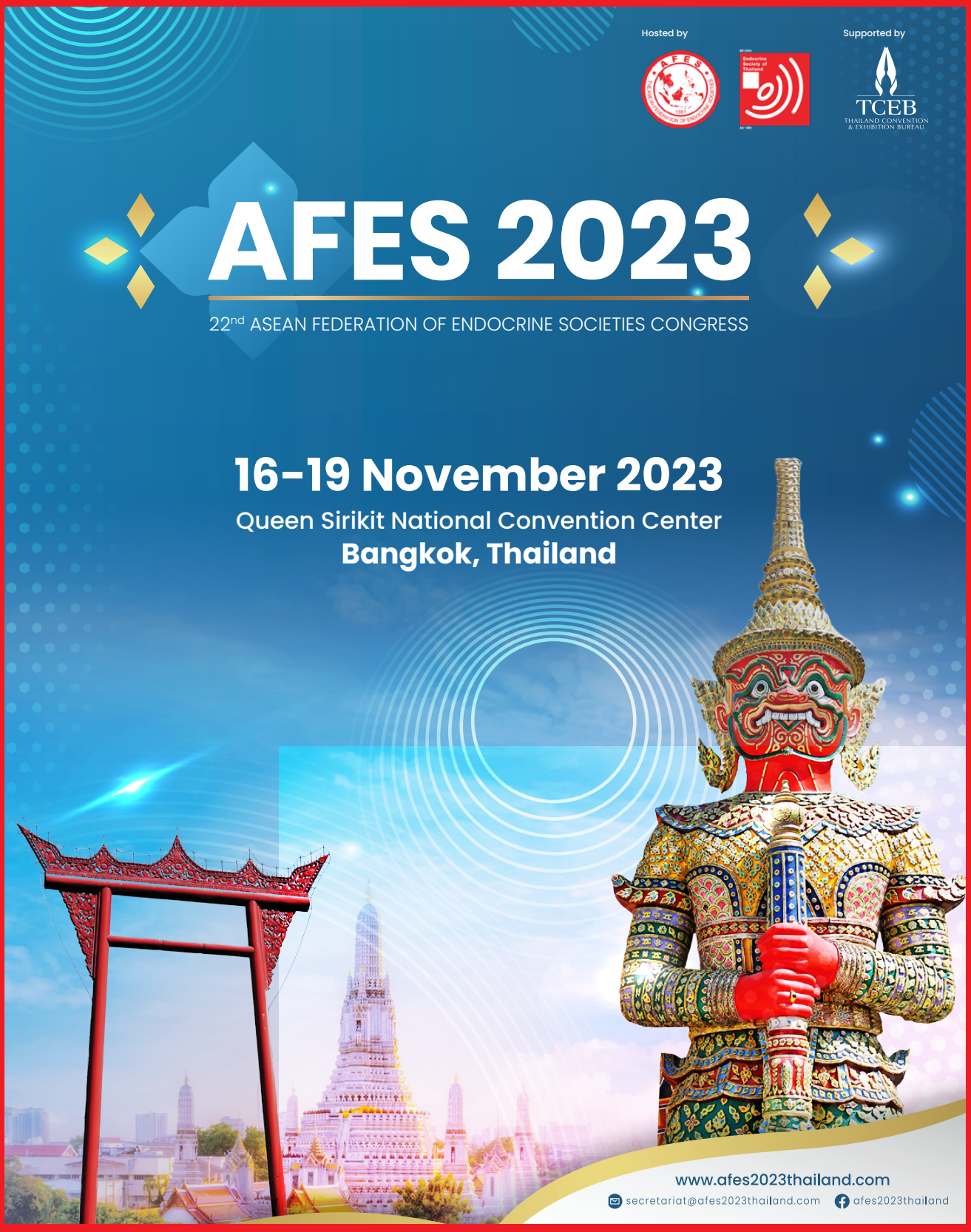
Journal of the
ASEAN Federation of
Endocrine Societies

Volume No. 38 Special Edition 3 | ISSN 2308-118x (Online)



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The publication of the abstracts for the 22nd ASEAN Federation of Endocrine Societies Congress as a special edition of the Journal of the ASEAN Federation of Endocrine Societies is a service of the journal to its member societies. The statements and opinions expressed in this publication are those of the individual authors and do not necessarily reflect the views of the Journal of the ASEAN Federation of Endocrine Societies (JAFES). The abstracts included have been selected by the Congress' Scientific Committee and have not undergone the editorial deliberation and peer review of the JAFES. JAFES is not responsible or liable in any way for the currency of the information, for any errors, omissions or inaccuracies, or for any consequences arising therefrom. With respect to any drugs mentioned, the reader is advised to refer to the appropriate medical literature and the product information currently provided by the manufacturer to verify appropriate dosage, method and duration of administration, and other relevant information. In all instances, it is the responsibility of the treating physician or other healthcare professional, relying on independent experience and expertise, as well as knowledge of the patient, to determine the best treatment for the patient.

AFES 2023
22nd ASEAN FEDERATION OF ENDOCRINE SOCIETIES CONGRESS
16-19 November 2023
Bangkok, Thailand

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WELCOME MESSAGE
FROM THE CHAIRMAN OF AFES 2023 ORGANIZING COMMITTEE

Dear Friends and Colleagues,

On behalf of the Endocrine Society of Thailand (EST) and the ASEAN Federation of Endocrine Societies (AFES), we are honored to invite you all to the upcoming 22nd ASEAN Federation of Endocrine Societies Congress (AFES 2023). The Congress will be held on 16 to 19 November 2023 at the Queen Sirikit National Convention Center (QSNCC) in Bangkok, Thailand.

The AFES is a regional society that seeks to promote and exchange knowledge in endocrinology. With the limitations imposed by the COVID-19 pandemic, this opportunity to strengthen and renew friendships among the seven-country members has become even more valuable.

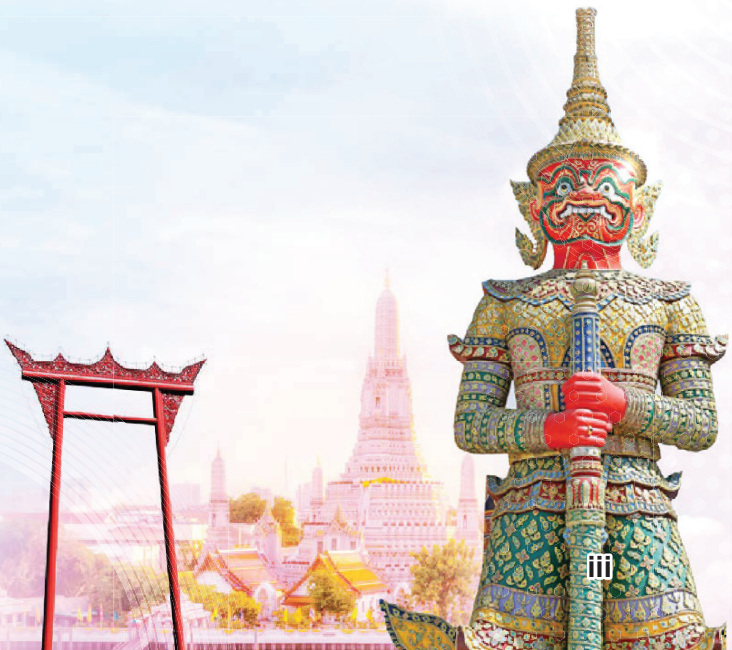
The AFES 2023 Local Organizing Committee has prepared a comprehensive program for doctors, scientists, medical personnel and other professionals who have a special interest in endocrinology. We have invited esteemed regional and international speakers to share their experiences and expertise by providing the latest clinical practices and advances in endocrinology.

We look forward to warmly welcoming you all to the Land of Smiles! We are delighted to provide the opportunity for participants to experience traditional Thai culture and enjoy authentic Thai cuisine.

Thank you and see you in Bangkok, Thailand.

Best regards,

Prof. Chaicharn Deerochanawong
President of Endocrine Society of Thailand
Chairman of AFES 2023 Organizing Committee



WELCOME MESSAGE
FROM THE SECRETARY GENERAL OF AFES 2023 ORGANIZING COMMITTEE

Dear Delegates,

On behalf of the AFES 2023 Organizing Committee, we are honored to have the opportunity to host and organize the 22nd ASEAN Federation of Endocrine Societies Congress at the modern and beautifully renovated Queen Sirikit National Convention Center in the heart of Bangkok.

The AFES 2023 scientific program is rich in updated content in various areas of endocrinology. In addition, we have social programs to enliven the delegates, including the opening reception, congress banquet and closing ceremony. The congress banquet has been meticulously prepared to showcase a variety of delicious cuisines and surprise numbers from all the AFES member countries for everyone's enjoyment.

Bangkok is a beautiful and popular tourist destination known for its cultural landmarks, bustling markets and vibrant street life. It would be a great experience for you to explore and discover more of the city during your free time. I hope that the AFES 2023 Congress will delight you and meet your expectations in every way.

Welcome to Bangkok! The Organizing Committee and our staff look forward to welcoming and supporting you at AFES 2023.

Respectfully yours,

Assoc. Prof. Chardpraorn Ngarmukos
AFES 2023 Secretary General

WELCOME MESSAGE
FROM THE SCIENTIFIC CHAIR OF AFES 2023 ORGANIZING COMMITTEE

Dear Colleagues,

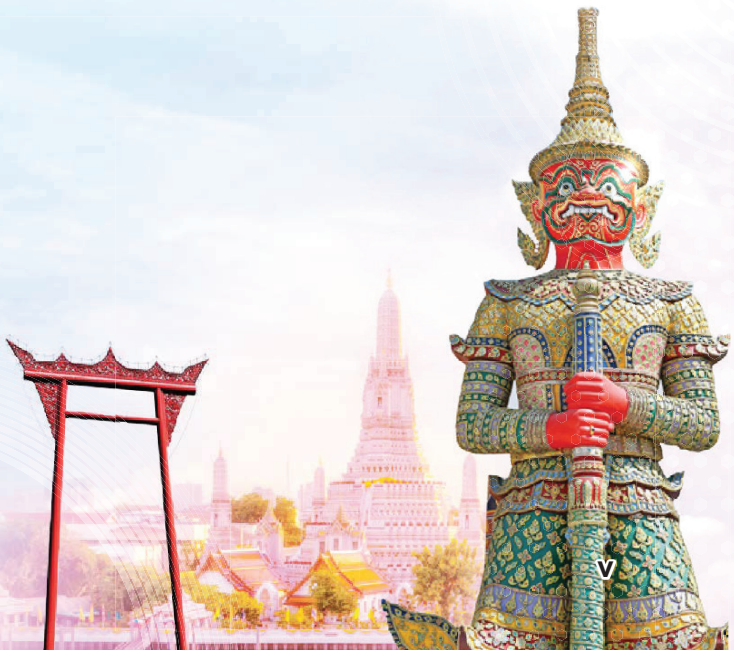
On behalf of the Scientific Committee, it is my great pleasure to welcome you to the 22nd ASEAN Federation of Endocrine Societies Congress (AFES 2023) in Bangkok, Thailand.

Our committee has prepared a program covering eight plenary sessions, nine symposia, six meet-the-expert sessions and six free paper presentations. I am confident that our invited regional and international speakers will provide you with valuable insights and rich content.

As the AFES 2023 Scientific Chair, I would like to express my gratitude to all invited speakers for accepting our invitation, and to all of the attendees for participating in the Congress. Your contributions have been instrumental in making the Congress a great success. Thank you all for being a part of it.

Sincerely yours,

Assoc. Prof. Apussanee Boonyavarakul
AFES 2023 Scientific Chair



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PREVIOUS AFES CONGRESSES HOSTED BY THAILAND

The 2nd Congress of the ASEAN Federation of Endocrine Societies
26-29 November 1983, Bangkok

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Vithaya Yodyingyuad, Ph.D.

PREVIOUS AFES CONGRESSES HOSTED BY THAILAND

The 10th Congress of the ASEAN Federation of Endocrine Societies

1-4 December 1999, Bangkok

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Yupin Benjasuratwong, M.D.	Scientific Member

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Vitaya Sridama, M.D.

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Thep Himathongkum, M.D.

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Chanika Tuchinda, M.D.

TRANSPORTATION

Kitti Angsusingha, M.D.

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PREVIOUS AFES CONGRESSES HOSTED BY THAILAND

The 15th Congress of the ASEAN Federation of Endocrine Societies

28 November - 1 December 2009, Bangkok

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Sarat Sunthornyothin, M.D.

SCIENTIFIC PROGRAM: PRE-CONGRESS

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Wannee Nitiyanant, M.D.
Thep Himathongkam, M.D.
Sunitaya Chandraprasert, M.D.
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2005-2006, 20/F Medical Plaza Ortigas, San Miguel Avenue, Ortigas Center, Pasig City, Philippines
E-mail: marjramos8@gmail.com, sec@endo-society.org.ph

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Prof. Tran Huu Dang PRESIDENT

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AFES 2023

22nd ASEAN FEDERATION OF ENDOCRINE SOCIETIES CONGRESS

PROGRAM AT A GLANCE

PRE-CONGRESS : 16 NOVEMBER 2023		
15.00-16.00	PRE-CONGRESS SYMPOSIUM	Ballroom 1
16.15-16.45	JAFES SYMPOSIUM	Ballroom 1
17:00-18:00	OPENING RECEPTION	Foyer of Ballroom 1

MAIN CONGRESS DAY 1 : 17 NOVEMBER 2023		
08:30-09.15	PLENARY LECTURE 1 : *DIABETES* Topic: The Journey and Future of Incretin Therapy for Diabetes and Obesity Management **Prof. Jens Juul Holst (Denmark)**	Ballroom 2
09:15-10:00	PLENARY LECTURE 2 : *PITUITARY* Topic: Personalized Treatment in Acromegaly **Assoc. Prof. Sebastian J.C.M.M. Neggers (Netherlands)**	Ballroom 2
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	Ballroom 4
10:30-12:00	SYMPOSIUM 1 *DM : HETEROGENEITY OF DM IN ASEAN*	Ballroom 1
	SYMPOSIUM 2 *PITUITARY : NON-CLASSICAL CAUSES OF HYPOPITUITARISM*	Ballroom 2
	SYMPOSIUM 3 *SUBCLINICAL ENDOCRINE DISORDERS*	Ballroom 3
12:00-13:30	LUNCHEON SYMPOSIUM 1	Ballroom 1
	LUNCHEON SYMPOSIUM 2	Ballroom 2
	LUNCHEON SYMPOSIUM 3	Ballroom 3
13:30-14:15	MEET THE EXPERT 1 : *ADRENAL* Topic: Primary Aldosteronism **Assoc. Prof. Sarat Sunthornyothin (Thailand)**	Ballroom 1
	MEET THE EXPERT 2 : *REPRODUCTIVE* Topic: Challenging Clinical Cases in Testosterone Replacement Therapy in Men **Prof. Vin Tangpricha (United States of America)**	Ballroom 2
	MEET THE EXPERT 3 : *BONE* Topic: Can We Stop Anti-Resorptive Therapy? • Bisphosphonate and Denosumab Discontinuation **Prof. Peter Robert Ebeling (Australia)**	Ballroom 3
14:15-15.30	FREE PAPER 1	MR 109A
	FREE PAPER 2	MR 109B
	FREE PAPER 3	MR 109C
15:30-16:00	COFFEE BREAK/EXHIBITION/POSTER SESSION	Ballroom 4
16:00-16:45	PLENARY LECTURE 3: *BONE* Topic: Individualizing Therapy for Osteoporosis **Prof. Peter Robert Ebeling (Australia)**	Ballroom 2
17:30-20:00	DINNER SYMPOSIUM	MR 109C

MAIN CONGRESS DAY 2 : 18 NOVEMBER 2023

07:00-08:15	BREAKFAST SYMPOSIUM	**MR 109C**
08:30-09:15	PLENARY LECTURE 4 : *ADRENAL* Topic: Adrenal Incidentaloma 2023 **Prof. Paul Michael Stewart (United Kingdom)**	**Ballroom 2**
09:15-10:00	PLENARY LECTURE 5 : *REPRODUCTIVE* Topic: Gender Affirming Hormone Therapy for Transgender People: An Update for Endocrinologists **Prof. Vin Tangpricha (United States of America)**	**Ballroom 2**
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	**Ballroom 2**
10:30-12:00	SYMPOSIUM 4 *BONE : NOVEL INSIGHTS IN PARATHYROID DISORDERS*	**Ballroom 1**
	SYMPOSIUM 5 *REPRODUCTIVE : GAP AND CHALLENGE IN TRANSGENDER CARE IN ASEAN*	**Ballroom 2**
	SYMPOSIUM 6 *LIPID: EMERGING DYSLIPIDEMIA MANAGEMENT*	**Ballroom 3**
12:00-13:30	LUNCHEON SYMPOSIUM 4	**Ballroom 1**
	LUNCHEON SYMPOSIUM 5	**Ballroom 2**
13:30-14:15	MEET THE EXPERT 4: *ADRENAL* Topic: Optimizing Glucocorticoid Replacement Therapy **Prof. Paul Michael Stewart (United Kingdom)**	**Ballroom 1**
	MEET THE EXPERT 5: *LIPID* Topic: Towards Improving Care of FH Patients **Prof. Weerapan Khovidhunkit (Thailand)**	**Ballroom 2**
	MEET THE EXPERT 6: *THYROID* Topic: Challenging Cases in Thyroid Disorders **Dr. Florence Tan (Malaysia)**	**Ballroom 3**
14.15-15.30	FREE PAPER 4	**MR 109A**
	FREE PAPER 5	**MR 109B**
	FREE PAPER 6	**MR 109C**
15:30-16:00	COFFEE BREAK/EXHIBITION/POSTER SESSION	**Ballroom 4**
16:00-16:45	PLENARY LECTURE 6: *THYROID* Topic: Management of Graves' Disease through the Lifespan **Asst. Prof. Chng Chiaw Ling (Singapore)**	**Ballroom 2**
18:30-22:00	CONGRESS BANQUET	**Ballroom 1**

MAIN CONGRESS DAY 3 : 19 NOVEMBER 2023

07:00-08:15	BREAKFAST SYMPOSIUM	**MR 109C**
08:30-09:15	PLENARY LECTURE 7: *LIPID* Topic: When Should Lp(a) Be Measured and Treated? **Prof. Kausik Kumar Ray (United Kingdom)**	**Ballroom 2**
09:15-10:00	PLENARY LECTURE 8: *T1DM* Topic: T1DM Prevention and Management: Where Are We Now? **Prof. Maria Eloise Craig (Australia)**	**Ballroom 2**
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	**Ballroom 4**
10:30-12:00	SYMPOSIUM 7 *THYROID: THYROID NODULES: ADVANCES AND CONTROVERSY*	**Ballroom 1**
	SYMPOSIUM 8 *ADRENAL: WHAT'S NEW IN ADRENAL DISORDERS*	**Ballroom 2**
	SYMPOSIUM 9 *ENDOCRINOLOGY AND PREGNANCY*	**Ballroom 3**

SCIENTIFIC SESSIONS
16 NOVEMBER 2023

15:00-16:00	PRE-CONGRESS SYMPOSIUM BY PFIZER (THAILAND) LIMITED **Moderator: Prof. Chaicharn Deerochanawong (Thailand)** Topic: Stay Up to Date with COVID-19 Vaccination **Prof. Sasisopin Kiertiburanakul (Thailand)** **Dr. Nitchakarn Laichuthai (Thailand)**	At Ballroom 1
16:15-16:45	JAFES SYMPOSIUM 16:15-16:20 Welcome Remarks **Dr. Elizabeth Paz-Pacheco, Editor-in-Chief** 16:20-16:30 Topic: Emerging AI Issues in Scientific Publication **Dr. Cecilia A. Jimeno, Vice Editor-in-Chief** 16:30-16:40 Topic: Recognition of JAFES Top Authors and Reviewers **Dr. Gabriel V. Jasul, Jr., Associate Editor** JAFES AVP: Our Commitment to Authors and Readers	At Ballroom 1
17:00-18:00	OPENING RECEPTION	Foyer of Ballroom 1

SCIENTIFIC SESSIONS
17 NOVEMBER 2023

08:30-09.15	PLENARY LECTURE 1: DIABETES **Chairperson: Prof. Chaicharn Deerochanawong (Thailand)** Topic: The Journey and Future of Incretin Therapy for Diabetes and Obesity Management **Prof. Jens Juul Holst (Denmark)**	At Ballroom 2
09:15-10:00	PLENARY LECTURE 2: PITUITARY **Chairperson: Assoc. Prof. Apussanee Boonyavarakul (Thailand)** Topic: Personalized Treatment in Acromegaly **Assoc. Prof. Sebastian J.C.M.M. Neggers (Netherlands)**	At Ballroom 2
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	At Ballroom 4
10:30-12:00	SYMPOSIUM 1 DM: HETEROGENEITY OF DM IN ASEAN **Chairperson: Prof. Elizabeth Paz-Pacheco (Philippines)** Topic: Latent Autoimmune Diabetes of Adults **Prof. Elizabeth Paz-Pacheco (Philippines)** Topic: Monogenic Diabetes **Assoc. Prof. Nattachet Plengvidhya (Thailand)** Topic: Young-onset T2DM **Dr. Tan Chee Eng (Singapore)**	At Ballroom 1
	SYMPOSIUM 2 PITUITARY: NON-CLASSICAL CAUSES OF HYPOPITUITARISM **Chairperson: Asst. Prof. Paweena Chunharojrith (Thailand)** Topic: Traumatic Brain Injury **Asst. Prof. Paweena Chunharojrith (Thailand)** Topic: Autoimmune Hypophysitis **Assoc. Prof. Sebastian J.C.M.M. Neggers (Netherlands)** Topic: Functional Hypopituitarism **Dr. Dicky L. Tahapary (Indonesia)**	At Ballroom 2
	SYMPOSIUM 3 SUBCLINICAL ENDOCRINE DISORDERS **Chairperson: Prof. Bien J. Matawaran (Philippines)** Topic: Subclinical Cushing's Syndrome **Prof. Bien J. Matawaran (Philippines)** Topic: Subclinical Hypothyroidism **Dr. Kyar Nyo Soe Myint (Myanmar)** Topic: Subclinical Hyperthyroidism **Asst. Prof. Sirinart Sirinvaravong (Thailand)**	At Ballroom 3

12:00-13:30	LUNCHEON SYMPOSIUM 1 BY NOVO NORDISK PHARMA (THAILAND) LIMITED **Moderator: Prof. Chaicharn Deerochanawong (Thailand)** Topic: Oral GLP-1 RA: Towards an Unmet Need of People with Type 2 Diabetes **Prof. Chaicharn Deerochanawong (Thailand)** **Prof. Jens Juul Holst (Denmark)**	At Ballroom 1
	LUNCHEON SYMPOSIUM 2 BY ASTRAZENECA (THAILAND) LIMITED **Moderator: Assoc. Prof. Apiradee Sriwijitkamol (Thailand)** Topic: SGLT2i: The Step over Cardiorenal Complications in T2DM **Assoc. Prof. Pattarapong Makarawate (Thailand)** **Prof. Carol Pollock (Australia)** **Assoc. Prof. Chutintorn Sriphrapradang (Thailand)**	At Ballroom 2
	LUNCHEON SYMPOSIUM 3 BY PROCTER & GAMBLE TRADING (THAILAND) LIMITED **Moderator: Assoc. Prof. Petch Rawdaree (Thailand)** Topic: Uncovering Diabetic Peripheral Neuropathy **Assoc. Prof. Lim Lee-Ling (Malaysia)** **Assoc. Prof. Bien J. Matawaran (Philippines)**	At Ballroom 3
13:30-14:15	MEET THE EXPERT 1: ADRENAL Topic: Primary Aldosteronism **Assoc. Prof. Sarat Sunthornyothin (Thailand)**	At Ballroom 1
	MEET THE EXPERT 2: REPRODUCTIVE Topic: Challenging Clinical Cases in Testosterone Replacement Therapy in Men **Prof. Vin Tangpricha (United States of America)**	At Ballroom 2
	MEET THE EXPERT 3: BONE Topic: Can We Stop Anti-Resorptive Therapy? - Bisphosphonate and Denosumab Discontinuation **Prof. Peter Robert Ebeling (Australia)**	At Ballroom 3
14:15-15:30	**FREE PAPER 1-3** FREE PAPER 1 **Chairpersons: Prof. Elizabeth Paz-Pacheco (Philippines) & Asst. Prof. Pongamorn Bunnag (Thailand)** **OP-D-01** *CLINICAL CHARACTERISTICS AND METABOLIC OUTCOMES IN THAI PEOPLE WITH YOUNG-ONSET DIABETES ATTENDING THEPTARIN HOSPITAL: EXPERIENCE FROM A PRIVATE SETTING IN BANGKOK* **Siriwan Butadej, Soontaree Nakasatien, Hussamon Prasartkaew, Waralee Chatchomchuan, Ekgaluck Wanothayaroj, Yotsapon Thewjitcharoen, Sirinate Krittiyawong, Thep Himathongkam (Thailand)**	At MR 109A

OP-D-02

ASSOCIATION BETWEEN GLYCEMIC VARIABILITY AND LOWER COGNITIVE FUNCTION, MEDIATED BY ARTERIAL STIFFNESS, IN ASIANS WITH TYPE 2 DIABETES

Serena Low, Angela Moh, Keven Ang, Su Chi Lim (Singapore)

OP-D-03

ELEVATED VISCERAL ADIPOSITY INDEX AS A MARKER OF DIABETIC NEPHROPATHY MARKED BY PROTEINURIA AMONG TYPE 2 DIABETICS

Robert Dwitama Adiwinoto, Soebagijo Adi Soelistijo, Deasy Ardiany, Agung Pranoto (Indonesia)

OP-D-04

THE EFFECT OF INSULIN INFUSION PROTOCOL UTILIZING A SPREADSHEET PROGRAM ON GLYCEMIC CONTROL OF PATIENTS WITH DIABETIC KETOACIDOSIS IN THE INTENSIVE CARE UNITS

Supasuta Wongdama (Thailand)

At MR 109A

OP-D-05

14:15-15:30

THE ASSOCIATIONS OF METABOLIC SYNDROME AND ALBUMINURIA WITH ALL-CAUSE MORTALITY IN PATIENTS WITH CORONARY ARTERY DISEASE AND NO HISTORY OF DIABETES

Harold Henrison Chiu and Jun-Sing Wang (Taiwan)

OP-D-06

EXPLORING THE PERSPECTIVES OF MUSLIM PATIENTS WITH DIABETES AT ZAMBOANGA CITY MEDICAL CENTER ON MANAGING DIABETES DURING RAMADAN: A FOCUS GROUP DISCUSSION STUDY ON KNOWLEDGE, ATTITUDES, AND PRACTICES

Mohammad Elshad Sali (Philippines)

FREE PAPER 2

Chairpersons: Dr. Tan Chee Eng (Singapore)
& Assoc. Prof. Apiradee Sriwijitkamol (Thailand)

OP-D-07

EFFECTIVENESS OF A FILIPINO LANGUAGE VIDEO ON INSULIN INJECTION METHODS IN IMPROVING TECHNIQUE OF INSULIN INJECTION AND BLOOD GLUCOSE LEVEL AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN A TERTIARY HOSPITAL: A RANDOMIZED CONTROL TRIAL

Cheryl Grace Adriano, Cecille Dela Paz, Cecilia Jimeno (Philippines)

At MR 109B

OP-D-08

ASSOCIATION OF SERUM URIC ACID CONCENTRATION WITH DIABETIC RETINOPATHY IN ADULTS WITH TYPE 2 DIABETES MELLITUS

Leo Tiu Jr. (Philippines)

OP-D-09

THE EFFECT OF DIFFERENT DOSES OF VITAMIN D SUPPLEMENTATION ON INSULIN RESISTANCE IN PATIENTS WITH GESTATIONAL DIABETES AND VITAMIN D DEFICIENCY

Khin Myo Aung, Ye Myint, Moe Wint Aung, Khin Saw Than (Myanmar)

OP-D-10

PREVALENCE OF METABOLIC ASSOCIATED FATTY LIVER DISEASE WITH CONTROLLED ATTENUATION PARAMETER AND LIVER STIFFNESS MEASUREMENTS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Yulia Sekarsari, R. Bowo Pramono, Vina Yanti Susanti, M. Robikhul Ikhsan, Hemi Sinorita, Neneng Ratnasari, Helmi Purba (Indonesia)

At MR 109B

OP-D-11

THE RELATIONSHIP BETWEEN HOMA-B DURING ADMISSION WITH POOR OUTCOMES AMONG HOSPITALIZED PATIENTS WITH CONFIRMED COVID-19 IN RSUPN DR. CIPTO MANGUNKUSUMO HOSPITAL

Ihsanul Rajasa Subekti (Indonesia)

14:15-15:30

OP-D-20

MACHINE LEARNING-DERIVED LOW DENSITY LIPOPROTEIN CHOLESTEROL (LDL-C) ESTIMATION AGREES BETTER WITH DIRECTLY MEASURED LDL-C THAN CONVENTIONAL EQUATIONS IN INDIVIDUALS WITH TYPE 2 DIABETES MELLITUS

Gerald Sng, Khoo You Liang, Tan Hong Chang, Bee Yong Mong (Singapore)

FREE PAPER 3

Chairpersons: Prof. Chan Siew Pheng (Malaysia) & Assoc. Prof. Lalita Wattanachanya (Thailand)

OP-D-12

STROKE AND THE RISK OF SUBSEQUENT DIABETES BY POST-STROKE DISABILITY STATUS AND STROKE TYPE

Dagyeong Lee and Sohyun Chun (South Korea)

At MR 109C

OP-D-13

CYSTATIN C LEVEL AND MICROVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

Chan Nyein Thu, Theingi Kyaw, Tun Tun Naing, Thet (Myanmar)

14:15-15:30	**OP-D-14** *YOUNG ONSET TYPE 2 DIABETES FROM THE TARGET T2D STUDY COHORT IN MALAYSIA: CLINICAL CHARACTERISTICS, ASSOCIATION WITH METABOLIC CONTROL AND COMPLICATIONS* **Chan Siew Pheng, Foo Siew Hui, Norlaila Mustafa, Rohana Abdul Ghani, Mohamed Badrulnizam Long Bidin, Nurain MD Noor, Syahrizan Samsuddin, Wan Mohamad Wan Bebakar, Yong Sy Liang, Chiew Thiam Kian (Malaysia)** **OP-D-15** *TYPE 2 DIABETES AND OSTEOSARCOPENIA: DOUBLE TROUBLE? A CROSS-SECTIONAL PILOT STUDY IN MALAYSIA* **Dorothy Maria Anthony Bernard, Terence Ing Wei Ong, Lee Ling Lim, Jeyakantha Ratnasingam, Luqman Ibrahim, Hui Min Khor, Wai Yee Chan, Mohammad Nazri MD Shah, Pavai Sthaneshwar, Christine Shamala Selvaraj, Karuthan Chinna, Shireene Ratna DB Vethakkan, Sharmila Sunita Paramasivam (Malaysia)** **OP-D-16** *THE PROFILE AND ASSOCIATED RISK FACTORS OF DIABETIC FOOT DISEASE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS SEEN AT PRIVATE SPECIALTY CLINICS AT ST. LUKE'S MEDICAL CENTER* **Krizia Marie Lim, Denise Joy Lopez, Carmela Veronica Bautista, Allan Dampil (Philippines)** **OP-D-17** *GLUCOSE FLUCTUATION PATTERNS FROM CONTINUOUS GLUCOSE MONITORING ARE ASSOCIATED WITH DYSGLYCEMIA AND ABNORMAL INSULIN RESPONSE* **Natthaphon Wonghakaeo, Aisawan Petchlorlian, Wasita Warachit Parksook, Natnicha Houngngam, Prangareeya Santisitthanon, Supagarn Umpornkotchakorn, Nitchakarn Laichuthai (Thailand)**	At MR 109C
15:30-16:00	COFFEE BREAK/EXHIBITION/POSTER SESSION	At Ballroom 4
16:00-16:45	PLENARY LECTURE 3: BONE **Chairperson: Assoc. Prof. Natthinee Charatcharoenwitthaya (Thailand)** Topic: Individualizing Therapy for Osteoporosis **Prof. Peter Robert Ebeling (Australia)**	At Ballroom 2
17:30-20:00	DINNER SYMPOSIUM BY BAYER THAI COMPANY LIMITED **Moderator: Prof. Chaicharn Deerochanawong (Thailand)** Topic: Non-Steroidal MRAs for Heart-Kidney Protection **Prof. Jiten Vora (United Kingdom)** **Assoc. Prof. Sarat Sunthornyothin (Thailand)**	At MR109C

SCIENTIFIC SESSIONS
18 NOVEMBER 2023

07:00-08:15	BREAKFAST SYMPOSIUM BY EMBECTA (THAILAND) LIMITED **Moderator: Dr. Shailendra Bajpai (Singapore)** Topic: Enhancing Diabetes Management in Asia: Innovation, Education, and Improving Access to Healthcare **Assoc. Prof. Sompongse Suwanwalaikorn (Thailand)** **Prof. Taninee Sahakitrungruang (Thailand)**	At MR 109C
08:30-09.15	PLENARY LECTURE 4: ADRENAL **Chairperson: Assoc. Prof. Sarat Sunthornyothin (Thailand)** Topic: Adrenal Incidentaloma 2023 **Prof. Paul Michael Stewart (United Kingdom)**	At Ballroom 2
09:15-10:00	PLENARY LECTURE 5: REPRODUCTIVE **Chairperson: Asst. Prof. Sira Korpaisarn (Thailand)** Topic: Gender Affirming Hormone Therapy for Transgender People: An Update for Endocrinologists **Prof. Vin Tangpricha (United States of America)**	At Ballroom 2
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	At Ballroom 4
10:30-12:00	SYMPOSIUM 4 BONE: NOVEL INSIGHTS IN PARATHYROID DISORDERS **Chairperson: Prof. Chan Siew Pheng (Malaysia)** Topic: Primary Hyperparathyroidism **Prof. Chan Siew Pheng (Malaysia)** Topic: Secondary Hyperparathyroidism **Prof. Mark Anthony Sandoval (Philippines)** Topic: Hypoparathyroidism **Dr. K. Heri Nugroho HS (Indonesia)**	At Ballroom 1
	SYMPOSIUM 5 REPRODUCTIVE: GAP AND CHALLENGE IN TRANSGENDER CARE IN ASEAN **Chairperson: Asst. Prof. Sira Korpaisarn (Thailand)** Topic: Thailand Experience **Asst. Prof. Sira Korpaisarn (Thailand)** Topic: Singapore Experience **Dr. Thomas Frederick James King (Singapore)** Topic: Philippines Experience **Asst. Prof. Lizette Kristine F. Lopez (Philippines)**	At Ballroom 2

10:30-12:00	SYMPOSIUM 6 LIPID: EMERGING DYSLIPIDEMIA MANAGEMENT **Chairperson: Dr. Mia C. Fojas (Philippines)** Topic: LDL Lowering Therapy **Assoc. Prof. Pimjai Anthanont (Thailand)** Topic: VLDL Lowering Therapy **Assoc. Prof. Nuntakorn Thongtang (Thailand)** Topic: Chylomicron Lowering Therapy **Dr. Mia C. Fojas (Philippines)**	At Ballroom 3
12:00-13:30	LUNCHEON SYMPOSIUM 4 BY ZUELLIG PHARMA LIMITED **Moderator: Asst. Prof. Pongamorn Bunnag (Thailand)** Topic: The Evolving Story of Incretins in Metabolic Disease; From Patient Heterogeneity to Recent Advances **Prof. Juliana Chung Ngor Chan (Hong Kong SAR)** **Prof. Chan Siew Pheng (Malaysia)** **Prof. Juan Pablo Frias (United States of America)**	At Ballroom 1
	LUNCHEON SYMPOSIUM 5 BY BOEHRINGER INGELHEIM (THAI) LIMITED **Moderator: Prof. Chaicharn Deerochanawong (Thailand)** Topic: Reshaping Kidney Care in T2D **Prof. Chaicharn Deerochanawong (Thailand)** **Dr.Ted Wu (Australia)**	At Ballroom 2
13:30-14:15	MEET THE EXPERT 4: ADRENAL Topic: Optimizing Glucocorticoid Replacement Therapy **Prof. Paul Michael Stewart (United Kingdom)**	At Ballroom 1
	MEET THE EXPERT 5: LIPID Topic: Towards Improving Care of FH Patients **Prof. Weerapan Khovidhunkit (Thailand)**	At Ballroom 2
	MEET THE EXPERT 6: THYROID Topic: Challenging Cases in Thyroid Disorders **Dr. Florence Tan (Malaysia)**	At Ballroom 3
14:15-15:30	**FREE PAPER 4-6** FREE PAPER 4 **Chairpersons: Asst. Prof. Lizette Kristine F. Lopez (Philippines) & Assoc. Prof. Rattana Leelawattana (Thailand)** **OP-T-01** *CLINICAL CHARACTERISTICS AND OUTCOMES OF AN EXOGENOUS THYROTOXICOSIS EPIDEMIC IN PRISON* **Chidchanok Pattarawongpaiboon, Nattachai Srisawat, Ratapum Champunot, Jukrin Somboonjun (Thailand)**	At MR 109A

OP-T-02

STEROID-RESISTANT EUTHYROID EXOPHTHALMOS, MYXEDEMA, AND OSTEOARTHROPATHY (EMO) SYNDROME TREATED WITH RITUXIMAB

Hernessa Hernandez and Nemencio Nicodemus (Philippines)

OP-T-03

PREDICTORS OF IN-HOSPITAL MORTALITY AMONG PATIENTS WITH THYROID STORM IN THE PHILIPPINE GENERAL HOSPITAL: A SEVEN-YEAR REVIEW (2017-2023)

Patrick Paolo Abarquez, Hernessa Hernandez, Cecilia Jimeno (Philippines)

OP-T-04

INCIDENCE AND CLINICAL PROFILE OF CANCER PATIENTS WITH IMMUNE CHECKPOINT INHIBITORS-INDUCED ENDOCRINE SIDE EFFECTS IN THE UNIVERSITY OF SANTO TOMAS HOSPITAL: A 5-YEAR RETROSPECTIVE STUDY

Nenuel Angelo Luna, Jennilyn Quinitio, Erick Mendoza, Sjoberg Kho, Priscilla Caguioa (Philippines)

At MR 109A

14:15-15:30

OP-R-01

COMPARISON OF CARDIO-METABOLIC PARAMETERS BETWEEN THE DIFFERENT POLYCYSTIC OVARY SYNDROME PHENOTYPES AMONG FILIPINO WOMEN IN A TERTIARY HOSPITAL

Nichole Andrea Bisquera, Oliver Allan Dampil, Erick Mendoza, Yvette Manalo-Mendoza (Philippines)

FREE PAPER 5

Chairperson: Dr. Thomas Frederick James King (Singapore) & Dr. Parinya Samakkarnthai (Thailand)

OP-A-01

THE IMPACT OF STANDARDIZED PATIENT EDUCATION ON THE HEALTH-RELATED QUALITY OF LIFE AND KNOWLEDGE IN PATIENTS WITH ADRENAL INSUFFICIENCY

Ken Seng Chiew and Ching Hui Khaw (Malaysia)

At MR 109B

OP-P-01

OBSTRUCTIVE HYDROCEPHALUS AS A PRESENTATION OF A MACROPROLACTINOMA: IS THERE ROOM FOR CONSERVATIVE MEDICAL TREATMENT?

Patricia Maria Gregoria Cuaño, Kevin Ivan Chan, Iris Thiele Isip-Tan (Philippines)

OP-P-02

PERIOPERATIVE COMPLICATIONS ASSOCIATED WITH ROUTINE PREOPERATIVE GLUCOCORTICOID USE AMONG PITUITARY SURGERY PATIENTS WITH NORMAL PREOPERATIVE HPA AXIS: A RETROSPECTIVE COHORT STUDY

Franz Michael Magnaye and Elizabeth Paz-Pacheco (Philippines)

OP-B-01

THE UTILITY OF EDUCATIONAL VIDEO IN IMPROVING AWARENESS OF BONE HEALTH IN PRE-SCHOOLS AND PRIMARY SCHOOL AGED CHILDREN AND EDUCATORS IN SINGAPORE

Linsey Gani, Elizabeth Chan, Janelle Pang, Shaheerah Kamas, Christina Low, Ang Seng Bin, Chionh Siok Bee (Singapore)

At MR 109B

OP-B-02

VITAMIN D: A PILOT STUDY OF THE CZECH POPULATION

Ladislav Spisak, Marie Karlikova, Sarka Svobodova, Lemis Kravecz, Jana Zehleova, Ondrej Topolcan, Vaclav. Simanek (Czech Republic)

14:15-15:30

FREE PAPER 6

Chairpersons: Dr. K.Heri Nugroho HS (Indonesia) & Asst. Prof. Sira Korpaisarn (Thailand)

OP-D-18

DIAGNOSTIC ACCURACY OF SERUM 1,5-ANHYDROGLUCITOL AS A SURROGATE MEASURE OF GLYCEMIC VARIABILITY AMONG ADULT FILIPINOS WITH TYPE 2 DIABETES MELLITUS: A RETROSPECTIVE CROSS-SECTIONAL STUDY

Ainee Krystelle Lee, Joebeth Tabora, Christian Bernard Cheng, Rosa Allyn Sy (Philippines)

OP-D-19

ASSOCIATION OF LIPID RATIO AND DYSGLYCEMIA AMONG URBAN POPULATION IN MAKASSAR, SOUTH OF SULAWESI

Fabiola M S Adam, Fergie M G Runtu, John M F Adam, Jordy Sitorus, Makbul Aman, Husaini Umar (Indonesia)

At MR 109C

OP-D-21

EXPERIENCE WITH CONTROL-IQ TECHNOLOGY: THE IMPERIAL COLLEGE LONDON PILOT STUDY

Lukana Preechasuk, Parizad Avari (Thailand), Nick Oliver (United Kingdom)

14:15-15:30	**OP-O-02** *PERCEPTIONS, ATTITUDES, BEHAVIORS, AND POTENTIAL BARRIERS FOR EFFECTIVE OBESITY CARE ACROSS PATIENTS WITH OBESITY (PWO) AND HEALTHCARE PROFESSIONALS (HCPS) IN VIETNAM: FINDINGS FROM AWARENESS CARE AND TREATMENT IN OBESITY MANAGEMENT (ACTION)-VIETNAM STUDY* **Nam Quang Tran, Dao Nguyen Thi, Thu Nghiem Nguyet, Tuan Nguyen Anh, Nghi Le Huu, Thanh Dau Ba, Yousun Ha (Vietnam)** **OP-O-01** *THE ASSOCIATIONS OF ALBUMINURIA AND METABOLIC SYNDROME WITH ALL-CAUSE MORTALITY IN PATIENTS WITHOUT SIGNIFICANT CORONARY ARTERY DISEASE* **Harold Henrison Chiu and Jun-Sing Wang (Taiwan)** **OP-M-01** *CLINICAL CHARACTERISTICS AND ONE-YEAR TREATMENT OUTCOMES IN A COHORT OF PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA IN SINGAPORE: FHCARE REGISTRY* **Sharon Pek, Jeremy Hoe, Sanjaya Dissanayake, Atiqa Binte Zulkifli, Madhuumetaa D/O Selvakumar, Terrance Chua Siang Jin, Tai E Shyong, Eric Lim Tien Siang, Chester Drum, Fathima Ashna Nastar, Tiong Yee Sian, Fabian Yap Kok Peng, Rashida Fahad, Loh Wann Jia, Natalie Koh Si Ya, Marvin Chua Weijie, Tan Hong Chang, Ian Koh, Darren Seah Ee Jin, Siau Kai Rong, Rinkoo Dalan, Tavintharan Subramaniam (Singapore)**	At MR 109C
15:30-16:00	COFFEE BREAK/EXHIBITION/POSTER SESSION	At Ballroom 4
16:00-16:45	PLENARY LECTURE 6: THYROID **Chairperson: Asst. Prof. Sirinart Sirinvaravong (Thailand)** Topic: Management of Graves' Disease through the Lifespan **Asst. Prof. Chng Chiaw Ling (Singapore)**	At Ballroom 2
18:30-22:00	CONGRESS BANQUET	At Ballroom 1

SCIENTIFIC SESSIONS
19 NOVEMBER 2023

07:00-08:15	BREAKFAST SYMPOSIUM 2 BY KOWA (THAILAND) COMPANY LIMITED **Moderator: Assoc. Prof. Apussanee Boonyavarakul (Thailand)** The World's First SPPARM α: Unleashing the Residual Risk with the Novel Triglyceride Approach **Prof. Iichiro Shimomura (Japan)**	At MR 109C
08:30-09.15	PLENARY LECTURE 7: LIPID **Chairperson: Prof. Weerapan Khovidhunkit (Thailand)** Topic: When Should Lp(a) Be Measured and Treated? **Prof. Kausik Kumar Ray (United Kingdom)**	At Ballroom 2
09:15-10:00	PLENARY LECTURE 8: T1DM **Chairperson: Prof. Supawadee Likitmaskul (Thailand)** Topic: T1DM Prevention and Management: Where Are We Now? **Prof. Maria Eloise Craig (Australia)**	At Ballroom 2
10:00-10:30	COFFEE BREAK/EXHIBITION/POSTER SESSION	At Ballroom 4
10:30-12:00	SYMPOSIUM 7 THYROID: THYROID NODULES: ADVANCE AND CONTROVERSY **Chairperson: Dr. Adoree Yi Ying Lim (Singapore)** Topic: Indeterminate Nodules in the Era of Molecular Genetics **Dr. Adoree Yi Ying Lim (Singapore)** Topic: Novel Non-Invasive Technologies for the Management of Benign and Malignant Nodules **Assoc. Prof. Somrach Thamtorawat (Thailand)** Topic: Endoscopic Thyroid Surgery, Where Are We Now? **Dr. Angkoon Anuwong (Thailand)**	At Ballroom 1
	SYMPOSIUM 8 ADRENAL: WHAT'S NEW IN ADRENAL DISORDERS **Chairperson: Asst. Prof. Thiti Snabboon (Thailand)** Topic: Cushing's Syndrome Update **Prof. Norlela Sukor (Malaysia)** Topic: Personalized Management of Pheochromocytoma and Paraganglioma **Asst. Prof. Thiti Snabboon (Thailand)** Topic: Late onset Congenital Adrenal Hyperplasia **Dr. Tri Juli Edi Tarigan (Indonesia)**	At Ballroom 2

10:30-12:00	SYMPOSIUM 9 ENDOCRINOLOGY AND PREGNANCY **Chairperson: Assoc. Prof. Chutintorn Sriphrapradang (Thailand)** Topic: Antithyroid Drugs in Pregnancy **Assoc. Prof. Chutintorn Sriphrapradang (Thailand)** Topic: Metformin in Pregnancy **Prof. Moe Wint Aung (Myanmar)** Topic: Lipid Lowering Therapy in Pregnancy **Dr. Ketut Suastika (Indonesia)**	At Ballroom 3

AFES 2023

22nd ASEAN FEDERATION OF ENDOCRINE SOCIETIES CONGRESS

POSTER PRESENTATIONS

ADRENAL

PP-A-01 PRIMARY ADRENAL INSUFFICIENCY SECONDARY TO ADRENAL TUBERCULOSIS IN A KLINEFELTER SYNDROME PATIENT: DIAGNOSTIC CONUNDRUM
Noor Hafis Md Tob, Norhaliza Mohd Ali, Bazli Bahar (Malaysia)

PP-A-02 CLINICAL COURSE FOR PATIENTS WITH PRIMARY ALDOSTERONISM: A SINGLE CENTRE EXPERIENCE
Chee Koon Low, Vanusha Devaraja, Yoke Mui Ng, Gayathri Devi Krishnan, Shazatul Reza Mohd Redzuan, Subashini Rajoo, Mohamed Badrulnizam Long Bidin (Malaysia)

PP-A-03 CONGENITAL ADRENAL HYPERPLASIA MANIFESTING WITH AMBIGUOUS GENITALIA
Saiful Anam and M Robikhul Ikhsan (Indonesia)

PP-A-04 A RARE CASE OF AN ADRENOCORTICAL ADENOMA MANIFESTING WITH PERIODIC PARALYSIS IN A 39-YEAR-OLD WOMAN
Yulia Sekarsari, R. Bowo Pramono, M. Robikhul Ikhsan, Vina Yanti Susanti, Hemi Sinorita, Metalia Puspitasari (Indonesia)

PP-A-05 GIANT ADRENAL LIPOMA MASQUERADING AS LOW-DENSITY PHEOCHROMOCYTOMA: A CASE REPORT
Denise Joy Emmanuelle Lopez, Louisse Lynn Antoinette Young, Maria Patricia Deanna Maningat-Goco, Czarlo Dela Victoria, Timothy Carl Uy, Gian Carlo Magno (Philippines)

PP-A-06 RISK FACTORS THAT CAN PREDICT ADRENAL INSUFFICIENCY AMONG PATIENTS WITH FEVER OF UNKNOWN ORIGIN
Dong Sun Kim and Jung Hwan Park (South Korea)

PP-A-07 DIFFUSE LARGE B CELL LYMPHOMA PRESENTING AS BILATERAL ADRENAL NODULES: A CASE REPORT ON PRIMARY ADRENAL LYMPHOMA
Ainee Krystelle Lee and Stefanie Lim Uy (Philippines)

PP-A-08 GIANT ADRENAL SCHWANNOMA PRESENTING AS ADRENAL INCIDENTALOMA WITH MALIGNANT FEATURES
Louisse Lynn Antoinette Young, Jose Carlo Elises, Ralph Bejar, Clarisse Veronica Mirhan (Philippines)

PP-A-09 TWO-IN-ONE: CONNSHING SYNDROME OR A FORTUNATE COINCIDENCE?
Patricia Maria Gregoria Cuaño (Philippines)

PP-A-10 SPONTANEOUS BILATERAL ADRENAL HEMORRHAGE AS MANIFESTATION OF PRIMARY ANTIPHOSPHOLIPID ANTIBODY SYNDROME: A CASE REPORT
Marivi Grace Mercado-Nerit (Philippines)

PP-A-11 INCIDENTAL ERYTHROCYTOSIS AS THE FIRST MANIFESTATION OF CUSHING'S SYNDROME
Marivi Grace Mercado-Nerit (Philippines)

PP-A-12 CHROMOGRANIN-POSITIVE ALDOSTERONE-PRODUCING ADRENOCORTICAL CARCINOMA WITH CORTISOL CO-SECRETION: A CASE REPORT
Megan Margrethe Balina (Philippines)

PP-A-13 HELICOBACTER PYLORI INFECTION IN PRIMARY AUTOIMMUNE ADRENAL INSUFFICIENCY: A CROSS-SECTIONAL ANALYTICAL STUDY
Jayaprakash Sahoo, S. Venkatesh, Dukhabandhu Naik, Pazhanivel Mohan, Nandini Pandit, Sadishkumar Kamalanathan, Sitanshu sekhar Kar (India)

PP-A-14 CUSHING'S SYNDROME FROM CONCOMITANT THERAPY OF RITONAVIR AND FLUTICASONE
Pontipa Engkakul, Pornumpa Bunjoungmanee, Wiraporn Yodvisitsak, Auchara Tangsathapornpong (Thailand)

PP-A-15 ADRENOCORTICOTROPIN-INDEPENDENT CUSHING'S SYNDROME DUE TO BILATERAL ADRENAL HYPERPLASIA: A RARE CASE OF PRIMARY PIGMENTED NODULAR ADRENOCORTICAL DISEASE
Ira Laurentika, Tri Juli Edi Tarigan, Em Yunir, Agus Rizal, Sahat Matondang, Merci Monica Pasaribu, Agnes Stephanie Harahap (Indonesia)

PP-A-16 USE OF EPLERENONE IN PRIMARY ALDOSTERONISM DURING PREGNANCY: A CASE SERIES
Denise Joy Emmanuelle Lopez, Lou Erika Rubion, Maria Patricia Deanna Maningat-Goco (Philippines)

PP-A-17 THREE CASES OF CATHECOLAMAMINE-SECRETING NEURODOCRINE TUMOR IN TERTIARY HOSPITAL, WEST JAVA, INDONESIA
Marshell Tendean, Maya Kusumawati, Ervita Ritonga, Hikmat Permana, Nanny M Soetedjo (Indonesia)

PP-A-18 MULTIPLE ENDOCRINE NEOPLASIA TYPE 2A PRESENTED WITH ECTOPIC ACTH SYNDROME DUE TO BILATERAL PHEOCHROMOCYTOMA
Wimalin Kaewcharoen, Manaporn Payanundana (Thailand)

BONE AND CALCIUM

PP-B-01 TARGETING TETRASPANIN 7 TO DEVELOP NEW DRUGS FOR OSTEOCLAST-RELATED BONE DISEASES
Minhee Kim and Soo Young Lee (South Korea)

PP-B-02 A RARE CASE OF PARATHYROID ADENOMA PRESENTING WITH HOARSENESS
Noemi Angela Nunez and Celeste C. Ong-Ramos (Philippines)

PP-B-03 FAHR'S SYNDROME DUE TO IDIOPATHIC HYPOPARATHYROIDISM WITH VITAMIN D DEFICIENCY, HYPOMAGNESEMIA, AND PRIMARY HYPOTHYROIDISM
Didik Supriyadi Kusumo Budoyo and M. Robhikul Ikhsan (Indonesia)

PP-B-04 PRIMARY HYPERPARATHYROIDISM AND ITS DIFFERENT MANIFESTATIONS: A CASE SERIES AND LITERATURE REVIEW
Kurt Bryan Tolentino, Quennie Bien Bien Yu, Stefanie Lim-Uy, Monica Therese Cating-Cabral, Maria Patricia Deanna Maningat (Philippines)

PP-B-05 ATYPICAL UNILATERAL FEMORAL FRACTURE IN A POSTMENOPAUSAL FEMALE AFTER TREATMENT OF BISPHOSPHONATES AND DENOSUMAB: A CASE REPORT
Kurt Bryan Tolentino, Quennie Bien Bien Yu, Camille Pestaño, Monica Therese Cating-Cabral (Philippines)

PP-B-06 CLINICAL PROFILES OF PATIENTS ATTENDING TO OSTEOPOROSIS CENTER OF GRAND HANTHA INTERNATIONAL HOSPITAL (GHIH)
Kyar Nyo Soe Myint, Than Than Aye, Kyaw Swar Thet (Myanmar)

PP-B-07 A LARGE AGGRESSIVE PHOSPHATURIC MESENCHYMAL TUMOR OF THE HUMERUS: SURGICAL MANAGEMENT AND BUROSUMAB THERAPY FOR TUMOR-INDUCED OSTEOMALACIA
Tasma Harindhanavudhi, Andrea Espejo-Freire, Paari Murugan, Edward Cheng (United States of America)

PP-B-08 CASE SERIES OF OSTEOMALACIA SECONDARY TO RENAL TUBULAR ACIDOSIS TYPE 1 WITH VITAMIN D DEFICIENCY
Lavanya Jeevaraj, Vijayrama Rao Sambamoorthy, Hidayatil Alimi Bin Keya Nordin, Anilah Bt Abdul Rahim, Ijaz Bt Hallaj Rahmatullah (Malaysia)

PP-B-09 BRITTLE BONE DISEASE BECOMES UNBREAKABLE WITH BISPHOSPHONATE INFUSION
Lucille Phylicia Cano-Laynesa, Maria Melanie Liberty Alcausin, Julius Bryan Abesamis (Philippines)

PP-B-10 TRANSIENT HYPERPHOSPHATASEMIA IN CHILDREN TREATED WITH GRISEOFULVIN
Pontipa Engkakul, Yuvaluck Thammagasorn, Wiraporn Yodvisitsak (Thailand)

PP-B-11 SUN EXPOSURE AND VITAMIN D STATUS AND ITS ASSOCIATION WITH BONE TURNOVER MARKERS IN TRANSFUSION DEPENDENT ADULT THALASSEMIA PATIENTS
Fatimah Zaherah Mohamed Shah and Nazirah Faizal (Malaysia)

PP-B-12 A CASE OF MALABSORPTION PRESENTING WITH OSTEOMALACIA, COAGULOPATHY AND DELAYED PUBERTY
Clarence Aaron Sy (Philippines)

PP-B-13 NAVIGATING THE DIAGNOSTIC CHALLENGES OF CALCIPENIC RICKETS COMPLICATED BY HYPERCOAGULATION, HYPOKALEMIA, AND SECONDARY AMENORRHEA IN A 21-YEAR-OLD FEMALE
Merylla Filianty Sipayung, Ratna Maila Dewi Anggraini, Alwi Shahab, Yulianto Kusnadi, Mediarty Syahrir, Radiyati Umi Partan (Indonesia)

PP-B-14 THE PREVALENCE OF VITAMIN D DEFICIENCY IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE AND T2DM
Nur Aini Eddy Warman, Fatimah Zaherah Mohamed Shah, Mohd Hazriq Awang, Nur Aisyah Zainordin, Aimi Fadilah Mohamad, Rohana Abdul Ghani (Malaysia)

PP-B-15 CASE SERIES OF PRIMARY HYPERPARATHYROIDISM: FROM ASYMPTOMATIC TO FATAL COMPLICATION
Muhammad Iman Pratama Putra, Hikmat Permana, Ervita Ritonga, Maya Kusumawati, Nanny Natalia Mulyani Soetedjo (Indonesia)

PP-B-16 UNDERDIAGNOSED CLASSICAL PRIMARY HYPERPARATHYROIDISM AND RAPID PROGRESSIVE DEMENTIA: CASE REPORT AND LITERATURE REVIEW
Jiranon Pirapattanapong and Karnwara Thanyawan (Thailand)

PP-B-17 EVALUATING PRESCRIBING PATTERN, OUTCOMES AND TACHYPHYLAXIS PREVALENCE OF INJECTABLE CALCITONIN IN HYPERCALCEMIA
Yong Wai Yin, Ernieda binti Md Hatah, Chan Huan Keat, Mohd Makmor Bakry, Hian Chuan Kai, Subashini Rajoo, Ijaz binti Hallaj Rahmatullah (Malaysia)

DIABETES

PP-D-01 DIABETIC KETOACIDOSIS COMPLICATED BY DEEP VEIN THROMBOSIS IN A NEWLY DIAGNOSED PATIENT WITH TYPE 1 DIABETES MELLITUS AND UNDIAGNOSED MAY-TURNER SYNDROME
Waralee Chatchomchuan, Yotsapon Thewjitcharoen, Veekij Veerasomboonsin, Sirinate Krittiyawong, Thep Himathongkam (Thailand)

PP-D-02 GLYCEMIC CONTROL IN CONTINGENT SITUATIONS: A LOOK INTO THE HbA1c OF PERSONS WITH DIABETES MELLITUS DURING THE COVID-19 PANDEMIC IN METRO MANILA
Maylynn Alcaraz-Fajardo (Philippines)

PP-D-03 ANTHROPOMETRIC, BIOCHEMICAL,AND IMAGING CHARACTERISTICS IN FEMALES WITH DIABETES AND FAMILIAL PARTIAL LIPODYSTROPHY
Wann Jia Loh, Yaligar Jadegoud, Amanda J. Hooper, Suresh Anand Sadananthan, Yeshe Kway, Su Chi Lim, Sambasivam Sendhil Velan, Melvin Khee Shing Leow, Joan Khoo (Singapore)

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ORAL PRESENTATIONS

ADRENAL

OP-A-01

THE IMPACT OF STANDARDIZED PATIENT EDUCATION ON THE HEALTH-RELATED QUALITY OF LIFE AND KNOWLEDGE IN PATIENTS WITH ADRENAL INSUFFICIENCY

https://doi.org/10.15605/jafes.038.AFES.01

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INTRODUCTION
Despite adequate glucocorticoid replacement, patients with adrenal insufficiency suffer from poor health-related quality of life (HRQOL) and have an increased risk of mortality. Patient education is an important measure to prevent adrenal crises and may also improve quality of life. Nevertheless, in Malaysia, patient education on adrenal insufficiency is often variable and confined to repeated oral instructions. As structured standardized patient education and written instructions have been shown to enhance knowledge transfer, we have produced educational materials in local languages for our patients.

METHODOLOGY
A prospective questionnaire-based single-center study evaluating the impact of standardized educational materials on the knowledge and HRQOL of patients with adrenal insufficiency. At baseline, HRQOL is examined using Short Form-36 version 2 (SF-36v2), and knowledge of adrenal insufficiency is assessed by a questionnaire designed by the authors. Education materials and steroid cards are then introduced. Three months later, participants were reassessed with the same questionnaires. Changes in the Physical Component Summary (PCS) and Mental Component Summary (MCS) scores of the SF-36v2 as well changes in changes in the total score obtained on the knowledge assessment questionnaires are then analyzed.

RESULTS
One hundred ten patients (Primary adrenal insufficiency, n = 13 and secondary adrenal insufficiency, n = 97) were recruited. Most (n = 89, 81%) had opted for Malay or Chinese education materials. After the intervention, the participants' median knowledge scores (25^{th}/75^{th} percentiles) improved from 5 (4/7) to 10 (9/11) (p <0.001), from a maximum score of 12. Poor baseline scores were seen in those who were older (>55 years), had lower education levels, secondary adrenal insufficiency, and shorter disease duration (55 years), but still performed worse compared to their younger counterparts.

After standardized education, the median score (25^{th}/75^{th} percentiles) of PCS recorded an improvement from 46.78 (40.40/51.87) to 47.87 (42.94/51.32) (p <0.001). MCS score improvement from 45.15 (40.39/49.84) to 46.10 (42.93/48.71) was not statistically significant (p = 0.148). Both PCS and MCS were poorer than the Malaysian age and gender-matched general population even after standardized education (p <0.001).

CONCLUSION
In conclusion, our current education strategy of repeated oral instructions during clinic visits is grossly inadequate for effective knowledge transfer. Patients with adrenal insufficiency still suffer from poor quality of life despite adequate glucocorticoid replacement. This prospective study has demonstrated the positive impact of standardized patient education and written instructions on patients' knowledge and HRQOL. The availability of educational materials in local languages has a huge role in improving our patient's care and self-management. They are easily administered and have the potential for undemanding widespread implementation throughout the country.

KEYWORDS
adrenal insufficiency, standardized patient education, quality of life, knowledge

BONE AND CALCIUM

OP-B-01

THE UTILITY OF EDUCATIONAL VIDEO IN IMPROVING AWARENESS OF BONE HEALTH IN PRE-SCHOOLS AND PRIMARY SCHOOL-AGED CHILDREN AND EDUCATORS IN SINGAPORE

https://doi.org/10.15605/jafes.038.AFES.02

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INTRODUCTION

The foundation of skeletal health begins as early as in utero with the majority of bone mass gained in childhood and adolescence. It is estimated that a 10% increase in peak bone mass would delay the onset of osteoporosis by 13 years in women. Thus, optimizing factors that would help in achieving peak bone mass would assist in the primary prevention of osteoporosis. In this study, we piloted an educational video in the preschool and primary school population to assess its effectiveness in increasing awareness of bone health and activity.

METHODOLOGY

A team of doctors, dieticians, and physiotherapists worked together to create an educational video to increase awareness of bone health. Major themes incorporated included: 1) The importance of strong bones and growth of bones in children; 2) The role of adequate calcium in a healthy diet; and 3) The importance of exercise in bone health. The educational video was piloted in Singapore from June to September 2022. The video was animated to appeal to younger children. The teacher's activities deck along with suggestions for learning points was also shared with the various schools and preschool institutions. The work was conducted with the collaboration of the Health Promotion Board (HPB), Singapore. Feedback on the educational video was also collected at the end of the pilot period.

RESULTS

For 3 months, publicity was conducted in 1,800 preschools and 170 primary schools. Feedback was received from 10 primary schools and 24 preschool centers. The educational video was also hosted on YouTube and received over 1,800 views. Over 5,000 students were reached based on the feedback given by the schools. The feedback found that 88% of the users found the resources were useful with age-appropriate content. There was a very high level of satisfaction with 91% stating a satisfaction level scale of 4-5. The majority of feedback was obtained from the kindergartens 1 and 2 and primary levels 1-4. About 77% found that the resources were easy to use.

CONCLUSION

An animated educational health video with an appealing design and simple contents is an easily administered tool and effective in increasing awareness of bone health. Hosting the video on YouTube also allowed greater outreach to those beyond the schools. Further follow-up is needed to ascertain the effectiveness of this educational tool in changing overall health behaviours and its long-term impact on bone health in Singapore.

KEYWORDS

bone health, education, children, public health

OP-B-02

VITAMIN D: A PILOT STUDY OF THE CZECH POPULATION

https://doi.org/10.15605/jafes.038.AFES.03

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INTRODUCTION
Low serum levels of vitamin D play a significant role in the origin of several serious diseases (e.g., infectious, cancer, cardiovascular).

OBJECTIVE
To find out vitamin D serum levels in the Czech population, changes in vitamin D serum levels in cancer and patients with COVID-19 infection, and the optimal substitution of vitamin D.

METHODOLOGY
Groups of patients: A cohort of 3,500 Czech population with vitamin D levels was examined in March 2023. A group of 1,000 patients with cancer and another group of 1,000 patients with COVID-19 infection were also included. Serum levels of Vitamin D were examined by chemiluminescence method using the Beckman DxI 800 instrument.

RESULTS
In the general population, the most common serum levels were within the range of 30 – 50 nmol/ L. Vitamin D deficiency and the extreme deficiency (below 30 nmol/L) occurred very rarely. On the contrary, we found extreme deficiency of vitamin D much more often in cancer patients, most often in lung cancer (18%), while normal levels were only found in 15-20% of cancer patients. Among patients with COVID-19 infection, serum levels were closely correlated with the clinical course of the disease. Patients with severe course had extremely low levels, whereas, those who had a mild course had vitamin D levels within the normal reference range.

CONCLUSION
Low serum levels of vitamin D represent a serious problem in the Czech population. Vitamin D deficiency is a serious risk factor for cancer and infectious diseases. The optimal replacement dosage for adults is between 1,500-2,500 IU per day.

KEYWORD
Vitamin D

DIABETES

OP-D-01

CLINICAL CHARACTERISTICS AND METABOLIC OUTCOMES IN THAI PEOPLE WITH YOUNG-ONSET DIABETES ATTENDING THEPTARIN HOSPITAL: EXPERIENCE FROM A PRIVATE SETTING IN BANGKOK

https://doi.org/10.15605/jafes.038.AFES.04

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INTRODUCTION
Young-onset diabetes (YOD) can be due to many different factors. Currently, nearly two-thirds of adults with T1D in the U.S. are overweight or obese. Few studies have examined the clinical characteristics and metabolic outcomes among Thai people with YOD.

METHODOLOGY
Data from participants enrolled between 2022-2023 into the Thai Type 1 Diabetes and Diabetes Diagnosed Before Age 30 Years Registry, Care and Network (T1DDAR CN) from Theptarin Hospital, a tertiary diabetes center in Bangkok were analyzed. Since 2014, T1DDAR CN has served as a multicenter retrospective study to improve the quality of care among persons with YOD. Enrollment in the study entails a clinical diagnosis of T1D made by diabetologists and random plasma C-peptide levels of ≤0.6 ng/mL.

RESULTS
A total of 113 patients (T1D 54.0%, females 46.9%, current age 45.9 ± 13.9 years, age at DM diagnosis 24.7 ± 9.8 years, duration of diabetes 22.3 ± 12.4 years, BMI 25.4 ± 5.4 kg/m^2, A1C 7.6 ± 1.8%) were included. Genetic syndromes associated with diabetes made up only 1.8% of this cohort. Among people with T1D, 93.5% used intensive insulin therapy (90.2% used basal-bolus insulin regimen. and 3.3% used insulin pump). For people with T2D, 54.0% used insulin, 44.0% used only oral anti-diabetes drugs, and 28.0% used GLP-1 RA. The frequency of SMBG was higher in T1D than in T2D (at least 2 times per day in 73.7% of T1D compared with only 12.0% of T2D). The prevalence of microvascular complications was 18.0% in T1D compared with 59.2% in T2D. Among people with T1D, 42.6% were overweight or obese (BMI ≥23 kg/m^2) compared with 78.0% for those with T2D. Optimal glycemic control (A1C <7.0%) was identified in only 32.8% of patients with T1D compared with 44.0% of patients with T2D. The ABC targets (A1C <7.0%, BP <140/90 mmHg, and LDL <100 mg/dL) were achieved by 13.1% of the T1D participants and 20.0% of the T2D participants.

CONCLUSION
Local YOD registry data provide an excellent window into the inadequacies of the current diabetes care systems amidst the global trend of the obesity pandemic. Our data were consistent with other studies in terms of demonstrating worse glycemic control in YOD and having a more than 40% prevalence of overweight and obesity among Thai people with T1D. Efforts are needed to translate the knowledge already gained from clinical trials into individual patients seen in real-life settings.

KEYWORDS
metabolic outcomes, young-onset diabetes, T1D

OP-D-02

ASSOCIATION BETWEEN GLYCEMIC VARIABILITY AND LOWER COGNITIVE FUNCTION, MEDIATED BY ARTERIAL STIFFNESS, IN ASIANS WITH TYPE 2 DIABETES

https://doi.org/10.15605/jafes.038.AFES.05

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INTRODUCTION
Glycemic variability involves deleterious cellular processes due to hyperglycemic spikes and hypoglycemic troughs. It is a known predictor of renal, retinal, and cardiovascular complications in type 2 diabetes (T2D). However, its role in the development of cognitive impairment is unclear. Arterial stiffness damages cerebral microvessels with high pulsatile flow. We aimed to examine the association between glycemic variability and cognitive function, and the role of arterial stiffness in mediating the association.

METHODOLOGY
This was a cross-sectional study of participants from the Singapore Study of Macroangiopathy and Microvascular Reactivity in Type 2 Diabetes (SMART2D) cohort. Cognitive function was assessed with a Repeatable Battery for Assessment of Neuropsychological Status (RBANS). Pulse wave velocity, an index which reflects arterial stiffness, was measured using the applanation tonometry method. HbA1c readings were retrospectively extracted from medical records over a mean period of 3.2 years (up to 7.1 years). HbA1c variability was expressed as the HbA1c coefficient of variation (CV) calculated as standard deviation (SD) in intrapersonal HbA1c divided by intrapersonal mean HbA1c. Linear regression was used to examine the association between HbA1c CV and RBANS score, adjusting for demographics, APOE ε4 allele, and clinical covariates.

RESULTS
There were 1408 participants with a mean age of 61.4 ± 8.0 years. The mean number of HbA1c measurements was 9.9 ± 8.4. Compared to HbA1c CV Quartile (Q) 1, HbA1c CV Q4 (highest HbA1c CV group) was associated with lower RBANS total score (indicative of lower cognitive function) with coefficients -1.52 (95% Confidence Interval (CI) -2.83 to -0.21; $p = 0.023$) and -1.49 (95% CI: -2.79 to -0.20, $p = 0.024$) in unadjusted and adjusted analyses respectively. Hb1A1c CV Q4 was also associated with a lower RBANS score in the attention domain with a coefficient of -2.19 (95% CI: -3.99 to -0.39, $p = 0.017$) in a fully adjusted analysis. In the mediation analysis, higher PWV accounted for 11.3% of the association between HbA1c CV Q4 and lower RBANS total score, and 15.6% of the association between HbA1c CV Q4 and lower RBANS score in the attention domain.

CONCLUSION
Long-term glycemic variability was independently associated with lower cognitive function both globally and in the attention domain with mediation by arterial stiffness. HbA1c variability may be a potential biomarker to complement the use of HbA1c alone in T2D management.

KEYWORDS
type 2 diabetes, glycemic variability, cognitive function, arterial stiffness

OP-D-03

ELEVATED VISCERAL ADIPOSITY INDEX AS A MARKER OF DIABETIC NEPHROPATHY MARKED BY PROTEINURIA AMONG PATIENTS WITH TYPE 2 DIABETES

https://doi.org/10.15605/jafes.038.AFES.06

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INTRODUCTION
Diabetic nephropathy (DN) is the leading cause of end-stage renal disease worldwide. Proteinuria is the first sign of renal involvement in type 2 diabetes mellitus (T2DM). The visceral adiposity index (VAI) is considered to represent the amount of visceral fat which is associated with oxidative stress, inflammation, and endothelial dysfunction, resulting in proteinuria. Our present study aimed to explore the performance of VAI as a marker for proteinuria in patients with T2DM.

METHODOLOGY
One hundred and sixty-eight adult patients with type 2 diabetes in the diabetes outpatient clinic at the Dr. Soetomo General Academic Hospital were recruited from July to December 2019 in this cross-sectional study. All participants underwent complete history taking and physical examination. Lipid profiles, glycosylated hemoglobin (HbA1c) levels, and urinalysis parameters were collected from all subjects. The VAI was calculated using the following formula, male: [waist circumference (cm)/(39.68+1.88 x BMI)] x [TG (mmol/L)/1.03] x [1.31/HDL (mmol/L)] and female: [waist circumference (cm)/(36.58+1.89 x BMI)] x [TG (mmol/L)/0.81] x [1.52/HDL (mmol/L)]. The subjects were divided into two groups: with proteinuria and without proteinuria. The VAI cut-off value, sensitivity, and specificity were calculated using a receiver operator characteristics (ROC) curve. Bivariate logistic regression analysis was used to construct the risk analysis model.

RESULTS
There were 125 subjects in the group with proteinuria and 43 subjects in the group without proteinuria. Subjects in the group with proteinuria were older, and had a longer duration of diabetes, higher prevalence of hypertension, HbA1c levels, and higher VAI; however, there were no significant differences between the two groups, except for the duration of diabetes and VAI. The VAI can be used to predict the presence of proteinuria with a cut-off value of 3.05 (sensitivity 40.8% and specificity 83.7%). Subjects with elevated VAI showed a significantly higher risk of developing proteinuria (OR: 4.391, 95% CI: 1.727 – 11.165, $p = 0.002$) even after adjusting for sex, age, duration of diabetes, hypertension, and HbA1c levels.

CONCLUSION
The VAI is elevated in patients with T2DM and proteinuria, and it is a potential marker for proteinuria in patients with T2DM.

KEYWORDS
visceral adiposity index, diabetic nephropathy, proteinuria, type 2 diabetes

OP-D-04

THE EFFECT OF INSULIN INFUSION PROTOCOL UTILIZING A SPREADSHEET PROGRAM ON GLYCEMIC CONTROL OF PATIENTS WITH DIABETIC KETOACIDOSIS IN THE INTENSIVE CARE UNITS

https://doi.org/10.15605/jafes.038.AFES.07

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INTRODUCTION
Diabetic Ketoacidosis (DKA) is the most common and potentially life-threatening complication of diabetes mellitus. A lack of prompt and accurate management can lead to morbidity and mortality. Therefore, an insulin infusion protocol was developed to help reduce human errors by adjusting the insulin infusion rate and warning doctors about correctable fatal complications during the DKA crisis.

METHODOLOGY
The protocol was developed using a spreadsheet program based on the treatment guidelines of DKA. After the protocol development, a randomized controlled trial was performed to compare 22 patients with DKA treated with insulin infusion protocol to 22 patients with DKA treated with conventional protocol. The treatment time was defined as the time to switch from intravenous insulin to intermediate-acting subcutaneous insulin. We compared the treatment time and adverse events between groups. Moreover, the nurses' satisfaction score of the protocol was collected using a Likert scale. This study was conducted at intensive care units, at Maharat Nakhon Ratchasima Hospital, and data were collected from December 1, 2021 to October 31, 2022.

RESULTS
Forty-four patients were included in the study. The mean age of the patients was 51.2 ± 16.9 and 42.8 ± 13.7 years in the intervention group and the control group, respectively. Approximately 60% of the patients in both groups had severe DKA. The treatment time was 21.5 ± 11.01 hours in the intervention group, which is significantly lower compared to 28.5 ± 18.26 hours in the control group (p = 0.047). Also, the rates of hypoglycemia (p = 0.607) and hypokalemia (p = 0.531) were not significantly different between the groups. The nurses' satisfaction in using the protocol was moderate to high.

CONCLUSION
The insulin infusion protocol is easy to use and is effective in reducing the time to switch from intravenous insulin to subcutaneous intermediate-acting insulin. This protocol should be employed in hospitals that have large numbers of patients to prevent medical errors. It may also be considered for use in non-intensive care settings in the future.

KEYWORDS
diabetic ketoacidosis, insulin infusion protocol, Time to switch forms of insulin

OP-D-05

THE ASSOCIATIONS OF METABOLIC SYNDROME AND ALBUMINURIA WITH ALL-CAUSE MORTALITY IN PATIENTS WITH CORONARY ARTERY DISEASE AND NO HISTORY OF DIABETES

https://doi.org/10.15605/jafes.038.AFES.08

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INTRODUCTION
Both albuminuria and metabolic syndrome are prevalent in patients with long duration of diabetes. However, at present, there are limited studies in which both the effects of albuminuria and metabolic syndrome on all-cause mortality are examined. Given that albuminuria has been associated with endothelial dysfunction, we investigated the associations of metabolic syndrome and albuminuria with all-cause mortality in patients with proven coronary artery disease with no history of diabetes.

METHODOLOGY
From December 2009 to July 2013, a total of 823 patients with coronary artery disease admitted in our institution for angiography were enrolled. Patients were stratified based on the presence of metabolic syndrome and albuminuria. Continuous variables were reported as mean ± SD while categorical data were reported as proportions. Statistical differences were tested using the Student's t-test for normally distributed data, the Mann-Whitney U-test for non-normally distributed variables, and the χ2-test for categorical variables. Event-free survival was calculated using the Kaplan-Meier estimation with a log-rank test. A two-sided p <0.05 was considered statistically significant.

RESULTS
The proportion of newly diagnosed diabetes mellitus based on fasting plasma glucose, oral glucose tolerance test or HbA1c, is significantly higher among those with metabolic syndrome (39.0 vs. 14.0%; p = 0.025) and those with albuminuria (37.0 vs. 24.0%; p = 0.007). During a median follow-up period of 8.94 years, there was no significant difference in terms of mortality among patients with and without metabolic syndrome in both unadjusted and adjusted models. The presence of albuminuria was associated with an increased risk of mortality in both unadjusted HR = 2.517 (95% CI: 1.755, 3.610; p <0.001) and adjusted HR = 1.631 (95% CI: 1.128, 2.358; p = 0.009) models, respectively. Further classification depending on the level of albuminuria showed that the presence of microalbuminuria was associated with a 59% increase in risk of mortality, HR = 1.588 (95% CI: 1.056, 2.388; p = 0.026) while the presence of macroalbuminuria showed a trend of elevated mortality risk but was not statistically significant, HR = 1.623 (95% CI: 0.820, 3.213; p = 0.164). Time-to-event analysis showed an adjusted HR remaining significantly higher (p <0.001) in the albuminuria group compared to those in the normoalbuminuric group.

CONCLUSION
We demonstrated that albuminuria was independently associated with long-term all-cause mortality in patients with coronary artery disease and no history of diabetes, while the presence of metabolic syndrome was not. Our findings suggest that the presence of albuminuria (≥30 mg/g) is a more important risk factor for long-term all-cause mortality than metabolic syndrome in patients with coronary artery disease and support the use of albuminuria, rather than metabolic syndrome, for prognostication in these patients.

KEYWORDS
albuminuria, coronary artery disease, metabolic syndrome, mortality

OP-D-06

EXPLORING THE PERSPECTIVES OF MUSLIM PATIENTS WITH DIABETES AT ZAMBOANGA CITY MEDICAL CENTER ON MANAGING DIABETES DURING RAMADAN: A FOCUS GROUP DISCUSSION STUDY ON KNOWLEDGE, ATTITUDES, AND PRACTICES

https://doi.org/10.15605/jafes.038.AFES.09

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INTRODUCTION
For Muslims, fasting during Ramadan is based on a multitude of spiritual benefits; hence, there is an intense desire to participate in the month-long fasting even for those who could seek exemption. In the Philippines, managing diabetes during Ramadan poses unique challenges due to the limited medical evidence available. The study seeks to set up a demographic profile of patients with diabetes who observe fasting during Ramadan and provide substantial data for further research. The study aims to evaluate the knowledge, explore the practices and experiences, and understand attitudes regarding medication, risk, and dietary modifications of Muslim patients with diabetes who are fasting during the month of Ramadan.

METHODOLOGY
An initial survey was conducted among adult Muslim patients with type 2 diabetes who fasted the previous year. These patients were recruited for the focus group discussion (FGD) via purposive sampling. Focus group discussions were conducted until no new information was obtained, resulting in a total of four group discussions. Descriptive statistics was employed to present clinical and demographic data, while data from the FGDs were subjected to coding and thematic analysis.

RESULTS
The participants, who had type 2 diabetes and were mostly at high or very high risk, used oral antihyperglycemic agents (OHAs) and fasted for a significant number of days during Ramadan. Complications associated with hypoglycemia and hyperglycemia were reported, which may have been underestimated due to limited monitoring. Thus, interventions including improved monitoring practices must be established for individuals with diabetes when fasting during Ramadan. The challenges that the participants experienced included diet and insulin management, blood sugar control, and exercise disruptions. Strategies that they employed were monitoring, planning, informed food choices, and consultation with doctors. The healthcare professionals play a vital role in providing support, education, and guidance to address concerns and preferences.

CONCLUSION
The study assessed the knowledge and attitudes of Muslim patients with diabetes regarding diabetes management during Ramadan, revealing varying levels of understanding and diverse attitudes toward fasting. The findings of the research highlight the need for advice, support, closer monitoring, and medication adjustments of Muslim patients with diabetes. Challenges included maintaining medication and diet, blood sugar control, hydration, and exercise disruptions. Facilitators comprised of support systems, healthcare consultations, educational resources, and adherence to meal plans. Tailored interventions, cultural sensitivity, increased support systems, patient education, proactive measures, consistent monitoring, and medical advice are necessary for effective diabetes management during Ramadan. Communication with healthcare professionals and access to comprehensive information and monitoring devices are recommended for effective support.

KEYWORDS
diabetes, Ramadan, knowledge, attitudes, practices

OP-D-07

EFFECTIVENESS OF A FILIPINO LANGUAGE VIDEO ON INSULIN INJECTION METHODS IN IMPROVING TECHNIQUE OF INSULIN INJECTION AND BLOOD GLUCOSE LEVEL AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS IN A TERTIARY HOSPITAL: A RANDOMIZED CONTROLLED TRIAL

https://doi.org/10.15605/jafes.038.AFES.10

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INTRODUCTION
Insulin is one of the oldest and most effective of the different medications for the management of diabetes. However, its effectiveness is dependent on feedback and dose adjustment through self-monitoring of blood glucose, and correct injection technique. Video-based materials are recognized as powerful learning tools as these help learners visualize procedures and details that are difficult to explain by text or static photos.

At the time of the COVID-19 pandemic, there were no available video-based educational material in the Filipino language on insulin injection technique. Hence, we aimed to create one and determined its effectiveness in improving knowledge and skills on insulin injection technique, and blood glucose level among persons with type 2 diabetes (T2DM).

METHODOLOGY
This is a randomized controlled study done at the diabetes clinic of a tertiary hospital in Quezon City, Philippines. Included were patients aged >18 years, patients with T2DM on insulin, with HbA1c >7%, who can read and understand Filipino, and can give informed consent. Excluded were pregnant women, those who were mentally challenged, had no access to the internet, and could not perform 7-point SMBG for 3 consecutive days, and those on medications that affect blood sugar such as steroids, chemotherapeutic, and antipsychotic medications.

In Phase I, an original Filipino language insulin injection video education material for the use of vial and syringe, and pen device was created by the author and a panel of experts. The material was then translated into the Filipino language by a local university-based language expert. Focus group discussions with patients with T2DM were done to improve content. The final video was then uploaded to a password-protected website.

In Phase II, participants were randomized into a control or intervention group. Using a checklist, a diabetes educator performed a baseline assessment of the patient's knowledge and skills on insulin injection via online consultation. Standard health education by demonstration and return demonstration was done for both groups but additionally, the intervention group was given access to the video education materials uploaded on the website. The second assessment of skills was done after 7 days and patients were instructed to do a 7-point SMBG.

RESULTS
Of the 146 eligible participants, 76 consented and were randomized into intervention and control groups with 32 participants from each group completing the study.

A T-test was used to compare the average percentage scores of participants. Similar baseline knowledge and skills of participants in the intervention and control group were observed (62.5 ± 14.265 vs 58.151 ± 15.2, $p = 0.23$). After the intervention, there was an increase in score among the 2 groups using vial and syringe (58.597 ± 15.269 vs 86.014 ± 10.785, $p < 0.01$) and pen device (62.151 ± 14.338 vs 86.667 ± 9.584, $p < 0.01$), showing significant statistical differences.

There was also lower mean SMBG levels in the intervention group compared to the control group but the difference was not statistically significant.

CONCLUSION
This study established that the use of video education material presented in the Filipino language is an effective tool in improving the skills on proper insulin injection technique. There was a lower mean blood glucose level after the intervention.

KEYWORDS
type 2 diabetes, Filipino insulin injection, video insulin injection technique

OP-D-08

ASSOCIATION OF SERUM URIC ACID CONCENTRATION WITH DIABETIC RETINOPATHY IN ADULTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.11

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INTRODUCTION
Recent clinical studies suggested that a high level of serum uric acid (SUA) is linked to the development of diabetic complications but has shown varying results in association with diabetic retinopathy (DR).

METHODOLOGY
A cross-sectional study of 106 adult patients with T2DM seen as outpatients at a tertiary hospital was performed. An independent t-test was used to compare the mean values of normally distributed continuous variables between high and low SUA. Crude and adjusted odds ratio and the corresponding 95% confidence interval from binary logistic regression were computed to determine the association of SUA level and other patient factors with diabetic retinopathy.

RESULTS
A total of 106 patients were analyzed. Among these patients, there were 17 (16%) patients with diabetic retinopathy, and 37 (34.9%) had high uric acid levels. Overall, the median age was 65 years, and 71.7% were female. Comparing the patients with high versus low serum uric acid, those with higher uric acid were relatively younger at 62 years old (versus 67, $p = 0.033$). They also had higher median FBS (7.4 vs 6.7, $p = 0.013$) and HbA1c (7.5 versus 6.8, $p = 0.007$) values. There were no statistically significant differences between the two groups in terms of sex, duration of DM, BMI, blood pressure, serum creatinine, and lipid profile. When compared according to diabetic retinopathy status, no statistically significant differences in the clinicodemographic profile were noted. For both groups, there were more cases of non-proliferative type of retinopathy. Patients with higher serum uric acid were more than three times as likely to have DM retinopathy (aOR 3.49, 95% CI: 1.10-11.12, $p = 0.034$). The multivariable model explained 16.42% of the variance in the DM retinopathy outcome and was significant at $p = 0.004$.

CONCLUSION
In this study, high serum uric acid (above 6 mg/dL) was found to be significantly associated with diabetic retinopathy. With the multiple physiologic mechanisms favoring the major role of SUA in the development of DR, it may be utilized as a biomarker for predicting the risk of developing diabetic retinopathy in patients with type 2 diabetes mellitus. Hence, interventions aiming to reduce uric acid synthesis may potentially help retard the development of diabetic retinopathy, but further investigations are needed.

KEYWORDS
retinopathy, type 2 diabetes, uric acid

OP-D-09

THE EFFECT OF DIFFERENT DOSES OF VITAMIN D SUPPLEMENTATION ON INSULIN RESISTANCE IN PATIENTS WITH GESTATIONAL DIABETES AND VITAMIN D DEFICIENCY

https://doi.org/10.15605/jafes.038.AFES.12

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INTRODUCTION
Gestational diabetes mellitus (GDM) has serious implications on pregnancy outcomes. Vitamin D deficiency has been increasingly recognized as one potential contributor to GDM risk in recent years. It is postulated to have a role in maintaining glucose homeostasis and insulin sensitivity. Vitamin D deficiency is more common in women with GDM. This study was conducted to determine the effects of different doses of vitamin D supplementation on insulin resistance in patients with gestational diabetes and vitamin D deficiency.

METHODOLOGY
In a randomized, hospital-based intervention study, 83 pregnant women with GDM during 24-28 weeks gestation were screened for vitamin D deficiency [25-hydroxyvitamin D (25(OH)D] <30 ng/mL). Of these, 60 GDM patients with vitamin D deficiency were randomly assigned to receive either vitamin D 2,000 IU daily [medium dose, group A (n = 30)] or 4,000 IU daily [high dose, group B (n=30)] for 8 weeks. The serum 25(OH)D, fasting plasma glucose (FPG), plasma insulin (FPI) and homeostatic model assessment-insulin resistance (HOMA-IR) were measured before and after treatment. Paired t-test and McNemar's Chi-square test were used.

RESULTS
After 8 weeks of intervention, the mean ± standard deviation of serum 25(OH)D levels is increased from 18.9 ± 5.36 to 29.2 ± 7.09 ng/mL in group A and group B it also increased from 15.85 ± 4.50 to 31.44 ± 10.03 ng/mL (p <0.001). The mean change of concentration of serum 25(OH)D at week 8 in group B was significantly higher than that of group A (15.59 ± 8.58 vs 10.30 ± 5.48 ng/mL, respectively) (p = 0.009).

Although metabolic parameters FPG, FPI and HOMA-IR were reduced in week 8, only FPG was significantly reduced in both groups, (4.62 ± 0.82 to 4.24 ± 0.51 mmol/L, p=0.007) in group A and (4.77 ± 0.97 to 4.45 ± 0.72 mmol/L, p = 0.037) in group B. However, the mean change of FPG was not significantly different between the two groups A and B (-0.38 ± 0.72 vs -0.32 ± 0.75 mmol/L, p = 0.750) after the study period.

A significant change in FPI (-1.34 ± 5.76 vs -0.30 ± 5.98 mU/L, p = 0.507) and HOMA-IR (-0.51 ± 1.74 vs -0.34 ± 1.67, p = 0.695) were not observed between the two groups A and B after 8 weeks.

From the view of having increased HOMA-IR (>3.8) status in all participants, there was a reduction in the number of patients having increased HOMA-IR, from 14 (25%) out of 57 to 5 (9%) out of 57 after 8 weeks. This change in the number of participants getting improvement in HOMA- IR was statistically significant (p = 0.026).

CONCLUSION
About 81% of the women with GDM had vitamin D deficiency. Although Vitamin D supplementation of 4,000 IU/d resulted in a significant increase in the concentration of serum 25(OH)D level compared to vitamin D 2,000 IU/d, the high dose vitamin D (4,000 IU/d) was not superior to medium dose vitamin D (2,000 IU/d) in reduction of insulin resistance (HOMA-IR) in GDM patients. However, vitamin D supplementation may have beneficial effect on changes of HOMA-IR to a certain extent.

KEYWORDS
gestational diabetes mellitus, vitamin D deficiency, homeostatic model assessment-insulin resistance (HOMA-IR)

OP-D-10

PREVALENCE OF METABOLIC ASSOCIATED FATTY LIVER DISEASE WITH CONTROLLED ATTENUATION PARAMETER AND LIVER STIFFNESS MEASUREMENTS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.13

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INTRODUCTION
Type 2 diabetes mellitus (T2DM) increases the risk of metabolic-associated fatty liver disease (MAFLD). We aimed to investigate the proportion of patients with T2DM and MAFLD and the factors associated with MAFLD among patients with T2DM in Dr. Sardjito Hospital, Yogyakarta, Indonesia.

METHODOLOGY
In a cross-sectional design study, 50 patients with T2DM were enrolled. Liver steatosis and fibrosis were assessed by Fibroscan.

RESULTS
The prevalence of MAFLD was 64%. Patients with steatosis and fibrosis had higher triglyceride levels than those with steatosis without fibrosis. The proportion of significant fibrosis (F2) and advanced fibrosis (F3) and cirrhosis (F4) were 20%,16%, and 4%, respectively. By multivariable analysis, triglyceride (OR:2,001; 95% CI: 1,570-2,054; p = 0,041) and presence of diabetes complication (OR:2,046; 95% CI: 1,865-3,728; p = 0.033) were associated with MAFLD.

CONCLUSION
Patients with T2DM have a high proportion of MAFLD and its presence is associated with serum triglyceride levels and the presence of diabetes complications.

KEYWORDS
type 2 diabetes, metabolic, fatty liver, liver stiffness

OP-D-11

THE RELATIONSHIP BETWEEN HOMA-β DURING ADMISSION WITH POOR OUTCOMES AMONG HOSPITALIZED PATIENTS WITH CONFIRMED COVID-19 IN RSUPN DR. CIPTO MANGUNKUSUMO HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.14

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INTRODUCTION
Many factors affect the severity of infection and mortality of Corona Virus Disease 2019 (COVID-19) infection. The COVID-19 virus is linked to pancreatic beta cell damage, yet the mechanism is still unclear. Diabetes is one of the most common comorbidities of patients with COVID-19 infection. Meta-analyses have also shown that patients with comorbid diabetes are twice as likely to be hospitalized and have three times the risk of mortality. Patients with diabetes theoretically don't have good beta cell function, but there has been no study up until now about beta cell function in patients with COVID-19 with no history of diabetes. The method utilized to assess the secretory function of pancreatic beta cells was the Homeostatic Model Assessment- (HOMA-β).

METHODOLOGY
This is a retrospective cohort study conducted at Cipto Mangunkusumo Hospital (RSCM). Patients with confirmed COVID-19 (mild/moderate) who were hospitalized at the RSCM Kiara Hospital during the period September 2020 – March 2021, with HbA1c <6.5%, and without history of diabetes underwent HOMA-β examination. The cut-off point for both was evaluated, furthermore, the relationship with poor outcomes during hospitalization was assessed.

RESULTS
From 232 subjects who met the inclusion and exclusion criteria, there were 10 (4.3%) subjects with poor outcomes. The median of HOMA-β in the poor outcome group was 70.28% (IQR 32.25 – 132.11) while in the good outcome group was 121.6% (IQR 82.39 – 174.23). The HOMA-β cut-off point was 80% showing AUC 0.702 (95% CI: 0.526-0.879), with sensitivity 60% and specificity 71.4%. The Hazard Ratio (HR) of HOMA-β value <80% was 4.660 (p = 0.017).

CONCLUSION
There is a significant relationship between HOMA-β during admission and the poor outcome of hospitalized patients with confirmed COVID-19.

KEYWORDS
COVID-19, beta cells, HOMA-beta, poor outcome

OP-D-12

STROKE AND THE RISK OF SUBSEQUENT DIABETES BY POST-STROKE DISABILITY STATUS AND STROKE TYPE

https://doi.org/10.15605/jafes.038.AFES.15

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INTRODUCTION
Stroke shares common risk factors with diabetes mellitus, but little is known about the risk of diabetes in stroke survivors. As such, this study aimed to compare the risk of diabetes in stroke survivors to a matched control group for post-stroke disability and stroke type.

METHODOLOGY
This retrospective cohort study used data from the Korean National Health Insurance System (KNHIS) database (2010-2018) and included a total of 217,157 patients with stroke and a 1:1 matched comparison group. Stroke survivors were grouped based on the severity of their disability. The primary outcome was to assess the incidence of newly diagnosed diabetes, as based on ICD-10 codes. A Cox proportional hazard regression analysis was used to calculate the hazard ratios of diabetes after adjusting for potential confounders.

RESULTS
Stroke survivors had a 15% higher risk of subsequent diabetes (adjusted hazard ratio (aHR) 1.15, 95% confidence interval (CI) 1.12- 1.18) compared to individuals without stroke. There was no discrepancy with the severity of disability; those with mild disability (aHR 1.17, 95% CI: 1.10 – 1.24), and those with severe disability (aHR 1.18, 95% CI 1.08 – 1.29). Importantly, the risk of diabetes was increased among individuals who experienced an ischemic type of stroke relative to a matched group (aHR 1.19, 95% CI: 1.16 – 1.22 for those without disability, and aHR 1.21, 95% CI: 1.14 – 1.28 for those with disability). There was no significant difference in diabetes risk in hemorrhagic stroke survivors (aHR 0.99, 95% CI: 0.94 – 1.04 for those without disability and aHR 1.08, 95% CI: 0.97 – 1.19 for those with disability).

CONCLUSION
Our findings showed a significant association between stroke, particularly ischemic stroke, and an increased risk of subsequent diabetes. There was no significant difference in the risk of diabetes among those with hemorrhagic stroke and between those with and without disability, regardless of disability severity. Consequently, it is crucial to include diabetes prevention and treatment strategies as an integral part of stroke management.

KEYWORDS
stroke, diabetes mellitus, disability, cohort, nationwide

OP-D-13

CYSTATIN C LEVEL AND MICROVASCULAR COMPLICATIONS IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.16

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INTRODUCTION
Most patients with type 2 diabetes mellitus usually develop diabetic microvascular complications. Cystatin C (CysC), a cysteine protease inhibitor, is freely filtered by the renal glomeruli, metabolized by the proximal tubule, and identified as a promising marker of renal failure. The role of CysC as a marker of diabetic microvascular complications is also shown in different clinical scenarios. Moreover, CysC has the potential to be an early predictor of glycemic control and microvascular complications in these patients.

METHODOLOGY
A total of 73 patients with type 2 diabetes mellitus were included in this cross-sectional hospital-based analytical study which was conducted at No. (2), Military Hospital (500-bedded), Yangon. The study aimed to determine the relationship between cystatin C level and microvascular complications in patients with type 2 diabetes mellitus.

RESULTS
The mean age of the study population was 56.23 ± 9.31 years. There was a preponderance of female patients (52.1%) over male (47.9 %) patients in this study. Thirty out of 73 patients (41.1%) had diabetic retinopathy (DR), and 43 patients (58.9%) had no features of diabetic retinopathy. Among them, 34 patients (46.6 %) were found to have diabetic nephropathy (DN) and 39 patients (53.4 %) had no diabetic nephropathy. Thirty-eight patients (52.1%) were found to have diabetic peripheral neuropathy (DPN) based on the Michigan Diabetic Neuropathy Screening Instrument while 35 patients (47.9 %) had no diabetic peripheral neuropathy. Moreover, 31 patients (42.5%) were found to have serum cystatin C levels of >1.09 mg/l, and 41 patients (56.2 %) had serum cystatin C levels of 0.47 to 1.09 mg/l. Only one patient (1.4 %) had serum cystatin C level <0.47 mg/l. The mean serum cystatin C level was 1.13 ± 0.37 mg/l, the highest was 2.40 mg/l whereas the lowest was 0.46 mg/l. The mean HbA1c was 8.63 ± 2.09 %. Serum cystatin C increased along with the rise of HbA1c but it was not statistically significant ($r = 0.2$, $p = 0.07$). A significant association between serum cystatin C level and diabetic retinopathy ($p < 0.0001$) was found in this study population. Moreover, serum Cystatin C level was positively correlated with urine albumin creatinine ratio, and it was statistically significant ($r = 0.55$, $p < 0.0001$). However, a significant association between serum Cystatin C level and diabetic peripheral neuropathy was not found in this study population ($p = 0.09$).

CONCLUSION
High serum Cystatin C level indicated that there was a significantly increased risk of microvascular complications especially DR and DN in this study population. It was found that serum Cystatin C estimation was useful for the detection of DR and DN, but longitudinal studies are required to confirm its usefulness as a screening and predictor of the development of microvascular complications.

KEYWORDS
type 2 diabetes mellitus, cystatin C, diabetic retinopathy, diabetic nephropathy, diabetic peripheral neuropathy

OP-D-14

YOUNG-ONSET TYPE 2 DIABETES FROM THE TARGET T2D STUDY COHORT IN MALAYSIA: CLINICAL CHARACTERISTICS, ASSOCIATION WITH METABOLIC CONTROL AND COMPLICATIONS

https://doi.org/10.15605/jafes.038.AFES.17

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INTRODUCTION
This study aims to describe the clinical characteristics of individuals with young-onset (age 40 years) T2D, its association with metabolic control and complications.

METHODOLOGY
The TARGET-T2D study is a cross-sectional study (December 2021-June 2022) involving T2D adults followed up at eight tertiary hospitals in Klang Valley, Malaysia. We compared the demographic, clinical characteristics, achievement of metabolic targets, and complications of the T2D individuals diagnosed before the age of 40 vs. those diagnosed at age 40 and above. The association between young-onset T2D with the achievement of HbA1c, blood pressure, and lipid targets as well as atherosclerotic cardiovascular disease (ASCVD), heart failure hospitalization, estimated glomerular filtration rate (eGFR) 30 mg/mmol), end-stage kidney disease (ESKD) and diabetic retinopathy were explored.

RESULTS
Among the 5087 individuals, 1908 (37.5%) had young-onset T2D. They were younger in age (48.6 vs. 65.3 years) but had longer disease duration (17.0 vs. 13.4 years) and a higher prevalence of family history of diabetes (82.9% vs. 71.0%) compared to those with usual onset T2D.

There was significantly higher rate of obesity (65.3% vs. 53.7%), poorer HbA1c control (8.5 + 2.0% vs. 7.9 + 1.8%) and more atherogenic lipid profile (higher low-density cholesterol [LDL-C] and triglyceride with lower high-density cholesterol levels) among the young-onset T2D individuals. The rate of achievement of HbA1c and lipid targets were thus significantly lower with 12.2% (vs. 19.5%) attained HbA1c <6.5% while 55.6% (vs. 68.2%) attained LDL-C <2.6 mmol/L. There was higher usage of insulin, SGLT-2 inhibitor and GLP-1 receptor agonist but lower usage of statin among the young-onset T2D cohort.

The young-onset T2D individuals had significantly less ASCVD (23.7% vs. 33.5%) and eGFR <60 ml/min/1.73 m^2 (22.9% vs. 34.6%) but more severe albuminuria (19.3% vs. 14.2%), ESKD (3.8% vs. 1.7%), retinopathy (39.4% vs. 24.7%), metabolic associated fatty liver disease (15.3% vs. 11.6%) and obstructive sleep apnoea (6.7% vs. 4.1%). The poorer glycaemic control along with less ASCVD and more severe renal and metabolic complications were no longer significant after adjustment of the confounders including age, diabetes duration, body mass index, smoking, HbA1c, blood pressure, lipid profile and medications. Only the poorer attainment of LDL-C <2.6 mmol/L and reduced prevalence of eGFR <60 ml/min/1.73 m^2 remained significant after adjustment.

CONCLUSION
We have a high proportion of T2D adults diagnosed at young age who were less likely to achieve target HbA1c and LDL-C compared to those with usual onset T2D, The higher burden of severe renal and metabolic complications at a young age warrants a more proactive and strategic approach in prevention or delay of the early onset diabetes in the young and to improve the attainment of metabolic targets to reduce long term cardio-metabolic complications.

KEYWORDS
young-onset, type 2 diabetes, metabolic targets, diabetes complications

OP-D-15

TYPE 2 DIABETES AND OSTEOSARCOPENIA: DOUBLE TROUBLE? A CROSS-SECTIONAL PILOT STUDY IN MALAYSIA

https://doi.org/10.15605/jafes.038.AFES.18

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INTRODUCTION

Osteoporosis/osteopenia commonly co-exists with sarcopenia resulting in an increased risk of falls and fractures. Given the high prevalence of type 2 diabetes mellitus (T2DM) in Malaysia and emerging evidence that T2DM is associated with sarcopenia and increases fracture risk beyond association with BMD, we designed a cross-sectional study to examine the prevalence of osteosarcopenia in patients with T2DM versus those without T2DM in a Malaysian cohort.

METHODOLOGY

Two hundred patients aged ≥50 years with BMI ≥18.5 kg/m^2 were recruited into two groups: the T2DM group (T2DMG), n=100, and the control group (CG), n = 100. Both groups were age and sex-matched with similar demographics and baseline characteristics. A detailed history of T2DM, history of falls, fragility fractures, sarcopenia assessment by muscle mass and muscle function assessment, osteoporosis assessment by bone mineral density, body composition measurement, HbA1c, bone turnover markers, serum calcium, and 25-OH Vitamin D were collected.

RESULTS

Both groups had similar median age [T2DMG vs CG: 65 (59-70) years vs 65 (59-69) years]. The median HbA1c in the T2DM group was 7.4 (6.6-8.5) %. Patients with T2DM had a significantly higher median weight [70.9 (63.4-81.1) kg], median BMI [26.9 (24.3-30.6) kg/m^2], mean waist circumference (94.4 ± 11.7cm), and median waist to hip ratio [0.93 (0.88-0.96)] compared to the control group. There was a higher number of falls in the T2DM group (31.0%, n=31) versus the control group (23.0%, n = 23), however, the number of vertebral fractures was higher in the control group (T2DMG vs CG [(n = 1,1.0%) vs (n = 3, 3.0%), p = 0.621]. Bone turnover markers were significantly lower in subjects with T2DM [PINP; T2DMG vs CG: 39.12 (30.66-50.12) µg/L vs 52.14 (40.76-63.27) µg/L, p <0.001; CTX; T2DMG vs CG: 298.15 (230.45-414.60) pg/mL vs 383.55 (304.98-568.23) pg/mL, p<0.001]. Participants with T2DM also had significantly higher BMD and T-scores. There was a significantly reduced physical performance (measured by 5 times chair stand test ≥12 seconds) in the T2DM group(33.0%, n = 33) as compared to the control group (18%, n = 18), p = 0.015 and remained significant among the male patients in both groups (p = 0.027). The prevalence of osteoporosis measured by BMD was significantly higher among the controls in comparison to patients with T2DM (p = 0.044). 32.0% (n = 32) of the subjects with T2DM had sarcopenia versus 27.0%(n=27) in the control group (p = 0.438). The prevalence of osteosarcopenia was similar between groups.

CONCLUSION

Our study demonstrated similar rates of osteosarcopenia between patients with T2DM in comparison to non-diabetics. However, osteoporosis measurement with BMD (DEXA) may underrepresent the true burden of disease. Our observations highlight the importance of assessing bone quality with a trabecular bone score or high-resolution peripheral quantitative CT scan in T2DM patients to avoid missing a diagnosis of osteosarcopenia and its associated risks of falls and fractures. Bone turnover markers were reduced in patients with T2DM indicative of reduced bone remodeling and increased fracture risk. Despite the patients with T2DM being mostly in the overweight or obese category, they had poorer physical performance, especially in men which increases their risk of falls and fractures.

KEYWORDS

Type 2 diabetes mellitus, osteosarcopenia, bone mineral density, bone turnover markers, falls and fracture risk.

OP-D-16

THE PROFILE AND ASSOCIATED RISK FACTORS OF DIABETIC FOOT DISEASE AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS SEEN AT PRIVATE SPECIALTY CLINICS AT ST. LUKE'S MEDICAL CENTER

https://doi.org/10.15605/jafes.038.AFES.19

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INTRODUCTION
Diabetic foot disease is a debilitating complication of diabetes mellitus and is a major source of morbidity, mortality, and reduced quality of life. Determining the risk factors for diabetic foot ulcers is important to prevent the devastating consequences among patients with diabetes. This study aims to determine the profile and associated risk factors of diabetic foot disease among patients diagnosed with type 2 diabetes mellitus being seen in private specialty clinics.

METHODOLOGY
A single-center, analytical cross-sectional study was conducted at St. Luke's Medical Center, Quezon City among patients with type 2 diabetes mellitus. Clinical information and laboratory results were obtained during the time of consultation, and patients were classified as either low risk, moderate risk, high risk for diabetic foot disease, or active foot disease. The interaction between various risk factors was explored by multivariate analysis.

RESULTS
A total of 129 adult patients with diabetes mellitus were evaluated using the Diabetes Foot Screening and Risk Stratification Tool from January to May 2021. The demographic and clinical profile of the study showed that the proportion of patients with neuropathy ($\chi 2$ = 60.66, p = 0.001), long duration of diabetes (F = 5.92, p = 0.004), and low estimated glomerular filtration rate (eGFR) (F = 3.70, p = 0.023) was significantly higher in patients with moderate to high risk for diabetic foot disease. Univariate polynomial logistic regression analyses showed that neuropathy greatly increased the odds of having moderate (OR = 115.63, p = 0.001) and high-risk stratification (OR = 166.50, p = 0.001). Other factors were also noted to affect the risk stratification for diabetic foot disease such as duration of diabetes (OR = 1.09, p = 0.004) and hypertension (OR = 2.45, p = 0.027). On the other hand, normal eGFR (OR = –1.02, p = 0.011), left normal ankle brachial pressure index (OR = –4.32, p = 0.042), and good glycemic control (OR = –5.41, p = 0.050) significantly decrease the likelihood of having high-risk stratification for diabetic patients.

CONCLUSION
Those most susceptible to developing a high risk for diabetic foot disease were patients with neuropathy, hypertension, and a long duration of diabetes. High-risk patients with the given profile should be closely followed to prevent diabetes-related complications.

KEYWORDS
diabetes mellitus, diabetic foot disease, foot ulcer

OP-D-17

GLUCOSE FLUCTUATION PATTERNS FROM CONTINUOUS GLUCOSE MONITORING ARE ASSOCIATED WITH DYSGLYCEMIA AND ABNORMAL INSULIN RESPONSE

https://doi.org/10.15605/jafes.038.AFES.20

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INTRODUCTION
The association between continuous glucose monitoring (CGM) data, physiologic response to glucose, and dysglycemia is not well-established.

METHODOLOGY
We evaluated the patterns of dysglycemia from CGM and correlated them with glucose, insulin, and GLP-1 from a 75-gram oral glucose tolerance test (OGTT). Cluster analysis was used to classify CGM patterns based on glucose variability and the ability to control glucose levels.

RESULTS
The study enrolled 37 subjects with 19 on the abnormal glucose tolerance (AGT) group and 18 on the control group. No differences in insulin, GLP-1, HOMA-IR, and insulinogenic index between the AGT and control group were observed. Continuous glucose monitoring data revealed less time in normoglycemia and a significantly higher percentage of time above range in the AGT group. Within the AGT group, differences were more pronounced in subjects with impaired fasting glucose (IFG) than impaired glucose tolerance (IGT) or combined IFG and IGT. Higher glucose excursion and a longer return time to baseline in the combined IFG and IGT group were observed. The AGT group had a significantly lower proportion of cases with a pattern of glucose levels that rise and fall back to baseline within 2.5 hours than the control group (0.33 vs. 0.35, $p = 0.023$). Pearson correlation analysis revealed that the LB2 pattern correlated with less insulin resistance and lower glucose burden.

CONCLUSION
Glucose dysregulation characterized by CGM is more heterogeneous than previously thought. Detection of specific glucose patterns from CGM could identify people at risk of diabetes.

KEYWORDS
dysglycemia, continuous glucose monitoring, glucose variability, insulin, GLP-1

OP-D-18

DIAGNOSTIC ACCURACY OF SERUM 1,5-ANHYDROGLUCITOL AS A SURROGATE MEASURE OF GLYCEMIC VARIABILITY AMONG ADULT FILIPINOS WITH TYPE 2 DIABETES MELLITUS: A RETROSPECTIVE CROSS-SECTIONAL STUDY

https://doi.org/10.15605/jafes.038.AFES.21

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INTRODUCTION
Glycemic variability increases the risk of the development of microvascular and macrovascular complications from diabetes mellitus. Currently, available metrics used to measure glycemic variability are derived from continuous glucose monitoring (CGM) data namely mean amplitude of glycemic excursion (MAGE), continuous overlapping net glycemic action at 1-hour intervals (CONGA-1), and mean of daily differences (MODD). Serum 1,5-anhydroglucitol (1,5-AG) as a biomarker of glucose fluctuations is a practical, cheaper, and surrogate measure of glycemic variability as compared to CGM. This study aims to determine the diagnostic accuracy of 1,5-AG in relation to the glycemic variability metrics derived from CGM as a surrogate measure of glycemic variability among adult Filipinos with type 2 diabetes mellitus (DM).

METHODOLOGY
Retrospective data analysis of 37 adult patients aged 20 years and above diagnosed with type 2 diabetes mellitus referred for CGM at the Diabetes, Endocrine, Metabolic, and Nutrition Center of Cardinal Santos Medical Center from January 2017 to October 2021 who underwent serum 1,5-AG level determination within 2 weeks of CGM were collected. Criteria for exclusion include (1) the presence of acute infection at the time of the study; (2) the presence of active malignancy or end-stage cardiac, pulmonary, hepatic, and renal diseases; (3) medications that could alter glomerular function (i.e., ACE inhibitor, SGLT-2 inhibitor).

RESULTS
There was good diagnostic accuracy between serum 1,5-AG levels with the different measures of glycemic variability derived from CGM namely MAGE, CONGA-1, and MODD with significant correlation among patients with HbAlc level ≤7%. Subjects were on CGM for approximately 6 ± 1 day with statistical significance between the good glucose control (HbA1c ≤7%), acceptable glucose control (HbA1c 7.1-8%), and poor glucose control group (HbA1c >8%) (p <0.05).

Determination of diagnostic accuracy between 1,5-AG and MAGE showed a good accuracy (Sensitivity 95.3%, specificity 100%, positive predictive value (PPV) 100%, negative predictive value (NPV) 75.43%, diagnostic accuracy 96%, and a Youden Index (YI) of 92.3) with a statistically significant correlation among subjects with HbA1c level ≤7% (p = 0.021). There is likewise good diagnostic accuracy between CONGA-1 and 1,5-AG level (Sensitivity 99%, specificity of 75.29%, PPV 89.1%, NPV 97%, Accuracy 89.50%, and YI of 58.41) with a statistically significant correlation among subjects with HbA1c ≤7% (p = 0.038). Comparison with interday glycemic variability showed fair diagnostic accuracy between MODD and 1,5-AG (Sensitivity 79.17%, specificity of 78%, PPV of 97%, NPV of 32%, Accuracy 76.89%, and YI of 49.07) and a statistically significant correlation among subjects with ≤7% (p = 0.009).

CONCLUSION
There is good diagnostic accuracy of serum 1,5-AG levels with the different measures of glycemic variability derived from CGM namely MAGE, CONGA-1, and MODD with significant correlation among patients with HbA1c level ≤7%. Among diabetics with HbA1c ≤7%, 1,5-AG could be used as a surrogate measure of glycemic variability and excursions.

KEYWORDS
continuous glucose monitoring, MAGE, CONGA-1, MODD. Serum 1,5-anhydroglucitol

OP-D-19

ASSOCIATION OF LIPID RATIO AND DYSGLYCEMIA AMONG URBAN POPULATION IN MAKASSAR, SOUTH OF SULAWESI

https://doi.org/10.15605/jafes.038.AFES.22

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INTRODUCTION
The global prevalence of dysglycemia, encompassing prediabetes and diabetes mellitus has increased worldwide. Dyslipidemia is recognized to be an implication of insulin resistance that is recognized as a key factor in the development of type 2 diabetes mellitus. Recently, lipid ratios have emerged as a predictor of dysglycemia and have been proposed as a screening tool for assessing insulin resistance. This study aimed to evaluate the relationship between different lipid ratios and the occurrence of prediabetes and diabetes mellitus.

METHODOLOGY
Subjects were men and women who participated in the Lipid and Diabetes Study in Makassar, South of Sulawesi, Indonesia, ages 18-70 years old who met the inclusion criteria. Data from anthropometric and biochemical laboratories were measured. Cholesterol total/HDL ratio and LDL/HDL ratio >5 were considered high risk. TG/HDL ratio was divided into quartiles and the 4th quartile was considered as high risk. The association of lipid ratio risk status with dysglycemia was determined using Chi-square analysis. Binomial regression analysis was performed to determine the measure of association between lipid ratio status and dysglycemia outcome using odds ratio.

RESULTS
The study included 2737 subjects consisting of 741 (27.1%) males and 1996 (72.9%) females with a mean age of 45.07 ± 12.15 years. There was a significant association across all high-risk lipid ratios with dysglycemia except for the LDL/HDL ratio in subjects with diabetes compared to those with prediabetes. Unadjusted odds of diabetes and prediabetes compared to normoglycemia were increased significantly in those with elevated lipid ratio of TG/HDL with OR 2.877 (95% CI: 2.028,4.081, p = 0.000), OR 1.506 (95% CI: 1.141-1.988, p = 0.004), respectively. Similarly, an increased total-cholesterol/HDL ratio was associated with a higher risk of diabetes and prediabetes compared to normoglycemia, with ORs of 2.699 (95% CI: 1.901, 3.832, p = 0.000) and 1.634 (95% CI: 1.243, 2.149, p = 0.000), respectively. While a high LDL/HDL ratio is associated with a 2.784 (95% CI: 1.619-4.787, p = 0.000) increased risk of diabetes and 1.685 (95% CI:1.038-2.734, p = 0.035) risk in prediabetes. When adjusted for age, smoking status, hypertension, central obesity, and BMI, all high-risk lipid ratios are significantly associated with an elevated risk of diabetes.

CONCLUSION
Elevated lipid ratios are significantly associated with an increased occurrence of dysglycemia. Moreover, the high-risk lipid ratio of TG/HDL and total cholesterol/HDL are linked to an enhanced risk of diabetes compared to prediabetes. Hence, these indices are potential screening tools for dysglycemia.

KEYWORDS
dysglycemia, insulin resistance, lipid ratio

OP-D-20

MACHINE LEARNING-DERIVED LOW-DENSITY LIPOPROTEIN CHOLESTEROL (LDL-C) ESTIMATION AGREES BETTER WITH DIRECTLY MEASURED LDL-C THAN CONVENTIONAL EQUATIONS IN INDIVIDUALS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.23

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INTRODUCTION
Elevated low-density lipoprotein cholesterol (LDL-C) is an important risk factor for atherosclerotic cardiovascular disease (ASCVD). Direct LDL-C measurement is not widely performed. LDL-C is typically estimated using the Friedewald (FLDL), Martin-Hopkins (MLDL), or Sampson (SLDL) equations, which may be inaccurate at high triglycerides (TG) or low LDL-C levels. We aimed to determine if machine learning (ML)-derived LDL-C levels agree better with direct LDL-C than conventional equations in patients with type 2 diabetes mellitus (T2DM).

METHODOLOGY
We performed a retrospective cohort study on patients with T2DM from a multi-institutional diabetes registry in Singapore from 2013 to 2020. Directly measured LDL-C values were compared against LDL-C values estimated by the FLDL, MLDL, and SLDL equations, and ML models using linear regression (LR), random forest (RF) and k-nearest neighbours (KNN) using measures of agreement and correlation. Values were considered discordant if the estimated LDL-C was 4.5 mmol/L.

RESULTS
There were 11,475 patients with 39,417 sets of unique lipid panel results included in the final analysis. In the training set, 31,533 sets of results were used and 7,884 sets of results were used in the test set. All three ML models demonstrated better goodness-of-fit with lower root-mean-square-error values than any of the conventional equations, as well as stronger correlation with higher R2 and r values. Of the three ML models, LR performed the least well (rmse 0.231, R2 0.954 and r 0.977, p <0.001) as compared to RF (rmse 0.209, R2 0.962 and r 0.981, p<0.001) or KNN (rmse 0.212, R2 0.961 and r 0.98, p <0.001). All three ML methods had much lower discordance rates (LR 2.17%, RF 2.18%, KNN 2.04%) than conventional equations (FLDL 23.14%, SLDL 17.90%, MLDL 14.22%). ML methods performed less well in the subset of patients with TG >4.5 mmol/L, although all three models still demonstrated better goodness of fit and correlation. Discordance rates were lower as well (LR 3.69%, RF 3.69%, KNN 2.30%), although the MLDL equation had the lowest discordance rate in this subgroup (1.84%).

CONCLUSION
Conventional LDL-C estimation equations have disadvantages and are reported to perform poorly at high TG levels. ML methods may offer an alternative to allow more accurate estimation of LDL-C and to reduce misclassification and undertreatment in T2DM patients at high ASCVD risk.

KEYWORDS
low-density lipoprotein cholesterol, type 2 diabetes, machine learning

OP-D-21

EXPERIENCE WITH CONTROL-IQ TECHNOLOGY: THE IMPERIAL COLLEGE LONDON PILOT STUDY

https://doi.org/10.15605/jafes.038.AFES.24

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INTRODUCTION
The t:slim X2 insulin pump with Control-IQ (CIQ) technology is one of the hybrid closed-loop systems available in the United Kingdom. We aimed to explore the benefits of CIQ technology in people with type 1 diabetes (PwT1D) in real-world practice.

METHODOLOGY
A retrospective review of persons with type 1 diabetes mellitus age ≥18 years old using the t:slim X2 insulin pump with CIQ technology who attended the diabetes service at Imperial College London NHS trust was performed. Clinical characteristics were obtained from the electronic health records (Cerner Corporation). Continuous glucose monitoring (CGM) data were collected from web-based platforms including Libre View and Dexcom Clarity. Ambulatory glucose profiles of 28 days before and after CIQ technology use were compared.

RESULTS
Data from 214 persons with type 1 diabetes mellitus were assessed for eligibility. Since 2020, 72 patients have used the t:slim X2 insulin pump with CIQ technology. The median (IQR) age at CIQ initiation was 36.4 (19.1,47.9) years, and the median (IQR) diabetes duration was 18.8 (9.4,31.6) years. Among the 72 patients, 41 patients had paired CGM data before and after CIQ technology use with 15 months of follow-up. Before using CIQ technology, 38 of 41 (92.7%) patients used insulin pump therapy, and 14 of 41 (36.8%) patients used a predictive low-glucose suspend insulin pump. The mean HbA1c before CIQ initiation was 7.4 ± 1.2%. After CIQ technology use, mean ± SD %time within 70-180 mg/dL increased from 60.2 ± 16.5% to 68.2 ± 15%, $p = 0.001$. There was a significant decrease in % time >180 mg/dL [median (IQR) 35.1 (21.7,46.1) vs. 26.5 (15.2,41.8), $p = 0.003$] and % time >250 mg/dL [6.3 (3.6,19.4) vs. 4.9 (1.9,14.8), $p = 0.025$]. There was no significant change in % time <70 mg/dL [median (IQR) 1.9 (0.8,3.6) vs. 1.4 (0.6,2.8), $p = 0.058$], % time. <54 mg/dL [0.2 (0.04,0.56) vs. 0.2 (0.08,0.71, $p = 0.834$], and % coefficient of variation (36.8 ± 6.7 vs. 35.3 ± 5.3, $p = 0.072$).

CONCLUSION
In real-world practice, CIQ technology led to further improvement in the percentage of time in the target range with no increase in hypoglycemic events.

KEYWORDS
hybrid closed-loop system, automated insulin delivery, t:slim X2 insulin pump, control-IQ

MISCELLANEOUS

OP-M-01

CLINICAL CHARACTERISTICS AND ONE-YEAR TREATMENT OUTCOMES IN A COHORT OF PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA IN SINGAPORE: FHCARE REGISTRY

https://doi.org/10.15605/jafes.038.AFES.25

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INTRODUCTION

Familial hypercholesterolemia (FH) is an autosomal dominant condition characterized by high low-density lipoprotein cholesterol (LDL-C), increasing the risk for premature cardiovascular disease (CVD). The gold standard for diagnosis is the identification of the pathogenic mutation (*LDLR, APOB* and *PCSK9*). We aim to compare clinical characteristics and treatment outcomes in patients with different FH-causing variants.

METHODOLOGY

Patients with possible and definite FH using the Simon-Broome criteria were recruited from acute hospitals and specialist centers in Singapore. Biochemical indices including total cholesterol (TC) and LDL-C were measured in CAP-accredited clinical laboratories. Genetic analysis of peripheral blood cells was performed in the same research laboratory using next-generation sequencing on lipid-related genes, including *LDLR, APOB* and *PCSK9*. CVD was defined as myocardial infarction, ischemic stroke and peripheral arterial disease.

RESULTS

From June 2015 to July 2023, 965 probands were recruited. The median age at entry was 39.7 years (range 29.6 to 53.4), BMI of 25.2 ± 4.68 kg/m^2 with a predominance of males (65%). In those with heterozygous FH, pathogenic and likely pathogenic variants were predominantly *LDLR* (n = 207), followed by *APOB* (n = 22) and *PCSK9* (n = 2). Comparing heterozygous *LDLR* versus no variants and *APOB* variants, those with *LDLR* variants were significantly younger, had significantly higher TC and LDL-C levels (mmol/l): (8.43 ± 1.89) and (6.70 ± 1.87) versus (7.47 ± 1.53) and (5.65 ± 1.21) vs (7.05 ± 1.41) and (5.45 ± 1.28), p <0.0001, higher prevalence of xanthomas, n = 55(23.0%) vs 50(7.5%) and 2 (9.1%), p <0.0001, lower prevalence of hypertension 21(8.8%), 115(18.2%), p = 0.036. (17.2%) and lower prevalence of type 2 diabetes: 14(6.0%) vs 75(11.2%) and 2(9.1%), p = 0.038. There were no statistical differences in the prevalence of CVD and corneal arcus.

At recruitment, a significantly higher proportion of those with LDLR variants vs no variants and APOB variants were on high-intensity statins: 94 (41.2%), 149 (23.4%) and 4 (20.0%), p = 0.001, a significantly higher proportion of patients with *LDLR* and *APOB* variants were on ezetimibe: 74 (37.0%), 5(31.3%) vs 91(16.3%), p <0.0001 After treatment for 12 months. Those with *LDLR* variants vs no variant vs *APOB* variants: TC (mmol/l): (5.34 ± 1.82) vs (5.40 ± 1.79) and (5.13 ± 1.09), p = 0.457. LDL-C: (3.64 ± 1.65) vs (3.47 ± 1.53) and (3.45 ± 1.00), p = 0.067. In those with *LDLR* variant vs no variants and *APOB* variants: 39(57.4%) were on high-intensity statins, p = 0.270. Those with *LDLR* variants vs no variant vs *APOB* variants: Those who achieved 50% LDL-lowering from baseline and target LDL-C<1.8 mmol/l: 15(5.3%), vs 53(8.0%) vs 1(4.8%), p = 0.705.

CONCLUSION
Our data showed that, despite being younger, patients with *LDLR* variants had significantly higher TC and LDL-C levels at baseline, lower prevalence of diabetes and hypertension, and similar prevalence of CVD. While TC and LDL-C levels were significantly lower in all groups after 12 months, not all patients were on high-intensity statins. Probands attaining LDL-C goals were low, suggesting undertreatment. Increased awareness for treatment in these patients should be emphasized.

KEYWORDS
familial hypercholesterolemia, statins, ezetimibe, *LDLR*, *APOB*

OBESITY

OP-O-01

THE ASSOCIATIONS OF ALBUMINURIA AND METABOLIC SYNDROME WITH ALL-CAUSE MORTALITY IN PATIENTS WITHOUT SIGNIFICANT CORONARY ARTERY DISEASE

https://doi.org/10.15605/jafes.038.AFES.26

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INTRODUCTION
Metabolic syndrome is a constellation of cardiovascular risk factors associated with a higher risk of mortality. Albuminuria was previously part of the criteria for metabolic syndrome. We investigated the associations of albuminuria and metabolic syndrome with all-cause mortality among patients without significant coronary artery disease.

METHODOLOGY
We enrolled 1,394 patients who had coronary angiography-proven coronary artery disease but no history of diabetes between 2009 and 2013. All patients underwent an oral glucose tolerance test to determine their glucose regulation state. Metabolic syndrome was determined using the criteria of the National Cholesterol Education Program Adult Treatment Panel III. A spot urine sample was collected to determine the urinary albumin to creatinine ratio (UACR). Information on all-cause mortality was confirmed until March 2023. Cox-proportional hazard models were conducted to examine the associations of metabolic syndrome and albuminuria with all-cause mortality.

RESULTS
A total of 551 patients without significant coronary artery disease were analyzed. After a median follow-up period of 8.94 years, there was no significant difference in all-cause mortality in patients with and without metabolic syndrome (adjusted HR 0.989, 95% CI: 0.530-1.846, $p = 0.971$). In contrast, the presence of albuminuria was associated with an increase in the risk of mortality in both unadjusted (HR 3.683, 95% CI: 2.105- 6.445, $p < 0.001$) and adjusted (HR 2.763, 95% CI: 1.559-4.894, $p < 0.001$) HR models, respectively. Further classification depending on the level of albuminuria showed that the presence of microalbuminuria is associated with a trend towards increased mortality (HR 1.950, 95% CI: 0.971-3.916, $p = 0.061$) while the presence of macroalbuminuria is associated with an almost eight-fold increase in mortality (HR 7.901, 95% CI: 3.272-19.079, $p < 0.001$).

CONCLUSION
We found albuminuria to be an independent predictor of long-term all-cause mortality even in patients without significant coronary artery disease and no history of diabetes. The presence of metabolic syndrome was not associated with increased mortality. Our findings suggest that albuminuria should be screened and monitored even amongst patients without significant coronary artery disease.

KEYWORDS
albuminuria, non-significant coronary artery disease, metabolic syndrome, mortality

OP-O-02

PERCEPTIONS, ATTITUDES, BEHAVIORS AND POTENTIAL BARRIERS FOR EFFECTIVE OBESITY CARE ACROSS PATIENTS WITH OBESITY (PwO) AND HEALTHCARE PROFESSIONALS (HCPs) IN VIETNAM: FINDINGS FROM AWARENESS CARE AND TREATMENT IN OBESITY MANAGEMENT (ACTION)-VIETNAM STUDY

https://doi.org/10.15605/jafes.038.AFES.27

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INTRODUCTION
Increasing obesity rates in Vietnam require timely weight management conversations between HCPs and PwO to help PwO in effective obesity management. The ACTION-IO study reported a lack of awareness of both PwO and HCPs regarding the clinical management of obesity leading to delayed weight management conversations between them. In line with the ACTION-IO study design, the ACTION-Vietnam study (part of the ACTION-APAC study) was designed to identify the perceptions, attitudes, behaviors, and potential barriers to effective obesity management in PwO and HCPs in Vietnam.

METHODOLOGY
Based on pre-tests conducted in India, Indonesia, Pakistan, Singapore and Thailand to confirm language (English and native languages) and understanding of PwOs and HCPs, an online survey was offered in English and Vietnamese to 1,000 adult PwO (>18 years old, BMI ≥25 kg/m^2) and 200 HCPs (general/family practice, internal medicine or appropriate specialty) with >2 years of practice in Vietnam and treated ≥10 PwO in the past month. Pregnant PwO and those involved in intense fitness or body-building programs were excluded from the study.

RESULTS
All participating PwO (mean age 39.2 years, 50% male) and HCPs (mean age 39 years, 56% male) completed the survey. About 51% of PwO had BMI 25-29.9 kg/m^2, 33% had BMI 30-34.9 kg/m^2, 12% had BMI 35-39.9 kg/m^2 and 5% had BMI >40 kg/m^2. About 34% of PwO believed they were either overweight (BMI 25-29.9 kg/m^2) or had normal weight. About 60% of PwO strongly agreed that weight loss (WL) was completely their responsibility, and 32% had WL intentions within the next month or committed to/enrolled in a WL program. A majority (82.7%) had attempted WL for an average of four times: 45% regained their weight after maintaining WL for ≥6 months. Only 4% of PwO (n = 40) had ≥10% WL (not due to illness or injury) and had maintained WL for ≥1 year. About 70% of PwO struggled with WL for two years before discussing it with their HCP. The majority (73%) were motivated to initiate WL following conversations with their HCPs, while 43% felt negative emotions. Most participating HCPs (78%) were involved in patient care and medical management (75% non-obesity specialists), and were specialists in internal medicine (24%), general practice (21%), endocrinology (14%) and cardiology (15%). The mean practicing experience was 11.3 years and had seen approximately 30% PwO in the earlier month. The majority agreed that obesity is a chronic disease and should be treated as a team. The majority of HCPs also agreed to support PwO in adopting healthy lifestyle modifications. About 40% of HCPs hesitated to initiate WL discussions, thinking that patients lacked interest in losing weight. HCPs preferred promoting healthy dietary habits and physical activity over anti-obesity medications and rarely prescribed these (16.6%) to PwO.

CONCLUSION
The findings of the ACTION-Vietnam study emphasize raising awareness for obesity management and suggest early weight management conversations among PWOs and HCPs to prevent obesity-related complications.

KEYWORDS
awareness, healthcare professionals, obesity, people with obesity, survey

PITUITARY

OP-P-01

OBSTRUCTIVE HYDROCEPHALUS AS A PRESENTATION OF A MACROPROLACTINOMA: IS THERE ROOM FOR CONSERVATIVE MEDICAL TREATMENT?

https://doi.org/10.15605/jafes.038.AFES.28

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CASE

Obstructive hydrocephalus is a rare complication of pituitary prolactinomas, especially in females, where symptoms rarely go unnoticed. We present a 28-year-old Filipino female with a two-month history of frontotemporal headache, acutely worsening over three days. Cranial imaging showed a sellar-suprasellar mass with associated tonsillar herniation and obstructive hydrocephalus. Hyperprolactinemia was confirmed (prolactin: 8785.61 ng/mL), and cabergoline was initiated. Clinically, the patient's headache resolved within 24 hours of the first dose, and repeat prolactin levels fell by 96% within the first month. Repeat imaging confirmed the resolution of the obstructive hydrocephalus within four weeks.

Only nine previous cases of prolactinomas presenting with obstructive hydrocephalus have been described. Of these, only 3 were females. Most cases required surgical decompression. The resolution of the acute hydrocephalus within one month after initiation of treatment with cabergoline suggests that dopamine agonists, in select cases, may obviate the need for surgery, especially in resource-limited settings.

KEYWORDS

prolactinoma, hydrocephalus, medical management, surgery

OP-P-02

PERIOPERATIVE COMPLICATIONS ASSOCIATED WITH ROUTINE PREOPERATIVE GLUCOCORTICOID USE AMONG PITUITARY SURGERY PATIENTS WITH NORMAL PREOPERATIVE HPA AXIS: A RETROSPECTIVE COHORT STUDY

https://doi.org/10.15605/jafes.038.AFES.29

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INTRODUCTION

This study determined the incidence of perioperative complications associated with routine preoperative glucocorticoid use in pituitary surgery patients with normal preoperative hypothalamo-pituitary-adrenal axis (HPA axis).

METHODOLOGY

In a retrospective chart review from 2011-2021, 243 patients with normal preoperative HPA axis who underwent pituitary surgery were divided into 2 groups: 1) with preoperative steroids and 2) without preoperative steroids, and evaluated for subsequent development of postoperative complications.

RESULTS
The incidence of composite postoperative complications of in-hospital mortality, postoperative infection, and postoperative diabetes insipidus was significantly increased among those with preoperative steroids compared to those without (58.33% versus 33.33%, p = 0.004), with an adjusted odds ratio of 2.90 (CI: 1.29 to 6.53, p = 0.010). Among the components of the composite outcome, post-operative diabetes insipidus was statistically higher among those given preoperative steroids (52.45% vs 28.21%, p = 0.006) with an adjusted OR of 3.31 (CI: 1.43 to 7.67, p = 0.005). The incidence of postoperative adrenal insufficiency was similar between the groups (20.15% with steroids vs 8.70% without steroids, p = 0.258).

CONCLUSION
Among patients with normal preoperative HPA axis who underwent pituitary surgery, routine preoperative steroid use was associated with an increased risk of composite postoperative complications (in-hospital mortality, postoperative infection, postoperative diabetes insipidus).

KEYWORDS
pituitary-adrenal system, pituitary gland / surgery, postoperative complications, glucocorticoids, steroids

REPRODUCTIVE

OP-R-01

COMPARISON OF CARDIO-METABOLIC PARAMETERS BETWEEN THE DIFFERENT POLYCYSTIC OVARY SYNDROME PHENOTYPES AMONG FILIPINO WOMEN IN A TERTIARY HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.30

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INTRODUCTION
Polycystic Ovary Syndrome (PCOS) is the most common endocrinopathy in reproductive-aged women. It affects fertility and is also associated with significant metabolic disturbances. Women diagnosed with PCOS may have a heterogeneous presentation. The International Evidence-based Guidelines for the Assessment and Management of PCOS in 2018 stated that the presentation and manifestations of PCOS may have ethnic differences. Knowledge of the ethnic differences in the phenotypic clinical and metabolic profiles may assist clinicians in the diagnosis and management of PCOS in specific populations.

METHODOLOGY
This single-center, prospective cross-sectional study was done on 142 reproductive-aged women (18-45 years old) with PCOS as diagnosed by Rotterdam criteria. Participants were recruited from Endocrinology Obstetrics and Gynecology clinics. Demographic data, obstetric and gynecologic history, co-existing medical conditions, medication history, vital signs, and anthropometric measurements were collected. The presence of clinical signs of hyperandrogenism was evaluated (hirsutism with mFG scores, acne, and alopecia). Results of 75-gram OGTT/FBS, lipid profile, fasting insulin, complete blood count, and transvaginal/transrectal ultrasound were collected. BMI, HOMA-IR, TG/HDL ratio, and Neutrophil-lymphocyte ratio (NLR) were computed. To determine the differences in mean, median, and frequency between phenotype groups, One-way ANOVA, Kruskal-Wallis test, and Fisher's Exact test were used, respectively.

RESULTS
A total of 142 participants were included in the analysis. Overall, the mean age was 30.57 years. The highest proportion among the study participants was phenotype A (37.32%). Clinical signs of hyperandrogenemia were highest in the hyperandrogenic phenotypes (A,B) (p = 0.05). Insulin resistance similarly was also comparable across phenotypes, however,, Phenotype A had the highest fasting insulin level (median 17, p = 0.047),, and HOMA-IR values (median 4.70, p = 0.048). Phenotype A had the highest weight, and BMI across groups (median 82 kg, median 31.69 kg/m^2, p = 0.023, and p = 0.032, respectively). Markers of central adiposity (waist circumference and waist-to-hip ratio) were highest in Phenotype A, but were also elevated in the oligo-anovulatory phenotypes B and D (p = 0.005). Participants in phenotype D had significantly higher TG/HDL ratios. NLR scores were similar across all phenotypic groups (median 2, p = 0.40).

CONCLUSION
In conclusion, this study provides a comprehensive metabolic and phenotypic profile in a clinical population of adult reproductive-age Filipino women with PCOS. The most common phenotype is the classic/hyperandrogenic type, but a greater proportion of non-hyperandrogenic phenotypes in this population suggests a greater role of the presence of PCO morphology in the diagnosis. There is a high prevalence of obesity and central adiposity in Filipinos with PCOS. The oligo-anovulatory phenotypes (A, B, and D) present with greater metabolic dysfunction. Markers for adiposity and determination of insulin resistance should be included in the assessment of PCOS patients because these measures inform risk for development of co-morbidities, allow secondary prevention and help clinicians tailor long-term management of patients with PCOS.

KEYWORDS
PCOS, PCOS phenotypes, insulin resistance, hyperandrogenism, obesity

THYROID

OP-T-01

CLINICAL CHARACTERISTICS AND OUTCOMES OF AN EXOGENOUS THYROTOXICOSIS EPIDEMIC IN PRISON

https://doi.org/10.15605/jafes.038.AFES.31

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INTRODUCTION
An outbreak of exogenous thyrotoxicosis is a very uncommon cause of thyrotoxicosis. Little is known about the clinical characteristics and outcomes in these situations. This study aimed to investigate the characteristics and outcome of exogenous thyrotoxicosis and electrolyte imbalance during an outbreak of exogenous thyrotoxicosis in Phitsanulok prison.

METHODOLOGY
This study collected prospective data during the outbreak of thyrotoxicosis among prisoners at Phitsanulok prison between 29 December 2019 and 17 January 2020. In the first phase, a total of 2,815 prisoners were screened for thyroid stimulating hormone (TSH), potassium levels, and pulse rate. In the second phase, 490 male prisoners were collected for thyroid function tests, serum electrolytes, and urine electrolytes. Thyroglobulin levels were measured in patients with thyrotoxicosis. A questionnaire was used to obtain signs & symptoms of thyrotoxicosis and other pertinent data.

RESULTS
The prevalence of subclinical hyperthyroidism was 78.1%. Four prisoners died, while 69 prisoners were admitted to the hospital. The pulse rate was significantly higher in the subclinical hyperthyroidism group. Weight loss, palpitation, muscle weakness, and fatigue were found predominantly in the subclinical hyperthyroidism group. The prevalence of hypokalemia was 38.4%, however, there was no difference between subclinical hyperthyroidism and normal TSH. The mean magnesium levels were significantly lower in the subclinical hyperthyroidism group. Hypokalemic patients showed potassium loss through the kidney and was related to hypomagnesemia. Almost all patients with extremely low TSH levels had low normal thyroglobulin levels. The frozen meat during the outbreak had higher levels of thyroid hormone compared to the control group.

CONCLUSION
This outbreak of thyrotoxicosis, likely due to exposure to exogenous thyroid hormone in frozen meat, raised awareness of nutritional problems in prison. The development of surveillance systems to prevent health outbreaks such as this is urgently needed.

KEYWORDS
hamburger thyrotoxicosis, exogenous thyrotoxicosis, nutrition in prison

OP-T-02

STEROID-RESISTANT EUTHYROID EXOPHTHALMOS, MYXEDEMA, AND OSTEOARTHROPATHY (EMO) SYNDROME TREATED WITH RITUXIMAB

https://doi.org/10.15605/jafes.038.AFES.32

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CASE
Exophthalmos, pre-tibial myxedema, osteoarthropathy with acropachy (EMO/EMA) syndrome is a rare constellation of extra-thyroidal manifestations of Graves' disease (GD) affecting less than one percent of this population. We present this case to describe the rare extrathyroidal manifestations of GD and share our experience with the use of rituximab. The case is a 57-year-old female, Filipino who was treated with total thyroidectomy for her Graves' disease and developed post-surgical hypothyroidism replaced with levothyroxine. Three months after her surgery, she developed bilateral exophthalmos, followed by swelling of the interphalangeal joints, with digital clubbing (acropachy), and well-demarcated erythematous thickened plaques and nodules on both legs and feet (myxedema) and debilitating joint pains (osteoarthropathy). She was on high doses of steroids for almost ten years with no clinical improvement. Her thyroid function tests were normal but her TRAb assay was highly elevated. Her condition improved after treatment with rituximab and the steroid was gradually tapered.

KEYWORDS
EMO syndrome, rituximab, Graves' disease

OP-T-03

PREDICTORS OF IN-HOSPITAL MORTALITY AMONG PATIENTS WITH THYROID STORM IN THE PHILIPPINE GENERAL HOSPITAL: A SEVEN-YEAR REVIEW (2017-2023)

https://doi.org/10.15605/jafes.038.AFES.33

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INTRODUCTION
Thyroid storm is an endocrine emergency that remains prevalent in developed and developing countries. Despite advances in treatment modalities and new scoring systems developed namely, the Burch Wartkofsky scoring and Japan Thyroid Association (JTA) scoring, this had a mortality rate of 10.7% to 75.0% in a Japanese study while locally, the mortality rate remained at 11.0% according to a 2003 study done at the Philippine General Hospital. This study aimed to determine the predictors of mortality among patients diagnosed with thyroid storm in Philippine General Hospital.

METHODOLOGY
A total of 115 patients were included from a retrospective chart review of medical records retrieved from the years 2017-2023 at the Philippine General Hospital.

RESULTS
The mean age of patients diagnosed with thyroid storm was 37 (29.4 to 49.5) years with a male-to-female ratio of 1:2.8 and having diffuse toxic goiter or Graves' disease as the most common etiology of thyroid storm. There were 36 patients (31.3% of cases) who were readmissions and most cases were on methimazole (42.6% of cases) and beta-blockade (46.1% of cases) prior to their admission for thyroid storm. Patients with cardiovascular disease were significantly more likely to die during hospitalization than those without having a crude odds ratio of 14.17 (95% CI 3.16-99.90). Also, patients who died had a significantly shorter duration of last intake of anti-thyroidal medication (IQR 0-1 days vs. 0-6 days) compared to those who survived (p = 0.043) was statistically significant. We had insufficient evidence to demonstrate a difference between the two groups in terms of age, sex, thyroid disease duration, comorbidities, and treatment durations. After adjusting for significant factors in the multivariate model, the need for a mechanical ventilator was statistically significant with an odds ratio of 117.43 (95% CI: 19.90-1278.18).

CONCLUSION
There were several factors affecting mortality among patients diagnosed with thyroid storm: the presence of cardiovascular disease, shorter duration of anti-thyroidal medications, presence of CNS manifestations, elevated FT3 levels, and the need for mechanical ventilatory support. After multivariate regression analysis, the need for mechanical ventilatory support was associated with mortality among patients with thyroid storm.

KEYWORDS
thyroid storm, thyroid, outcomes, predictors, mortality

OP-T-04

INCIDENCE AND CLINICAL PROFILE OF CANCER PATIENTS WITH IMMUNE CHECKPOINT INHIBITORS-INDUCED ENDOCRINE SIDE EFFECTS IN THE UNIVERSITY OF SANTO TOMAS HOSPITAL: A 5-YEAR RETROSPECTIVE STUDY

https://doi.org/10.15605/jafes.038.AFES.34

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INTRODUCTION
Immune checkpoint inhibitors (ICIs) are relatively novel drugs in medical oncology which has led to improved care for advanced cancers. Referrals to endocrinology have been increasing because ICIs were associated with endocrine-related adverse effects including hypophysitis, hypothyroidism, hyperthyroidism, diabetes, and adrenalitis. Hence, the study aims to retrospectively determine the local prevalence and profile of patients who developed endocrinopathies during ICI therapy at the University of Santo Tomas Hospital (USTH) from 2013-2019.

METHODOLOGY
This was a retrospective study of adult ICI-treated cancer patients with a review of serial monitoring of endocrine adverse effects (i.e., thyroid function test, fasting blood glucose or HbA1c, hormonal screening tests, and/or imaging tests for pituitary or adrenal dysfunction) in USTH upon approval by the Research Ethics Committee. There was a follow-up period of 2 years after the initiation of the first dose of ICI therapy.

RESULTS
Out of the 65 patients who were started on ICIs, a total of 27 subjects satisfied the inclusion criteria with a median age of 60 years and male predominance. Pembrolizumab consists of 93% of ICIs. The incidence of thyroid dysfunction was 36% (18% overt hypothyroidism, 9% subclinical hypothyroidism, and 9% subclinical hyperthyroidism). The median time at risk for developing overt hypothyroidism is one month with a median TSH level of 9.05 uIU/mL. All patients who had baseline hypothyroidism worsened with an increase from baseline levothyroxine dose by 50 to 230% to achieve euthyroidism (p = 0.037). Serial monitoring was done every 2 weeks until euthyroidism. ICIs were temporarily put on hold in 75%. Diabetes (p = 0.05), renal carcinoma (p = 0.001), and a dose of 200 mg (p = 0.42) were associated with developing overt hypothyroidism. Checking glycemic levels was not routine among non-diabetic patients. Fifteen percent of diabetic patients had worsening of control (median HbA1c 8.5% [8-9] and 23% were newly diagnosed pre-diabetes (median fasting glucose 114 mg/dL [104-120]. No patients had abnormal adrenal metabolic and pituitary uptake on PET scans. Routine or symptom-prompted baseline biochemical testing for adrenalitis and hypophysitis was not done.

CONCLUSION
Overt hypothyroidism is a common occurrence during ICI therapy(18%). Worsening occurred among all patients with hypothyroidism at baseline. New-onset pre-diabetes and worsening of glycemic control were seen in 15 and 23%, respectively. No biochemical testing for adrenalitis and hypophysitis was available.

KEYWORDS
immune checkpoint inhibitors, endocrinopathies, hypothyroidism, diabetes

POSTER PRESENTATIONS

ADRENAL

PP-A-01

PRIMARY ADRENAL INSUFFICIENCY SECONDARY TO ADRENAL TUBERCULOSIS IN A KLINEFELTER SYNDROME PATIENT: DIAGNOSTIC CONUNDRUM

https://doi.org/10.15605/jafes.038.AFES.35

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CASE
Primary adrenal insufficiency (PAI) due to adrenal tuberculosis is rare. The presence of confounding factors, and comorbidities, coupled with negative culture and tissue biopsy, make the diagnosis difficult. A 56-year-old Malay male with underlying Klinefelter syndrome and diabetes presented with symptoms of adrenal crisis. Clinical examination revealed skin hyperpigmentation and hypotension. Morning cortisol was low, and ACTH was high, suggesting PAI. Contrast-enhanced computerized tomography (CECT) scan showed bulky bilateral adrenal glands with calcification, lung granuloma, and tree-in-bud appearance. Endoscopic ultrasound (EUS) guided biopsy of the left adrenal gland revealed necrotic tissue without any evidence of malignancy. Tuberculosis workouts, tumor markers, viral screenings, and 21-hydroxylase antibodies were all negative. Following multidisciplinary discussion, empirical treatment with anti-tuberculosis therapy with steroid replacement was initiated. In conclusion, adrenal tuberculosis and Klinefelter syndrome are potential causes of PAI, and this case highlights the importance of considering patients' epidemiological background and overall clinical picture to establish diagnosis.

KEYWORDS
primary adrenal insufficiency, tuberculosis, Klinefelter syndrome, 21-hydroxylase antibody

PP-A-02

CLINICAL COURSE FOR PATIENTS WITH PRIMARY ALDOSTERONISM: A SINGLE CENTRE EXPERIENCE

https://doi.org/10.15605/jafes.038.AFES.36

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INTRODUCTION
Timely diagnosis and appropriate treatment of primary aldosteronism (PA) are crucial to prevent detrimental cardiovascular and renal outcomes. Our study aimed to evaluate the clinical characteristics of patients with PA and compare the treatment outcomes of surgical versus pharmacologic therapy.

METHODOLOGY
We conducted a retrospective review of patients with PA followed up at our Endocrine Clinic from March 2010 until December 2022. Clinical data were collected from September 2022 until January 2023.

RESULTS
A total of fifty-one patients were analyzed. They were diagnosed with hypertension at 40.8 ± 11.8 years of age. A duration of 6.5 ± 5.7 years was delayed before confirmation of PA. The majority (92.2%) underwent screening because of spontaneous hypokalemia and hypertension with mean blood pressure (BP) of 175/103 ± 20/15 mmHg and potassium level of 2.8 ± 0.5 mmol/L. Most patients (92.1%) required at least two anti-hypertensive medications with significant comorbidities including chronic kidney disease (35.3%), left ventricular hypertrophy (30.8%), and stroke (5.9%). Forty-eight patients underwent adrenal-directed computed tomography with the following findings: 37.5% had unilateral nodules, 20.8% had a micronodular lesion (<1 cm) and 41.7% had no focal lesion. Sixteen patients underwent adrenal venous sampling (AVS) with a success rate of 56.2%. Forty-two patients (82.4%) were treated pharmacologically. Two patients were cured after surgery. One patient failed to achieve normokalaemia after surgery whereas eight patients in the pharmacologic group were dependent on potassium replacement. During the follow-

up period, there was no significant difference in the mean BP for both treatment groups however surgical group required a lesser number of anti-hypertensive medications (1.33 ± 0.86) as compared to the pharmacologic group (2.95 ± 0.73) (p <0.001).

CONCLUSION
Diagnosis of PA remains suboptimal leading to a high burden of aldosterone-specific end-organ damage. The majority of confirmed PAs received medical therapy either due to individual preference or lack of AVS-guided treatment. Patients who underwent surgery attained greater biochemical improvement and reduced medication burden in the long term.

KEYWORDS
hypertension, hypokalemia, primary aldosteronism, adrenal imaging, adrenal venous sampling

PP-A-03

CONGENITAL ADRENAL HYPERPLASIA MANIFESTING WITH AMBIGUOUS GENITALIA

https://doi.org/10.15605/jafes.038.AFES.37

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CASE
Congenital adrenal hyperplasia (CAH) is a group of autosomal recessive diseases caused by a deficiency of the enzymes responsible for steroidogenesis. The prevalence of the classical form is 1 in 14,000-18,000 births worldwide, while the non-classical form has a prevalence of 1 person per 200 in the US.

We report a 28-year-old Indonesian female with complaints of genital growth abnormalities, an incomplete vagina, and a small penis from birth. The patient carries out activities like a man and the penis can still be erect. Chromosomal analysis revealed intersex 46XX. Laboratory results were as follows: FSH 0.424 mIU/mL, LH <0.300 mIU/mL, estradiol (E2) 39 pg/mL, testosterone 6.01 ng/mL, cortisol 2.00 µg/dL, DHEA 1379.50 µg/dL and 17-OHP 258.05 ng/mL. Abdominal ultrasound showed uterine echostructure in the retrovesica. Abdominal MSCT showed bilateral enlargement of the adrenal glands and a visible uterine structure in the pelvic cavity.

The patient was diagnosed with CAH with ambiguous genitalia. The patient was treated with 20 mg oral hydrocortisone once daily and was advised to undergo adrenalectomy and genital reconstruction.

KEYWORDS
CAH, enzyme deficiency, ambiguous genitalia

PP-A-04

A RARE CASE OF AN ADRENOCORTICAL ADENOMA MANIFESTING WITH PERIODIC PARALYSIS IN A 39-YEAR-OLD WOMAN

https://doi.org/10.15605/jafes.038.AFES.38

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CASE
Periodic paralysis is a rare manifestation of primary hyperaldosteronism. This case demonstrates that primary hyperaldosteronism should be included in the differential diagnosis of periodic paralysis, especially in patients with hypertension. In this case, a 39-year-old Indonesian female was admitted to the hospital with the main complaint of a three-year history of recurring weakness of all four extremities. The patient said she was on therapy for hyperthyroidism and hypertension. Blood tests revealed potassium 1.6 mEq/L. A right adrenal tumor was discovered during a CT scan of the abdomen with contrast. The patient was then treated with a unilateral adrenalectomy. Histopathological examination which showed an adrenocortical adenoma. Primary hyperaldosteronism is caused by an aldosterone-producing adrenal adenoma. Patients may experience sporadic temporary paralysis due to severely low blood potassium levels. A CT scan or MRI can be utilized to diagnose the adenoma. The patient's condition progressively improved following the adrenalectomy.

KEYWORDS
adrenocortical adenoma, periodic paralysis, hypokalemia, adrenalectomy

PP-A-05

GIANT ADRENAL LIPOMA MASQUERADING AS LOW-DENSITY PHEOCHROMOCYTOMA: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.39

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CASE

A 45-year-old Filipino male who had early-onset hypertension for more than 15 years developed left flank pain with no other symptoms such as headache, palpitations, diaphoresis, or lightheadedness. CT imaging showed a large right adrenal mass measuring 8.1 x 7.2 cm with unenhanced attenuation of -85 Hounsfield units, suggestive of an adrenal myelolipoma. Hormonal studies were unremarkable except for elevated 24-hour urinary metanephrines which showed a 3.5-fold increase. Secondary hypertension from low-density pheochromocytoma was initially considered hence terasozin was started prior to surgery. The patient underwent a successful right-sided laparoscopic adrenalectomy with an uneventful postoperative course. Histopathologic examination revealed an adrenal lipoma measuring 10x6x4 cm, and immunohistochemistry was negative for chromogranin A. His urinary metanephrines became normal after surgery. Adrenal lipomas are uncommon and comprise 0.7% of primary adrenal tumors; all of which are nonfunctioning. To the best of our knowledge, this is the first case of a large adrenal lipoma with elevated catecholamines reported in the literature.

KEYWORDS

pheochromocytoma, adrenal lipoma, catecholamine-secreting

PP-A-06

RISK FACTORS THAT CAN PREDICT ADRENAL INSUFFICIENCY AMONG PATIENTS WITH FEVER OF UNKNOWN ORIGIN

https://doi.org/10.15605/jafes.038.AFES.40

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INTRODUCTION

Adrenal insufficiency is one of the causes of fever of unknown origin (FUO). The purpose of this study is to find out risk factors that can predict adrenal insufficiency in FUO patients so that guidelines can be made to recommend the adrenocorticotropic hormone (ACTH) stimulation test.

METHODOLOGY

This study was conducted retrospectively in a tertiary hospital with 846 beds in South Korea. All adult inpatients (age ≥19 years) who have requested a consult with the department of infectious disease for FUO between 1 July 2019 and 30 June 2020 were included in the study. Among them, those who underwent an ACTH stimulation test and had a fever of 37.8℃ or higher within 48 hours of the ACTH stimulation test were included in the study subjects.

RESULTS

A total of 202 FUO patients were enrolled and 61 (30.1%) were diagnosed with adrenal insufficiency. In a multivariate analysis, use of immunosuppressant within 3 months (OR 6.06, 95% CI: 1.82–20.13, p = 0.003), use of corticosteroid within 3 months (OR 8.23, 95% CI: 1.35–50.17, p = 0.022), sodium ≥136.7 (OR 3.43, 95% CI:1.49–7.88, p = 0.004), and calcium ≥8.4 (OR 0.31, 95% CI: 0.14-0.71, p = 0.005) were proven to be factors that can predict adrenal insufficiency in FUO patients.

CONCLUSION

In FUO patients with immunosuppressive prescription or systemic steroid prescription within 3 months, or with high sodium levels or low calcium levels, an ACTH simulation test should be performed to discriminate adrenal insufficiency.

KEYWORDS

fever, adrenal insufficiency

PP-A-07

DIFFUSE LARGE B CELL LYMPHOMA PRESENTING AS BILATERAL ADRENAL NODULES: A CASE REPORT ON PRIMARY ADRENAL LYMPHOMA

https://doi.org/10.15605/jafes.038.AFES.41

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CASE

The case is of a 64-year-old Filipino female presenting with a 4-month history of unintentional weight loss with anorexia. Whole abdominal computed tomography with contrast showed large ovoid adrenal mass (7.4x4.5x3.8 cm right; 6.4x5.4x3.5 cm left) exhibiting heterogeneous and delayed enhancement: precontrast + 40 HU right, +36 HU left; contrast +50 HU right, +42 HU left; delayed phase +68 HU right, +71 HU left with <50% washout period. Upon completion of the hormonal work-up, she underwent laparoscopic exploration of the left adrenal mass. Histopathology revealed high-grade non-Hodgkin B Cell Lymphoma favoring Diffuse large B Cell Lymphoma. The patient is currently enrolled in frontMIND: a phase 3, multicenter, randomized, double-blind, placebo-controlled trial that compares tafasitamab with lenalidomide and R-CHOP (rituximab, cyclophosphamide, doxorubicin, vincristine, prednisone) versus R-CHOP in previously untreated, high-intermediate and high-risk patients with newly-diagnosed DLBCL.

KEYWORDS
primary adrenal lymphoma, extranodal lymphomas, adrenal glands

PP-A-08

GIANT ADRENAL SCHWANNOMA PRESENTING AS ADRENAL INCIDENTALOMA WITH MALIGNANT FEATURES

https://doi.org/10.15605/jafes.038.AFES.42

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CASE

Adrenal schwannomas, which are benign nerve sheath tumors, are rare causes of incidentaloma, accounting for 0.7% of adrenal tumors. A 42-year-old Filipino male presented with right flank pain. An ultrasound showed an incidental right suprarenal complex mass. CT scan of the adrenals showed an 11.1 x 11.1 x 11.5 cm heterogenous, predominantly cystic right suprarenal mass with progressive enhancement, compressing the liver, right kidney, and inferior vena cava, with unenhanced attenuation of 32 Hounsfield units, and an absolute percentage washout of -87%, implying possible malignancy. Plasma-free metanephrines, aldosterone, renin, serum cortisol after 1mg DST, and DHEAS were all unremarkable. He underwent an open right adrenalectomy for an impression of non-functioning adrenocortical carcinoma. Final histopathology diagnosis revealed spindle cell neoplasm and immunohistochemistry staining with S100 showed strong, diffuse, nuclear staining observed in neoplastic cells, compatible with a schwannoma. To our knowledge, this is the first reported case of a giant adrenal schwannoma in the Philippines.

KEYWORDS
adrenal schwannoma, adrenal incidentaloma, schwannoma, adrenal tumors

PP-A-09

TWO-IN-ONE: CONNSHING SYNDROME OR A FORTUNATE COINCIDENCE?

https://doi.org/10.15605/jafes.038.AFES.43

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CASE

Connshing syndrome, a rare disorder of cortisol and mineralocorticoid co-secretion by an adrenal mass, has been recognized as a distinct subgroup of primary aldosteronism. This condition is associated with increased cardiovascular risk, as well as downstream complications stemming from hypercortisolism. A 46-year-old Filipino female with long-standing hypertension and hypokalemia was diagnosed with primary aldosteronism. Low-dose and high-dose dexamethasone suppression tests also confirmed subclinical Cushing's syndrome. Although the patient was beyond 35 years old, adrenal vein sampling was deferred due to the possible interference by hypercortisolism. Laparoscopic adrenalectomy of the left adrenal gland was done, revealing a 3.5 x 2 cm adrenal nodule. Histopathology, however, revealed two adrenal adenomas, which begs the question of whether this is a case of aldosterone and cortisol co-secretion, or if this patient was fortunate to have two separate aldosterone and cortisol-secreting adenomas localized to one gland.

KEYWORDS
Connshing syndrome, primary aldosteronism, Cushing's syndrome, adrenal

PP-A-10

SPONTANEOUS BILATERAL ADRENAL HEMORRHAGE AS MANIFESTATION OF PRIMARY ANTIPHOSPHOLIPID ANTIBODY SYNDROME: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.44

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CASE
A 31-year-old Filipino female presented with epigastric tenderness. She had anemia, thrombocytopenia, hyponatremia, and elevated D-dmer. An initial CT scan of the abdomen showed left adnexal fluid. Due to worsening of symptoms, a mesenteric CT angiogram was done revealing a left adrenal gland hematoma. Adrenal function was shown to be normal but she was started on hydrocortisone. An emergency adrenal angiogram was done revealing extravasation of dye from the inferior, superior, and middle adrenal arteries. A superselective adrenal arterial embolization was performed which resulted in a dramatic decrease in dye extravasation. Post-procedure, the patient developed a fever and dyspnea. On chest x-ray, there was a sudden increase in cardiac size. She was given a dose of methylprednisolone pulse therapy for possible SLE-related pericardial effusion. Blood specimen was sent for ANA, anti-DsDNA, and anti-cardiolipin studies revealing positive results. She eventually improved with tapering doses of prednisone and hydroxychloroquine.

KEYWORDS
adrenal hemorrhage, adrenal insufficiency, embolization, steroids, adrenal

PP-A-11

INCIDENTAL ERYTHROCYTOSIS AS THE FIRST MANIFESTATION OF CUSHING'S SYNDROME

https://doi.org/10.15605/jafes.038.AFES.45

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CASE
A 23-year-old Filipino female was consulted due to incidental erythrocytosis. Initial physical and laboratory examinations were unremarkable other than an elevated blood pressure. She was initially started on Telmisartan. In the interim, she noted a progressive increase in her weight and abdominal girth. She also developed hirsutism, buffalo hump, and abdominal purplish striae. Her blood pressure was persistently elevated, hence, her Telmisartan was increased to 80 mg/day, with the addition of Carvedilol 25 mg/day, Lercanidipine 20 mg/day, and Spironolactone 50 mg/day. Endocrine work-up showed dyslipidemia, diabetes, and hypercortisolism consistent with Cushing's Syndrome. Her upper abdominal CT scan revealed a left adrenal gland nodule. She subsequently underwent an open adrenalectomy with pancreatic tail excision due to mass adherence. She was given a stress dose of hydrocortisone prior to the procedure. The histopathologic report was consistent with adrenocortical adenoma. Postoperatively, her erythrocytosis resolved. Her blood pressure was controlled with carvedilol 50mg/day alone. She was discharged with tapering doses of prednisone and insulin.

KEYWORDS
endocrine hypertension, Cushing's syndrome, adrenal nodule, erythrocytosis, hypercortisolism

PP-A-12

CHROMOGRANIN-POSITIVE ALDOSTERONE-PRODUCING ADRENOCORTICAL CARCINOMA WITH CORTISOL CO-SECRETION: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.46

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CASE
A 45-year-old Filipino female consulted due to persistent bilateral lower-extremity weakness associated with poorly-controlled hypertension on triple anti-hypertensive medications, recurrent spontaneous hypokalemia, elevated plasma aldosterone concentration (PAC), suppressed plasma renin activity (PRA), elevated PAC/PRA ratio at 318.29 ng/dL per ng/mL/hour, and a nonsuppressed 8 am serum cortisol at 11.6 ug/dL after 1 mg overnight dexamethasone suppression test. A computed tomography scan of the abdomen (adrenal protocol) showed a heterogeneously enhancing right adrenal mass measuring 6.2 x 6.5 x 9.5 cm (previously 4.6 x 5.3 x 6.3 cm), exhibiting intralesional vascularity and areas of necrosis, with mass effect to the liver, right kidney, and inferior vena cava. She underwent an open right adrenalectomy with the removal of a 9.5 x 6.8 x 5.0 cm encapsulated mass. The histopathology report revealed a low-grade adrenocortical carcinoma.

KEYWORDS
adrenocortical carcinoma, aldosterone, cortisol, ACC, chromogranin-positive

PP-A-13

HELICOBACTER PYLORI INFECTION IN PRIMARY AUTOIMMUNE ADRENAL INSUFFICIENCY: A CROSS-SECTIONAL ANALYTICAL STUDY

https://doi.org/10.15605/jafes.038.AFES.47

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INTRODUCTION
Helicobacter pylori (H. pylori) is a common infectious bacterium that colonizes the stomach in approximately 50% of the world population. Because of its ability to elicit a chronic immune response in the host, studies have suggested a possible role for H. pylori in the development of various autoimmune diseases. The primary objective of our study was to compare the proportion of H. pylori infection between patients with primary autoimmune adrenal insufficiency and healthy controls. The secondary objectives were to determine the effect of H. pylori treatment on plasma ACTH levels and inflammatory parameters (erythrocyte sedimentation rate, high sensitivity C-reactive protein, and interleukin-6) in patients with primary autoimmune adrenal insufficiency.

METHODOLOGY
A total of 62 subjects (31 cases and 31 healthy controls) were recruited in this study. A patient was diagnosed to have autoimmune primary adrenal insufficiency if he has low serum cortisol, plasma ACTH >100 pg/ml, normal or reduced adrenal volume without calcification on non-contrast computerized tomography scan, and absence of secondary conditions causing adrenal insufficiency. Both the patients and healthy controls underwent a 14C urea breath test for detection of H. pylori infection.

RESULTS
The age, gender, weight, body mass index, and waist circumference were similar across the two groups. The proportion of H. pylori infection was significantly higher in subjects with autoimmune primary adrenal insufficiency 9/31 (29.1%) compared to healthy subjects 2/31 (6.4%) [p = 0.02]. In our study, both H. pylori positive and negative patients had comparable plasma ACTH and inflammatory markers at baseline. Additionally, there was no change in either plasma ACTH or inflammatory parameters after treatment for H. pylori infection.

CONCLUSION
The patients with autoimmune primary adrenal insufficiency have a markedly increased prevalence of H. pylori infection. Future studies are required to look for the cause-and-effect relationship between these two diseases.

KEYWORDS
adrenal, autoimmune, cortisol, Helicobacter pylori, primary

PP-A-14

CUSHING'S SYNDROME FROM CONCOMITANT THERAPY OF RITONAVIR AND FLUTICASONE

https://doi.org/10.15605/jafes.038.AFES.48

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CASE
The most common cause of Cushing's syndrome (CS) is exogenous steroid use. We present a 9-year-old female with CS from a drug interaction between an intranasal steroid (INS) and a protease inhibitor. She was treated for HIV with zidovudine, lamivudine, and lopinavir/ritonavir. At the age of 6.5 years, she had used intranasal fluticasone furoate to control allergic rhinitis. She had poor linear growth and she became extremely short. She has truncal obesity, a moon face, and purplish abdominal striae at the age of nine. The 8 a.m. serum cortisol level was less than 0.05 mcg/dL, with no response to the 1 mcg ACTH stimulation test. Thus, exogenous CS was diagnosed. Ritonavir inhibits the hepatic CYP3A4 isozyme resulting in decreased glucocorticoid metabolism. Interaction between ritonavir and fluticasone was suspected as the cause of CS. After the withdrawal of INS, the clinical features of CS improved. Therefore, children receiving antiretroviral medication should use steroids with caution.

KEYWORDS
Cushing's syndrome, protease inhibitor, ritonavir, fluticasone, HIV

PP-A-15

ADRENOCORTICOTROPIN-INDEPENDENT CUSHING'S SYNDROME DUE TO BILATERAL ADRENAL HYPERPLASIA: A RARE CASE OF PRIMARY PIGMENTED NODULAR ADRENOCORTICAL DISEASE

https://doi.org/10.15605/jafes.038.AFES.49

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CASE
Cushing's syndrome (CS) is defined as a constellation of signs and symptoms that result from prolonged exposure to cortisol. The most common cause of CS is excessive use of corticosteroids also called exogenous CS. Endogenous CS only accounts for less than 20%. Adrenocorticotropin (ACTH)-independent CS or adrenal CS is characterized by evidence of hypercortisolism with suppressed serum ACTH level. The most common cause of this condition is unilateral adenoma, while bilateral adrenal hyperplasia is a rare cause. The two types of bilateral adrenal hyperplasia are primary bilateral macronodular hyperplasia (PBMAH) and primary pigmented nodular adrenocortical disease (PPNAD). The treatment of choice for bilateral adrenal hyperplasia with overt CS is bilateral adrenalectomy. Here, we reported a 22-year-old Indonesian female with overt CS due to PPNAD. She subsequently underwent bilateral laparoscopic adrenalectomy.

KEYWORDS
Cushing's syndrome, bilateral adrenal hyperplasia, PPNAD, adrenalectomy

PP-A-16

USE OF EPLERENONE IN PRIMARY ALDOSTERONISM DURING PREGNANCY: A CASE SERIES

https://doi.org/10.15605/jafes.038.AFES.50

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CASE
We describe 2 patients with biochemically confirmed primary aldosteronism (PA) who were treated with eplerenone during pregnancy. Both patients were diagnosed with PA prior to pregnancy but were lost to follow-up since the pandemic. Patient 1 is a 32-year-old gravida 3 para 3 with a previous preterm delivery, seen at 26 weeks age of gestation and referred for elevated blood pressure of 160/110mmHg with severe hypokalemia. Patient 2 is a 40-year-old Gravida 6 Para 5 with previous preterm delivery as well. She was seen at 25 weeks age of gestation and referred for elevated blood pressure of 140/90mmHg and hypokalemia of 2.9 mmol/L. Both patients were given eplerenone 25 mg twice daily and had improvement in blood pressure and hypokalemia thereafter. Both patients had preterm births with birthweights appropriate for age, and APGAR scores of 9 after 5 minutes. This case series can support the efficacy of the short-term use of eplerenone to control hypertension and hypokalemia in PA during pregnancy.

KEYWORDS
primary aldosteronism, pregnancy, eplerenone

PP-A-17

THREE CASES OF CATECHOLAMINE-SECRETING NEUROENDOCRINE TUMOR IN A TERTIARY HOSPITAL, WEST JAVA, INDONESIA

https://doi.org/10.15605/jafes.038.AFES.51

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CASE
Pheochromocytomas or paragangliomas (PPGL) are rare neuroendocrine chromaffin-derived tumors. The annual incidence of PPGL is approximately 0.66 per 100,000 person-years. Approximately 50% of patients present with paroxysmal hypertension, 15-25% have the classic triad, while 5–15% are asymptomatic. Patients with a high degree of catecholamine excess may present with PPGL crisis with target organ complications.

Three cases of catecholamine-secreting neuroendocrine tumors (NET) were entertained in our institution. Patient I presented with a nonclassical triad, and patient II presented with a classic triad. Patient III was diagnosed as having a pheochromocytoma crisis, manifesting as recurrent myocarditis and cardiogenic shock. The patients were diagnosed as PPGL based on elevated metanephrine, adrenal CT scan, and Iodine-131-metaiodobenzylguanidine scintigraphy (I131-MIBG) positivity. Two patients underwent tumor resection after being perioperatively stable for 14 days, and one patient was lost to follow-up. The final diagnosis for patient I was progressive malignant paraganglioma, Patient II had pheochromocytoma. The patients were followed up and showed no residual symptoms after 1 month.

KEYWORDS
pheochromocytoma, paraganglioma, perioperative, adrenal-ectomy

PP-A-18

MULTIPLE ENDOCRINE NEOPLASIA TYPE 2A WITH ECTOPIC ACTH SYNDROME DUE TO BILATERAL PHEOCHROMOCYTOMA

https://doi.org/10.15605/jafes.038.AFES.52

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CASE
Ectopic ACTH syndrome (EAS) accounts for less than 5% of endogenous Cushing's syndrome. In a previous retrospective study on patients with endogenous Cushing's syndrome, only one had EAS from pheochromocytoma.

A 33-year-old Thai female with a cushingoid appearance complained of abdominal pain. CT scan showed an enlarged bilateral adrenal gland. Urine VMA was positive. 1 mg dexamethasone suppression test and 24 hr urine-free cortisol suggested endogenous hypercortisolism. Plasma ACTH was 21 pg/ml, not suppressible on high-dose dexamethasone suppression test. She was subsequently diagnosed with bilateral pheochromocytoma with ectopic ACTH and underwent bilateral adrenalectomy.

Her genetic testing showed a heterozygous pathogenic variant in the RET gene (c.1901G>A,p.Cys634Tyr), consistent with MEN2. Serum calcitonin was 121 pg/ml. She eventually underwent a total thyroidectomy as well.

Genetic testing is beneficial for the diagnosis of symptoms related to genetic pheochromocytoma. It is also beneficial for screening family members and finding tumors at other locations.

KEYWORDS
ectopic ACTH Syndrome, Cushing's syndrome, bilateral pheochromocytoma, medullary thyroid carcinoma, MEN2A

BONE AND CALCIUM

PP-B-01

TARGETING TETRASPANIN 7 TO DEVELOP NEW DRUGS FOR OSTEOCLAST-RELATED BONE DISEASES

https://doi.org/10.15605/jafes.038.AFES.53

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INTRODUCTION
Bone remodeling is essential for bone homeostasis and is controlled by bone-forming osteoblasts and bone-resorbing osteoclasts. Several bone diseases, including osteoporosis, are related to an imbalance of activity between the 2 cell types. Previous results from our group and others have shown that tetraspanin 7 (TSPAN7) plays an important role in cytoskeletal reorganization and bone resorption in osteoclasts. In this study, we investigated the efficacy of TSPAN7 as a potential new drug target for osteoclast-related bone diseases.

METHODOLOGY
We constructed soluble cell-permeable TSPAN7-NT and -CT peptide inhibitors, and TSPAN7-Fc fusion protein that consists of the EC2 domain of TSPAN7 and the Fc part of human IgG (hIgG). The effects of TSPAN7 peptide inhibitors and TSPAN7-Fc on osteoclasts were evaluated by TRAP staining assay, actin ring immunofluorescence assay, and bone resorption assay. The bone-protective effect of TSPAN7-Fc was determined with the pathological bone loss models: lipopolysaccharide (LPS) and ovariectomy (OVX) models. The statistical tests used were the student's 2-tailed T-test and ANOVA.

RESULTS
In-vitro study showed that both TSPAN7 peptide inhibitors and TSPAN7-Fc inhibited the formation of fully spreading mature osteoclasts with normal actin rings, thereby leading to significantly decreased bone resorption. In addition, mice treated with TSPAN7-Fc were protected against LPS- and OVX-induced bone loss. Interestingly, TSPAN7-Fc induced abnormal morphology of osteoclasts in vivo.

CONCLUSION
Our findings suggest that specific inhibition of TSPAN7 could be used as a novel therapeutic strategy to treat osteoclast-related bone diseases.

KEYWORDS
drug target, osteoclast-related bone diseases, TSPAN7 peptide inhibitor, TSPAN7-Fc

PP-B-02

A RARE CASE OF PARATHYROID ADENOMA PRESENTING WITH HOARSENESS

https://doi.org/10.15605/jafes.038.AFES.54

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CASE
A 47-year-old Filipino male presented with hoarseness and aspiration episodes for 3 days. Transnasal endoscopy revealed right vocal cord paralysis. Neck MRI revealed an enhancing ovoid lesion measuring 0.9 x 0.9 x 1.8 cm in the posterior portion of the right thyroid lobe, with thickening and medial displacement of the right vocal cord consistent with right vocal cord paralysis secondary to a parathyroid adenoma. Workup showed elevated iCA 1.40 mmol/L (NV:1.09-1.30) intact PTH 160.10 pg/ml (NV:18.50-88) and low vitamin D 29.74 ng/ml (NV: 30-100). Creatinine was 1.22 mg/dl (NV: 0.55-1.02) with eGFR of 67.7 ml/min. SPECT/CT revealed no sestamibi-avid parathyroid adenoma in the neck and mediastinum. Bone mineral densitometry was normal. He was managed as primary hyperparathyroidism secondary to parathyroid adenoma and underwent right lobectomy with parathyroidectomy. Histopathology showed an enlarged hypercellular parathyroid. He had a >50% decrease in iPTH (24.80 pg/ml), normal ionized calcium(1.25 mmol/L), and resolution of hoarseness. He was discharged with vitamin D supplementation.

KEYWORDS
hypercalcemia, parathyroid, adenoma

PP-B-03

FAHR'S SYNDROME DUE TO IDIOPATHIC HYPOPARATHYROIDISM WITH VITAMIN D DEFICIENCY, HYPOMAGNESEMIA, AND PRIMARY HYPOTHYROIDISM

https://doi.org/10.15605/jafes.038.AFES.55

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CASE
Fahr's syndrome due to hypoparathyroidism is a rare condition with a prevalence of 23-37 cases per 100,000 people per year.

A 63-year-old Indonesian female had frequent seizures, hallucinations, depression, and dementia. Peripheral blood, liver and kidney function, and blood glucose were normal. Hypocalcemia and hypothyroidism were observed. Head CT scan revealed intracerebral calcifications. The serum magnesium level was decreased while serum calcium levels were always low despite repeated corrections. She was later diagnosed with vitamin D deficiency and hypoparathyroidism. We gave CaCO3, calcitriol, vitamin D3, levothyroxine, haloperidol, and phenytoin. She was then deemed stable for outpatient care.

Almost 73.8% of hypoparathyroid patients have basal ganglia calcifications, while two cohort studies in America and India reported 52-74%. Therapy aims to achieve serum calcium at the low-normal range to reduce symptoms and prevent the worsening of brain calcification. PTH replacement therapy is indicated for our patient but we provided conventional therapy with monitoring of hypercalciuria every 6 months.

It is important to find the etiology of Fahr's syndrome and prevent complications due to therapy.

KEYWORDS
Fahr's syndrome, hypoparathyroidism, hypocalcemia, intracerebral-calcification

PP-B-04

PRIMARY HYPERPARATHYROIDISM AND ITS DIFFERENT MANIFESTATIONS: A CASE SERIES AND LITERATURE REVIEW

https://doi.org/10.15605/jafes.038.AFES.56

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CASE
Primary hyperparathyroidism is an uncommon endocrine disorder occurring in 0.21 per 1000 people per year, usually diagnosed through an incidental elevation of serum calcium on routine laboratory workup. We report 3 cases of primary hyperparathyroidism in the Philippines and discuss the similarities and differences in their presentations, laboratory findings, and clinical course, 2 of whom underwent parathyroidectomy in St. Luke's Medical Center - Global City. These 3 cases come from different age groups, 2 female and 1 male, all presenting with different clinical symptoms prior to establishing the diagnosis. Two of these patients had their adenomas localized using 99mTc-sestamibi scanning, with the other patient through ultrasonography. Primary hyperparathyroidism remains an uncommon endocrine disorder and should be entertained when clinical symptoms can be related to an increase in serum calcium in any age group. This case series will add to the pool of data lacking in the Southeast Asian population.

KEYWORDS
hyperparathyroidism, parathyroid adenoma, parathyroidectomy, calcium, parathyroid hormone

PP-B-05

ATYPICAL UNILATERAL FEMORAL FRACTURE IN A POSTMENOPAUSAL FEMALE AFTER TREATMENT OF BISPHOSPHONATES AND DENOSUMAB: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.57

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CASE
The incidence of atypical femoral fractures (AFF) and bisphosphonates with denosumab usage have not been established, although individually uncommon, yielding an incidence of 0.90 and 7.8 per 100,000 patient years, respectively. This discusses an 81-year-old female, known osteoporotic and diabetic, previously on alendronate for 10 years, ibandronate from 2020-2022, and 2 doses of denosumab (November 2022, May 2023), complaining of a 4-month history of a right thigh pain without any history of trauma or fall and improvement from physical rehabilitation. Previous X-rays did not reveal any fractures. On the day of the consult, she complained of a sudden onset of severe right thigh pain. Repeat imaging studies revealed a complete, transverse, noncomminuted fracture of the proximal femoral diaphysis. She underwent closed reduction, and intramedullary nailing with the application of autologous bone graft and was sent home well. The link between AFF and the subsequent use of bisphosphonates and denosumab should be further established in high-risk patients.

KEYWORDS
atypical femoral fracture, bisphosphonate, denosumab, antiresorptive agents, osteoporosis

PP-B-06

CLINICAL PROFILES OF PATIENTS ATTENDING TO OSTEOPOROSIS CENTER OF GRAND HANTHA INTERNATIONAL HOSPITAL (GHIH)

https://doi.org/10.15605/jafes.038.AFES.58

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INTRODUCTION
Osteoporosis is the most common chronic metabolic bone disease, which is characterized by increased fragility fracture. We aim to describe the clinical profiles of osteoporosis/osteopenia patients seen at the Osteoporosis Center of Grand Hantha International Hospital (GHIH) and evaluate DXA scan results amongst fractures in our center.

METHODOLOGY
This study is a retrospective analysis of the clinical characteristics of 137 participants above 40 years old who were referred to or directly entered into the Osteoporosis Center of GHIH from October 31, 2022 to July 14, 2023. Osteoporosis was analyzed using the WHO T-score criteria through DXA scanning, and fracture risk was calculated using the FRAX calculation method.

RESULTS
Among the 137 patients enrolled in the clinic, 117 patients have either osteoporosis in at least one site according to the T-score, or a major osteoporotic fracture risk (MOF) greater than 20% or a hip fracture risk greater than 3% by FRAX calculation. The remaining 20 patients neither have osteopenia nor an increased risk of fracture. In terms of gender distribution, 89.1% of the attendees were female patients, while 10.9% were male. The mean age of the patients is 72 years (SD 11.0), with a range from 44 to 108 years. The mean age of the fracture group is 75.69 (SD 11.21), while that of the non-fracture group is 70.43 (SD 10.6). There is a significant difference in age between the two groups ($p = 0.009$), with the fracture group being older. Among the patients, 72.9% have one or more underlying diseases, type 2 diabetes (59%) being the most common associated disease.

Regarding fragility fractures, 32.0% of female patients and 26.7% of male patients have recently experienced a fracture, but there is no significant association between gender and fracture occurrence (p = 0.776). BMI distributions are as follows: underweight (5.1%), normal weight (29.9%), overweight (18.2), and obese (35.8%). The mean BMI of the fracture group is 25.56 (SD 6.629), while that of the non-fracture group is 23.89 (SD 4.206). There is no significant association between BMI and fragility fractures (p = 0.098).

Among the 122 patients who had T-scores from DXA results, a minor discordance in T-scores was found in 48 patients (45.5%), which was defined as the lumbar spine T-score is below -2.5 but the hip T-score is between -1 and -2.4. Although there were 117 osteoporotic patients, only 104 of them received treatment. The most commonly used drug for treatment is oral bisphosphonates (32.8%), followed by SC Denosumab, IV zoledronate, and SC teriparatide.

CONCLUSION

This study demonstrates that for those identified to have osteoporosis in this institution, females predominate, and the majority of the attendees have one or more underlying diseases, with type 2 diabetes being the most common associated disease. Osteoporotic fracture is not associated with gender or BMI but is associated with aging. Oral bisphosphonates were the most commonly prescribed drug for osteoporosis in the study patients.

KEYWORDS

osteoporosis, type 2 diabetes, FRAX, bisphosphonates, fracture

PP-B-07

A LARGE AGGRESSIVE PHOSPHATURIC MESENCHYMAL TUMOR OF THE HUMERUS: SURGICAL MANAGEMENT AND BUROSUMAB THERAPY FOR TUMOR-INDUCED OSTEOMALACIA

https://doi.org/10.15605/jafes.038.AFES.59

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CASE

Tumor-induced osteomalacia (TIO) is a rare condition caused by phosphaturic mesenchymal tumors (PMTs) that overproduce FGF23, resulting in renal phosphate wasting. We present a case of a 74-year-old female with a right humeral fracture. MRI revealed a large (6.4x7.2x8.2 cm) enhancing lesion in the proximal right humerus, confirmed as a PMT by core biopsy. Laboratory findings showed persistent hypophosphatemia and FGF23 levels >30,000 pg/mL. The PMT was excised, and impaction bone allograft fixation was performed. Pathology results indicated a non-malignant tumor but with features warranting concern. The PET scan showed no metastatic disease, and residual tumor was suspected as the cause of persistent hypophosphatemia. Postoperatively, burosumab, an antibody targeting FGF23, was initiated to restore phosphorus levels and alleviate bone pain. This case underscores the complexity of managing TIO with a large PMT, necessitating a multidisciplinary approach involving various specialties. Burosumab demonstrates promise as an effective treatment option when surgical intervention alone may be insufficient.

KEYWORDS

tumor-induced osteomalacia, phosphaturic mesenchymal tumor, burosumab

PP-B-08

CASE SERIES OF OSTEOMALACIA SECONDARY TO RENAL TUBULAR ACIDOSIS TYPE 1 WITH VITAMIN D DEFICIENCY

https://doi.org/10.15605/jafes.038.AFES.60

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CASE

Osteomalacia is a disease of inadequate bone mineralization. Its association with RTA type 1 is less established. Early recognition is essential to treat and prevent osteomalacia. We report 2 cases of Malaysian females with osteomalacia and RTA type 1. The first patient, 36 years old, was wheelchair-bound. Initial BMD showed a hip Z-score of -3.9 and a T-score of -4.0. Recent BMD showed a hip Z-score of -1.5 and a T-score of -1.6. The second patient, 38 years old, presented with muscle weakness and bone pain. The vitamin D level was 9.6 nmol/L. Initial BMD showed a T-score of -2.1. The latest BMD showed a T-score of 1.7 and a Z-score of 1.7. Both patients made a complete recovery after initiation of treatment. Type 1 RTA may present later with osteomalacia. Correction of acidosis along with the concomitant correction of vitamin D is crucial to successfully treat these patients.

KEYWORDS

RTA Type 1, osteomalacia, vitamin D deficiency

PP-B-09

BRITTLE BONE DISEASE BECOMES UNBREAKABLE WITH BISPHOSPHONATE INFUSION

https://doi.org/10.15605/jafes.038.AFES.61

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CASE
Osteogenesis imperfecta is a lifelong inheritable disease and currently has no definitive cure. A 32-year-old female born to a non-consanguineous couple of Filipino descent consulted for chronic back pain. The patient had a history of recurrent fractures on low-intensity trauma starting from her toddler years. She had an unremarkable family history and prenatal and perinatal courses. Physical examination noted short stature with greyish blue scleral hue, triangular face, no bowing of upper and lower extremities, and positive Adam's forward bending test. Laboratory results showed normal serum levels of calcium, phosphorus, vitamin D, and PTH. Spine imaging showed thoracolumbar dextrolevoscoliosis. The patient was clinically diagnosed with Osteogenesis Imperfecta type I and was handled using a multidisciplinary approach composed of physical therapy, surgical interventions, genetic counseling, and bone-targeted therapy. Medical management was done using bisphosphonate therapy for 3 doses. Currently, the patient has minimal back pain with no recurrence of fracture and the latest bone densitometry values are within the expected range for age.

KEYWORDS
osteogenesis imperfecta, bisphosphonate, brittle bone disease

PP-B-10

TRANSIENT HYPERPHOSPHATASEMIA IN CHILDREN TREATED WITH GRISEOFULVIN

https://doi.org/10.15605/jafes.038.AFES.62

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CASE
The hallmark of transient hyperphosphatasemia (TH) is an elevation of serum alkaline phosphatase (ALP), which resolves within a few weeks or months without evidence of liver or bone disease. Despite its unknown etiology, it is frequently found in children under the age of five following an acute viral infection. We report a 7-year-old male who developed TH after receiving griseofulvin treatment for tinea capitis. He complained of fever and generalized erythematous rashes two weeks after treatment. Because of a possible drug allergy, blood tests were evaluated. Liver function showed normal transaminase and bilirubin levels, but the ALP was extremely high (2,657 IU/L). His serum calcium, phosphorus, PTH, and vitamin D were normal. Griseofulvin or viral exanthem were suspected of causing hyperphosphatasemia. Because his scalp lesion was worsening, itraconazole was substituted. After two months of monitoring, his ALP returned to normal. As a result, TH was diagnosed. Therefore, awareness of this event may prevent unnecessary investigations.

KEYWORDS
transient hyperphosphatasemia, hyperphosphatasemia

PP-B-11

SUN EXPOSURE AND VITAMIN D STATUS AND ITS ASSOCIATION WITH BONE TURNOVER MARKERS IN TRANSFUSION-DEPENDENT ADULT THALASSEMIA PATIENTS

https://doi.org/10.15605/jafes.038.AFES.63

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INTRODUCTION
Bone disease in patients with thalassemia, encompassing both osteopenia and osteoporosis, is on the rise, partly due to improvements in treatment and survival rates. Bone metabolism in thalassemia is influenced by many confounding factors including hormonal abnormalities, vitamin D deficiency, and iron load from multiple blood transfusions. Bone turnover markers are potentially useful as non-invasive tests to assess bone remodeling in this high-risk population. Due to the increasing frequency of thalassemia bone disease and limited data on vitamin D status among thalassemia patients in countries with adequate sun exposure, this study aimed to assess vitamin D status and its association with sun exposure, bone turnover markers (BTM) and ferritin in adult transfusion-dependent thalassemia patients in Malaysia.

METHODOLOGY
This cross-sectional study involved transfusion-dependent thalassemia patients (n = 40) from the adult hematology clinic. All participants had anthropometric measurements, sun exposure index (SI) measured by calculating body-surface-area x hours of exposure/week, as well as a complete biochemical profile including ferritin, calcium

and phosphate levels, 25-hydroxyvitamin(OH)D level, and bone turnover markers serum P1NP and serum CTX as bone formation and bone resorption markers respectively. Vitamin D deficiency was defined as 25-hydroxyvitamin D of less than 75 nmol/L. Vitamin D inadequacy was a combination of vitamin D deficiency and insufficiency.

RESULTS

The study population included 47.5% female and 52.5% male subjects with a mean age of 27.5 ± 5.2 years. Almost all (95%) had elevated serum ferritin (>1000 ug/l) and various endocrinopathies. Increased BTM was detected in 27.5% of patients (n = 11). A high prevalence of vitamin D inadequacy (95%) was observed, with vitamin D insufficiency of 32.5% and deficiency of 62.5%, correlating with ferritin levels (r = -0.444, p = 0.005) and serum P1NP (r = -0.364, p = 0.024). A majority (72.5%) had inadequate sun exposure, particularly among the females (p = 0.021) and Malays (p = 0.003). There was no significant correlation between SI and vitamin D status (r = 0.037, p = 0.824) or BTM.

CONCLUSION

This study revealed a high prevalence of vitamin D inadequacy among adult transfusion-dependent thalassemia patients and low sun exposure among females and Malays. Vitamin D inadequacy was associated with high ferritin and bone formation markers reflecting increased bone remodeling which can lead to higher fracture risk due to bone fragility. Hence, it is important to recognize and treat vitamin D deficiency early in these patients to prevent its deleterious effects on bone health.

KEYWORDS

bone disease, thalassemia, bone turnover markers, vitamin D, sun exposure

PP-B-12

A CASE OF MALABSORPTION PRESENTING WITH OSTEOMALACIA, COAGULOPATHY AND DELAYED PUBERTY

https://doi.org/10.15605/jafes.038.AFES.64

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CASE

A 26-year-old Filipino female presented initially with hematochezia. At the age of 2, following blunt abdominal trauma, the patient underwent intestinal bypass surgery (gastrojejunostomy). Thereafter, she experienced recurrent abdominal pain and diarrhea, with poor weight gain and short stature. Later, she would report delayed puberty (breast budding at 16; menarche at 18). She also reported bone and joint pain coupled with facial and extremity paresthesias, with X-rays revealing signs of osteopenia. Development of hematochezia resulting in severe anemia, in association with recurring gastrointestinal symptoms, prompted admission. Workup revealed elevations in prothrombin time, which improved following Vitamin K administration. GI endoscopy revealed no structural lesions. Skeletal X-rays revealed generalized decreases in mineralization, with lateral views showing concaving fish-mouth deformities in the L1 to L5 vertebral bodies. Vitamin D levels were found to be deficient; this improved only following large doses of daily Vitamin D3 administration. Hormonal studies revealed hypogonadotropic hypogonadotropism, likely stemming from malnutrition.

KEYWORDS

osteomalcia, coagulopathy, vitamin D, delayed puberty

PP-B-13

NAVIGATING THE DIAGNOSTIC CHALLENGES OF CALCIPENIC RICKETS COMPLICATED BY HYPERCOAGULATION, HYPOKALEMIA, AND SECONDARY AMENORRHEA IN A 21-YEAR-OLD FEMALE

https://doi.org/10.15605/jafes.038.AFES.65

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CASE

Rickets, a metabolic bone disorder primarily attributed to insufficient mineralization of the epiphyseal plate or osteoid calcification failure due to vitamin D or calcium deficiency, encompasses a spectrum of etiological factors including genetic anomalies and drug-induced manifestations. This report details a case of calcipenic rickets in a 21-year-old Indonesian female who presented with growth retardation and leg deformities since age 13. Extensive evaluation revealed hypocalcemia, hyperparathyroidism, elevated alkaline phosphatase, reduced phosphate levels, and decreased vitamin 25(OH)D concentrations. Alongside calcipenic rickets, the patient exhibited hypercoagulability, hypokalemia, and secondary amenorrhea. Treatment comprised Vitamin D supplementation (5000 IU) and calcium supplementation. Early diagnosis, guided by history, physical examination, and laboratory and radiological assessments, is essential. The profound impact of rickets on stature and bone structure underscores the urgency of timely diagnosis and appropriate intervention to ensure optimal outcomes for affected individuals.

KEYWORDS

rickets, vitamin D, diagnosis

PP-B-14

THE PREVALENCE OF VITAMIN D DEFICIENCY IN PATIENTS WITH NON-ALCOHOLIC FATTY LIVER DISEASE AND T2DM

https://doi.org/10.15605/jafes.038.AFES.66

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INTRODUCTION
Vitamin D has been shown to have anti-inflammatory effects and its deficiency is associated with increased risk of type 2 diabetes mellitus (T2DM), and non-alcoholic fatty liver disease (NAFLD). Vitamin D deficiency is prevalent in patients with T2DM and NAFLD.

METHODOLOGY
This study aimed to determine the prevalence of vitamin D deficiency in patients with both T2DM and NAFLD. We conducted a cross-sectional study in adult patients with T2DM, and they were divided into 2 groups: patients with T2DM and NAFLD (n = 86) and patients with T2DM without NAFLD (n=24). The definition of NAFLD was based on the presence of liver steatosis via ultrasound abdomen. Serum total 25-hydroxy-D3 (vitamin D) level was analysed using electrochemiluminescence immunoassay and defined as deficient if the level was <50 nmol/L. The sample size calculated was 47 patients per group.

RESULTS
The prevalence of vitamin deficiency in the overall population was 48.2% (53/110). There was a numerically higher prevalence of vitamin D deficiency in patients with T2DM and NAFLD compared to those without NAFLD (52.3% (45/86) vs 33.3% (8/24), p=0.1). The mean serum vitamin D levels of patients with T2DM and NAFLD were statistically lower than those without NAFLD (51.53 ± 19.68 vs 60.61 ± 20.25; p <0.05). These differences were seen despite no significant difference in age, diabetes duration, insulin dose, BMI, weight circumference, HbA1c, LDL-c, HDL-c, triglycerides, and interleukin-6 levels between the NAFLD and no NAFLD group.

CONCLUSION
This study demonstrated a high prevalence of vitamin D deficiency in patients with T2DM and NAFLD. Patients with T2DM and NAFLD have lower vitamin D level as compared to those with T2DM alone.

KEYWORDS
vitamin D deficiency, type 2 diabetes mellitus, non-alcoholic fatty liver disease, insulin, ultrasound

PP-B-15

CASE SERIES OF PRIMARY HYPERPARATHYROIDISM: FROM ASYMPTOMATIC TO FATAL COMPLICATION

https://doi.org/10.15605/jafes.038.AFES.67

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CASE
Primary hyperparathyroidism is a disorder of the parathyroid glands that causes excessive secretion of parathyroid hormones. The presentation spectrum of PHPT is wide, from asymptomatic to symptomatic. We present four cases of primary hyperparathyroidism (Case 1: 45-year-old female, Case 2: 18-year-old male, Case 3: 36-year-old female, and Case 4: 27-year-old male. All patients were Indonesian), with asymptomatic presentation only in Case I, the rests were symptomatic. Parathyroidectomy was performed in all patients, with the histopathological results of parathyroid adenoma (Cases 1 and 2) and parathyroid carcinoma (Cases 3 and 4). There were hungry bone syndrome complications in both parathyroid carcinoma patients, and one of the patients did not survive due to cardiac arrhythmia. We compare the differences of clinical presentation, biochemical findings, imaging, and the outcomes of all patients, to learn how to treat primary hyperparathyroidism with different presentations.

KEYWORDS
primary hyperparathyroidism, parathyroid adenoma, parathyroid carcinoma, hungry bone syndrome

PP-B-16

UNDERDIAGNOSED CLASSICAL PRIMARY HYPERPARATHYROIDISM AND RAPID PROGRESSIVE DEMENTIA: CASE REPORT AND LITERATURE REVIEW

https://doi.org/10.15605/jafes.038.AFES.68

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CASE
A 76-year-old female presented with forgetfulness and disorganized behavior 3 months prior to admission. She had hypertension and also had postmenopausal osteoporosis which was treated with oral alendronate plus vitamin D for 7 months. After complete metabolic panels, laboratory results revealed unexpected serum calcium

15.0 mg/dL, ionized calcium 8 mmol/L, phosphorus 2.77 mg/dL, intact parathyroid hormone 415 pg/mL, 25 (OH) D 55.3 ng/mL, ALP 145 U/L, and eGFR 33.3 mL/min. On physical examination, all were unremarkable except for mild dehydration. Her Thai mini-mental state examination score (TMSE) was 11/30 which was compatible with mild cognitive impairment. After saline infusion, her TMSE score improved, and serum calcium gradually decreased to less than 12.0 mg/dL. A Sestamibi scan revealed a single parathyroid adenoma. Alendronate was continued due to the very high risk of osteoporotic fracture. In this case, we demonstrated a PHPT patient who presented with rapid progressive dementia which was one of the neuropsychiatric manifestations, similarly shown in other series.

KEYWORDS
rapid progressive dementia, primary hyperparathyroidism

PP-B-17

EVALUATING PRESCRIBING PATTERN, OUTCOMES AND TACHYPHYLAXIS PREVALENCE OF INJECTABLE CALCITONIN IN HYPERCALCEMIA

https://doi.org/10.15605/jafes.038.AFES.69

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INTRODUCTION
Despite recommendations advocating to limit calcitonin use to 48 to 72 hours, the true occurrence of tachyphylaxis in the population and the extent of its impact on serum calcium levels is not known. This current study aimed to evaluate prescribing patterns, outcomes, and tachyphylaxis prevalence of injectable calcitonin in hypercalcemia.

METHODOLOGY
A retrospective observational study of hospitalised patients' medical records was conducted in three government tertiary hospitals in Malaysia. Included patients were adults aged ≥18 years old, diagnosed with all-cause hypercalcemia, and treated with injectable calcitonin from 1st January 2020 to 31st December 2022. Those patients on calcitonin ≥48 hours with at least one serum calcium at 48 hours were included and analysed for calcitonin prescribing pattern, changes in serum calcium, the prevalence of tachyphylaxis and factors associated with calcium reduction.

RESULTS
A total of 64 patients on calcitonin were recruited, calcitonin monotherapy (n=53) and combination therapy with calcitonin and bisphosphonate (n = 11). The reduction in corrected serum calcium at 48 hours after treatment initiation was greater in combination therapy 0.76 mmol/L (IQR 0.98) versus 0.26 mmol/L (IQR 0.43, p = 0.022) in monotherapy. Tachyphylaxis was observed in 32.1% and 27.3% of patients with calcitonin monotherapy and combination therapy respectively (p >0.05). Pre-corrected serum calcium was significantly associated with calcium reduction at 48 hours after treatment initiation (AOR:0.62, 95% CI: 37.83, 70.94, p <0.001). Trends showed that monotherapy did not reduce serum calcium at 48 hours after treatment initiation as much as the combination therapy group, but the difference was non-significant (p = 0.064).

CONCLUSION
The overall prevalence of tachyphylaxis associated with calcitonin in this study was 31.2% at 48 hours. The study findings suggest that it is important to initiate calcitonin in combination with bisphosphonate at a weight-based dose of ≥4 IU/kg/dose and constantly adjust the dose according to clinical response.

KEYWORDS
calcitonin, tachyphylaxis, hypercalcemia, bisphosphonate

DIABETES

PP-D-01

DIABETIC KETOACIDOSIS COMPLICATED BY DEEP VEIN THROMBOSIS IN A NEWLY DIAGNOSED PATIENT WITH TYPE 1 DIABETES MELLITUS WITH UNDIAGNOSED MAY-THURNER SYNDROME

https://doi.org/10.15605/jafes.038.AFES.70

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CASE
May-Thurner syndrome is a rare vascular condition where the left common iliac vein is compressed by the right common iliac artery, leading to left iliac vein thrombosis. Here, we present a case of diabetic ketoacidosis (DKA) complicated by deep vein thrombosis (DVT) in a patient with type 1 diabetes mellitus with May-Thurner syndrome.

A 41-year-old Thai male with T1D and a recent COVID-19 infection presented with polyuria and significant weight loss. He discontinued insulin treatment for a month and was diagnosed with DKA. Shortly after admission, he developed left lower limb swelling with elevated D-dimer levels. Doppler ultrasound revealed acute DVT in the left common iliac vein with a collateral blood flow, prompting suspicion of extrinsic venous compression including May-Thurner syndrome, later confirmed by CT venography. The follow-up endovascular treatment was planned.

In patients with DKA with lower extremity DVT, consider May-Thurner syndrome as a potential cause alongside the known hypercoagulable state.

KEYWORDS
deep vein thrombosis, COVID-19, type 1 diabetes, diabetic ketoacidosis, May-Thurner syndrome

PP-D-02

GLYCEMIC CONTROL IN CONTINGENT SITUATIONS: A LOOK INTO THE HbA1c OF PERSONS WITH DIABETES MELLITUS DURING THE COVID-19 PANDEMIC IN METRO MANILA

https://doi.org/10.15605/jafes.038.AFES.71

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INTRODUCTION
Coronavirus Disease-2019 (COVID-19) was declared by the World Health Organization as a pandemic last March 11, 2020. Different governments enforced different measures like imposition of lockdowns to control the spread of the disease. However, lockdowns have adverse effects. This study aimed to determine the effect of quarantine restrictions caused by the COVID-19 pandemic on the glycemic control of adult patients with type 2 diabetes mellitus at the East Avenue Medical Center. It also aimed to identify socioeconomic and lifestyle changes that affected glycemic control during the lockdown.

METHODOLOGY
This study compared glycemic control of people with type 2 diabetes mellitus pre- and post-imposition of community quarantine during the COVID-19 pandemic. This study analyzed factor/s that affected glycemic control in such a contingent situation. It is a cross-sectional analytic study that examined HbA1c as a measure of glycemic control. Specifically, it compared HbA1c taken from patients with type 2 diabetes mellitus before the Enhanced Community Quarantine in Metro Manila and compared it with HbA1c taken post-ECQ/MECQ. It also identified other factor/s that affected glycemic control present in a lockdown.

RESULTS
A total of 120 patients with type 2 diabetes mellitus participated in the study. The median HbA1c prior to ECQ was 8.0 while the median HbA1c post-ECQ/MECQ was 8.23. Median fasting blood sugar was 144.88 mg/dl prior to quarantine which increased to 158.05 mg/dl after ECQ/MECQ.

CONCLUSION

Increases in the median HbA1c and FBS were noted among the patients; however, only the increase in FBS was statistically significant. There was also a statistically significant lesser risk of having poor glycemic control when patients adhered to medications. Efforts toward addressing different factors in contingent times like these should be made. This study can serve as an example for future contingent situations (e.g., natural disasters or war).

KEYWORDS

diabetes, COVID-19, glycemic control

PP-D-03

ANTHROPOMETRIC, BIOCHEMICAL AND IMAGING CHARACTERISTICS OF FEMALES WITH DIABETES AND FAMILIAL PARTIAL LIPODYSTROPHY

https://doi.org/10.15605/jafes.038.AFES.72

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INTRODUCTION

Familial partial lipodystrophy (FPL) is an under-recognized condition characterized by an increased genetic predisposition to abnormalities in white adipose tissue function, quantity, and distribution, leading to young-onset metabolic syndrome including type 2 diabetes mellitus (T2DM). However, in clinical practice, there are no clear criteria to diagnose FPL. This pilot study aimed to determine clinical markers using skinfold measurements, DXA, and MRI scans to identify individuals with FPL and to characterize their adipose tissue distribution and fat phenotypes.

METHODOLOGY

In 8 females with FPL and 4 BMI-matched female controls, skinfold measurements, HOMA-IR, whole genome sequencing, and DXA were performed. MRI was used to measure abdominal subcutaneous adipose tissue (SAT), visceral adipose tissue (VAT), and femoral and calf SAT and muscle volumes.

RESULTS

Both groups' median BMI were 32-33 kg/m^2. All eight patients in the FPL group had T2DM with median disease onset at age 31 years. FPL, when compared to controls, had higher levels of HOMA-IR (p = 0.028), reduced thigh skinfold thickness (20.4 mm vs 51.4 mm, p = 0.008) with a correspondingly increased subscapular-to-thigh skinfold ratio (p = 0.004), and iliac-to-thigh skinfold ratio (p = 0.004). The FPL group had a reduced leg fat percentage (34.6 vs 48.1, p = 0.004) with an increased ratio of trunk-to-legs fat percentage (1.36 vs 0.98, p = 0.004), and android to gynoid ratio (1.21 vs 0.98, p = 0.008). The FPL group had decreased SAT volume in the femoral and calf.

KEYWORDS

lipodystrophy, severe insulin resistance, MRI, diabetes, obesity

PP-D-04

THE ABC TARGETS AND USE OF ORGAN-PROTECTIVE MEDICATIONS AMONG THAI PEOPLE WITH YOUNG-ONSET TYPE 2 DIABETES

https://doi.org/10.15605/jafes.038.AFES.73

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INTRODUCTION

Young-onset Type 2 Diabetes (YOD) is associated with premature death and worse microvascular and cardiovascular outcomes. Our recent study which recruited all individuals with the onset of DM before 30 years revealed that YOD had a three times higher prevalence of diabetic kidney disease (DKD) than young-onset T1D despite similar disease duration, glycemic control, and age. This study aimed to evaluate the rate of RAAS blockade (ACEi or ARB), SGLT2i, GLP-1 RA, and statin use among YOD. The proportion of patients who attained various multiple treatment targets was also evaluated.

METHODOLOGY

Data from all participants with T2D enrolled between 2022-2023 into the Thai Type 1 Diabetes and Diabetes Diagnosed Before Age 30 Years Registry, Care and Network (T1DDAR CN) from Theptarin Hospital, a tertiary diabetes center in Bangkok, were analyzed. The various ABC targets defined as standard targets (A1C <7.0%, BP <140/90 mmHg, and LDL <100 mg/dL), ADA-recommended targets (A1C <7.0%, BP <130/80 mmHg, and LDL <100 mg/dL) and tight targets (A1C ≤6.5%, BP <130/80 mmHg, and LDL <70 mg/dL) were examined.

RESULTS
A total of 50 patients (42.0% were females, current age of 46.6±12.4 years, age at DM diagnosis of 24.4 ± 5.2 years, duration of diabetes of 23.1 ± 11.2 years, BMI of 28.4±5.5 kg/m^2, prevalence of hypertension of 48.0%, insulin usage in 54.0%, and A1C of 7.5 ± 1.7%) were included. Statin medications were prescribed in 86.0%, RAAS inhibitors in 42.0%, SGLT2i in 32.0%, and GLP-1 RA in 28.0% of all patients. Among the DKD patients (N = 24), the rate of RAAS blockade was 66.7% and SGLT2i was 45.8%. The glycemic targets at ≤6.5% and <7.0% were achieved in 20.8% and 25.0%, respectively. The standard ABC targets, ADA-recommended targets, and tight targets were achieved in only 20.0%, 14.0%, and 6.0%, respectively.

CONCLUSION
Our routine clinical practice among diabetologists showed that achievement of treatment targets and use of organ-protective medications remain considerably suboptimal in individuals with YOD. Efforts to evaluate and improve the quality of care of these patients should be done to ensure the provision of adequate organ-protective medications.

KEYWORDS
type 2 diabetes, ABC targets, organ-protective medications

PP-D-05

REAL-WORLD EVIDENCE FOR THE USE OF SGLT2 INHIBITORS IN PATIENTS WITH TYPE 2 DIABETES AT A MALAYSIAN TERTIARY CARE CENTRE

https://doi.org/10.15605/jafes.038.AFES.74

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INTRODUCTION
Randomised controlled trials show that SGLT2 inhibitors provide metabolic benefits, and cardiovascular and renal protection in patients with Type 2 Diabetes Mellitus (T2DM). Little is known in terms of real-world evidence for the use and persistence, metabolic benefits, durability in glucose control and adverse events related to SGLT2 inhibitors, particularly in South East Asia. The aim was to determine the metabolic, renal and cardiovascular outcomes and adverse events amongst T2DM patients commenced on SGLT2 inhibitors.

METHODOLOGY
We retrospectively analysed the demographics, clinical characteristics, metabolic, renal and cardiovascular outcomes, as well as adverse events, of patients commenced on SGLT2 inhibitors. Data were extracted from electronic medical records in a tertiary care hospital and followed up for 24 months.

RESULTS
A total of 504 participants were analysed (male: 53.1%, mean age: 68.2 ± 7.1 years). The participants had a baseline HbA1c of 8.5%, 46.5% were insulin users, 49% with established ASCVD and 19.8% with CKD stage 3 and above. The SGLT2 inhibitors used were empagliflozin (81.4%) and dapagliflozin (18.6%). A significant reduction was seen in all metabolic parameters from baseline to 24 months: HbA1c: 0.6 ± 1.8% (p <0.001), fasting plasma glucose (FPG): 0.7 ± 3.9 mmol/l (p <0.001), weight: 2.6 ± 6.5 kg (p <0.001), systolic blood pressure (SBP): 3.8 ± 20.6 mmHg (p = 0.001) and low-density lipoprotein (LDL): 0.25 ± 1.29 mmol/l (p <0.001). The eGFR declined by 2.8 ± 10.6 ml/min/1.73 m^2 from baseline (p <0.001) and the urine albumin-creatinine ratio (UACR) showed no significant change of 4.4 ± 73.5 mg/mmol (p = 0.996) over 24 months. There was no difference in terms of metabolic or renal outcomes amongst those with and without atherosclerotic cardiovascular disease (ASCVD) except those without ASCVD had greater weight loss compared to those without (3.1 vs 0.6 kg, p=0.04). We reported eighteen cardiovascular (CV) events of the acute coronary syndrome and nine events of hospitalisation for heart failure. Fifteen participants discontinued therapy due to adverse events and the causes were: genitourinary infections (0.8%), excessive polyuria (0.8%), and worsening eGFR of more than 40% from baseline (0.8%) were among the commonest. We observed only two events of diabetic ketoacidosis. Our findings were similar to other real-world studies done in other parts of the world.

CONCLUSION
In this real-world study, SGLT2 inhibitors effectively improved HbA1c, FPG, weight, SBP and LDL amongst multi-ethnic Malaysians with T2DM, similar to the magnitude reported in randomised clinical trials. Adverse events reported were lower than observed in randomised trials. This data compliments the current available literature on the efficacy and safety of SGLT2 inhibitors.

KEYWORDS
SGLT2-inhibitors, T2DM, HbA1c, weight, real world evidence

PP-D-06

ASSOCIATION BETWEEN FATTY LIVER-LINKED LYPLAL1 RS12137855 AND DEPRESSION IN TYPE 2 DIABETES: A 5-YEAR FOLLOW-UP ANALYSIS

https://doi.org/10.15605/jafes.038.AFES.75

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INTRODUCTION
Limited data, predominantly cross-sectional, suggest an association between non-alcoholic fatty liver disease (NAFLD) and depression. Whether NAFLD-associated genetic variants are associated with depressive symptoms is not clearly defined, particularly in type 2 diabetes (T2D). Hence, this 5-year observational longitudinal study explored the relationship between four known NAFLD-linked single nucleotide polymorphisms (SNPs) and depression among multi-ethnic Asians with T2D.

METHODOLOGY
Participants diagnosed with T2D were recruited by the Singapore Study of Macroangiopathy and Microvascular Reactivity in Type 2 Diabetes (SMART2D) study from August 2011 to March 2014, and genotyped. The subjects were recalled from September 2014 to October 2017, during which baseline geriatric depression scale (GDS)-15 was administered and analyzed (n = 1,339; mean age: 62 ± 8 years, males: 52%). A follow-up GDS-15 assessment was conducted from Jul 2019 to May 2022. NAFLD was reflected by the hepatic steatosis index (HSI), which is a surrogate marker for fatty liver. Plasma specimens collected from September 2014 to October 2017 were subjected to nuclear magnetic resonance-based metabolomic profiling. PNPLA3 rs738409, NCAN rs2228603, LYPLAL1 rs12137855, GCKR rs780094, and their derived weighted-polygenic risk score (PRS) were evaluated.

RESULTS
Among the SNPs/PRS tested, only LYPLAL1 rs12137855 displayed increasing HSI readings from the CC to TT genotype (P36) than individuals harboring CT and CC genotypes (90.5%, 69.0% and 62.1%, respectively; $p = 0.004$). LYPLAL1 rs12137855 TT genotype was associated with baseline GDS-15 total score in the unadjusted (B = 1.28, 95% CI: 0.47–2.10; $P = 0.002$) and covariate-adjusted linear regression model (B=1.31, 95% CI: 0.48–2.14, $p = 0.002$), especially in the overweight/obesity category (body mass index ≥25 kg/m^2). Specifically, the SNP was associated with the depression dimensions of dysphoric mood, withdrawal-apathy-vigour, and hopelessness, but not with anxiety and memory complaints. Moreover, rs12137855 TT-alleles were associated with depression (GDS-15 ≥5; odds ratio=3.36, 95% CI: 1.03–10.96, $p = 0.044$) and absolute change in GDS-15 score after a mean 5-year follow-up period (B=1.57, 95% CI: 0.34–2.81, $p = 0.013$). The plasma metabolites that were associated with both GDS-15 and rs12137855 were valine, albumin, and proinflammatory glycoprotein acetyls. Using multiple mediation, we demonstrated that rs12137855 TT genotype was associated with the GDS-15 score through reduced albumin levels which accounted for 10.5% of the total effect.

CONCLUSION
LYPLAL1 rs12137855 TT genotype is associated with GDS-15-derived depression outcomes cross-sectionally and longitudinally in T2D. Given that LYPLAL1 rs12137855 is an intronic variant, it is unknown whether the SNP confers direct pathogenic consequences or indirectly through its linkage disequilibrium with a functional variant. Furthermore, the mood-depressive effect of this SNP appears to be mediated through reduced circulating albumin. Whether LYPLAL1 polymorphism plays a role in suppressing albumin synthesis and function that in turn affects mood warrants further investigation.

KEYWORDS
type 2 diabetes, fatty liver, depression

PP-D-07

CHANGES IN HbA1c AND ANTHROPOMETRY IN REAL-WORLD SETTINGS IN PATIENTS WITH TYPE 2 DIABETES RECEIVING GLP-1 RECEPTOR ANALOGUES (CHARGE AUDIT)

https://doi.org/10.15605/jafes.038.AFES.76

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INTRODUCTION
GLP-1 receptor analogue is a class of glucose-lowering agents with weight loss benefits. The magnitude of benefits may not be emulated in real-world settings compared to randomised controlled trials (RCT) due to strict inclusions and frequent follow-ups. This class of medication is costly and justification is required to support its usage. This study aims to look at real-world evidence of weight loss and HbA1c changes in patients started on GLP-1 receptor analogues.

METHODOLOGY
Patients were recruited from the Diabetes Clinic in a tertiary hospital. Inclusion criteria were patients with type 2 diabetes initiated on GLP1 receptor analogues in the year 2022. Data on anthropometry, body weight and HbA1c were captured retrospectively based on patients' clinic records and segregated into 3 monthly intervals. Data were analyzed using SPSS version 22.

RESULTS
The total number of patients recruited was 14; 12 receiving subcutaneous semaglutide and two on dulaglutide. Mean body weight reduction was higher among semaglutide recipients compared to dulaglutide at 3 months, 6 months and peaked at 9 months (semaglutide -10.4% vs dulaglutide -6.0%). HbA1c changes were highest at 3 months post initiation for semaglutide (10.2% reduction from baseline), plateaued at 6 months and increased close to baseline at 9 months. There was insufficient data for dulaglutide users.

CONCLUSION
In Malaysia, the cost-per-patient-per-month for GLP1 RA is about US $110 and about US $10 per-patient-month for SGLT2 inhibitors, in public hospital settings. Both GLP-1 receptor analogues showed weight loss benefits, with the effect seen greater in subcutaneous semaglutide users. This finding has been reproduced in other studies that have shown more weight loss effects when switching from dulaglutide to semaglutide. Moreover, the weight loss effect is continuous up to the 9th month for both drugs and did not plateau. Despite the further weight loss, the HbA1c effect was maximum at 3rd month and plateaued at 6 months onwards. Our study findings were comparable with other existing real-world evidence and RCTs, in line with the latest Malaysian guidelines in managing patients with type 2 diabetes and excessive weight. The limitations of this study were the small sample size and more subjects received semaglutide.

KEYWORDS
semaglutide, dulaglutide, obesity, type 2 diabetes, GLP-1 receptor analogues

PP-D-08

THE EFFICACY OF TELEMONITORING AND INTEGRATED PERSONALIZED DIABETES MANAGEMENT (IPDM) IN PEOPLE WITH INSULIN-TREATED TYPE 2 DIABETES MELLITUS: A PRELIMINARY ANALYSIS

https://doi.org/10.15605/jafes.038.AFES.77

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INTRODUCTION
Integrated personalized diabetes management (iPDM) can improve glycemic control in people with diabetes. Emerging evidence suggests that telehealth can improve diabetes care. The purpose of this study was to assess the efficacy of diabetes care through a structured telehealth model of care.

METHODOLOGY
A 6-month single-center, open-labeled, prospective randomized controlled trial enrolled insulin-treated subjects with diabetes, aged 18-65 years old and A1c of 7.4-10.5%. All participants received standard diabetes education. The tele-iPDM group will connect their glucometer to the cloud-based telemonitoring platform and adjust insulin following a protocol by investigators weekly for 3 months (phase 1), then monthly for another 3 months (phase 2). The usual care group will receive standard diabetes care and record glucose data in the paper logbook. The primary outcome was a difference in A1c change from baseline between 2 groups at 12 and 24 weeks. Secondary outcomes included changes in FPG, BW, BMI, and the percentage of people with A1c 0.5% at 24 weeks, SMBG profiles and the number of hypoglycemic events.

RESULTS
Sixty-one subjects completed the study. The mean age of participants was 53.07±7.74 years. The mean duration of diabetes was 11.76 ± 8.26 years. The baseline A1c was 8.48 ± 0.76%. Phase 1 study showed a mean reduction in A1c of 1.02% (95% CI: 0.74-1.30) in the tele-iPDM group and 0.48% (95% CI: 0.19-0.76) in the usual care group. The difference in A1c reduction between the 2 groups was 0.55% [95% CI: 0.15-0.95, p <0.05]. At 24 weeks of follow-up, the mean difference in A1c between the tele-iPDM and usual care groups is 0.72% [95% CI: 0.24-1.20, p <0.05]. There were no significant differences in body weight and body mass index and hypoglycemic events between both groups.

CONCLUSION
Telemonitoring can facilitate the iPDM care model in people with insulin-treated type 2 diabetes mellitus. It improves the efficiency of diabetes care and improves glycemic control at 12 weeks and can maintain glycemic control at 24 weeks.

KEYWORDS
telemonitoring, structured feedback loop, type 2 diabetes, insulin-treated

PP-D-09

IMPACT OF DIABETES AND SARCOPENIA ON MORTALITY

https://doi.org/10.15605/jafes.038.AFES.78

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INTRODUCTION
Diabetes mellitus (DM) and sarcopenia are growing public health threats in an aging society. They share common pathophysiological mechanisms and are associated with serious health consequences. We investigated the impact of DM and sarcopenia on all-cause and cardiovascular mortalities in a longitudinal nationwide population-based study.

METHODOLOGY
Subjects who participated in the Korea National Health and Nutrition Examination Survey conducted from 2008 to 2011 with available appendicular skeletal muscle mass data were analyzed. Mortality data up to December 2020 were retrieved from the National Death Registry.

RESULTS
Of the 17,920 subjects, 14,737 (82.2%) had neither DM nor sarcopenia (DM-/SP-), 1,349 (7.5%) had only DM (DM+/SP-), 1,425 (8.0%) had only sarcopenia (DM-/SP+), and 409 (2·3%) had both DM and sarcopenia (DM+/SP+). Compared to the DM-/SP- group, all-cause mortality was increased, with hazard ratios (HRs) of 1.29 (95% confidence interval [CI]: 0.97–1.73), 1.44 (95% CI: 1.12–1.85), and 1.88 (95% CI: 1.29–2.73) in the DM+/SP-, DM-/SP+, and DM+/SP+ groups, respectively, after adjusting for covariates. The data showed the DM+/SP+ group had the highest risk of overall mortality (p-for-trend = 0.042). Cardiovascular mortality was increased, with HRs of 1.34 (95% CI: 0.79–2.25), 1.39 (95% CI: 0.82–2.36), and 1.98 (95% CI: 1.04–3.77) in the DM+/SP-, DM-/SP+ and DM+/SP+ groups, respectively, compared to DM-/SP- group (p-for-trend 0.037).

CONCLUSION
The coexistence of DM and sarcopenia synergistically increased the risk of all-cause and cardiovascular mortality. Individuals with either disease may require more careful management to prevent the development of the other disease to reduce mortality.

KEYWORDS
diabetes, sarcopenia, mortality

PP-D-10

EFFECTIVENESS OF A DIABETES ONE-STOP CLINIC FOR TYPE 2 DIABETES PATIENTS IN A TERTIARY CARE HOSPITAL IN THAILAND

https://doi.org/10.15605/jafes.038.AFES.79

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INTRODUCTION
A multidisciplinary team approach is a strategy for optimizing care for patients with uncontrolled type 2 diabetes. However, the effectiveness of an integrated diabetes care team remains unclear.

METHODOLOGY
This study aims to evaluate the efficacy of a diabetes one-stop clinic, a multidisciplinary outpatient clinic that aims to provide integrated care for type 2 diabetes at Taksin Hospital. A multidisciplinary team, consisting of an endocrinologist, a certified nurse educator, a pharmacist, and a nutritionist, attended a weekly clinic at the Diabetes and Metabolic Care Center in Taksin Hospital. The integrated care team provides diabetes self-management and support, nutritional counseling, and diabetes management. To evaluate the change in their metabolic profile, a retrospective assessment of medical records for type 2 diabetes patients who visited a clinic between October 2021 and March 2022 and had HbA1c above 8%

was conducted. The statistical analysis was conducted on 113 patients who underwent follow-up for at least 6 months.

RESULTS

Among 113 patients, 68.5% were female participants and the mean age of the patients was 60 years. Their mean HbA1c was 9.36%, and their mean body mass index was 29.1 kg/m^2. From baseline to 6 months, HbA1c levels decreased significantly (- 0.92%, $p<0.05$). 61.6% of patients lowered their HbA1c levels by 0.5% in 6 months. There were no statistically significant reductions in fasting blood glucose, systolic blood pressure, weight, body mass index, or serum low-density lipoprotein (LDL).

CONCLUSION

A diabetes one-stop clinic showed significant improvement in HbA1c levels of around 0.9% in 6 months without an increase in body mass index. This study supports the benefits of treating type 2 diabetes using multidisciplinary teams that may help optimize glycemic control in clinical practice.

KEYWORDS

diabetes mellitus, multidisciplinary care, integrated health care systems, one-stop clinic

PP-D-11

UTILITY OF CONTINUOUS GLUCOSE MONITORING TO DETECT SYMPTOMATIC REACTIVE HYPOGLYCEMIA IN DIPEPTIDYL PEPTIDASE-4 INHIBITOR/ METFORMIN COMBINATION THERAPY-TREATED T2D INDIVIDUALS: AN ILLUSTRATIVE CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.80

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CASE

"Relative hypoglycemia" is a phenomenon characterized by an increase in the glycemic threshold for detecting and responding to hypoglycemia. Herein, we illustrated a case of non-insulin requiring well-controlled diabetes presented with postprandial glucose.

A 60-year-old Thai female with well-controlled T2D for 5 years presented with a 6-month history of regularly experiencing symptoms consistent with hypoglycemia without any other alarm symptoms. She is taking a combined tablet of sitagliptin 100 mg/ metformin extended-release 1,000 mg and her latest A1C values varied from 6.1-6.5% in the past 6 months. Continuous glucose monitoring (CGM) revealed postprandial hyperglycemia and subsequent low-normal interstitial glucose levels. Further dietary recall revealed her excessive refined carbohydrate or fruit juices before the onset of hypoglycemic symptoms. Low glycemic index foods and avoiding excessive carbohydrates had been advised. Her symptoms markedly improved, thereafter.

CGM provides important information regarding overall glycemic excursion over time in this patient.

KEYWORDS

reactive hypoglycemia, continuous glucose monitoring, CGM, type 2 diabetes

PP-D-12

PREVALENCE OF SGLT2 INHIBITOR AND GLP-1 RECEPTOR AGONIST PRESCRIPTIONS IN PATIENTS WITH COMORBID DIABETES AND CARDIOVASCULAR DISEASE IN RAJAVITHI HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.81

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INTRODUCTION

The clinical relevance of sodium-glucose co-transporter 2 inhibitors (SGLT2i) and Glucagon-like peptide 1 receptor agonists (GLP-1 RA) has been rapidly evolving for the treatment of type 2 diabetes mellitus (T2DM), especially in patients with cardiovascular comorbidities. There is a lack of global data on the prescription prevalence of these medications. The primary objective of this study was to estimate the prevalence of SGLT2i and GLP-1 RA prescriptions in patients with comorbid diabetes and cardiovascular disease in Rajavithi Hospital from 2017 to 2020. Another objective was to further characterize the patients regarding demographic, clinical parameters, and other medication usage between patients who were and were not prescribed SGLT2i and/or GLP- 1 RA.

METHODOLOGY

Data were collected from adults with comorbid diabetes and cardiovascular disease managed in Rajavithi Hospital, Thailand between January 1, 2017, and December 31, 2020. The prevalence of SGLT2i and GLP-1 RA prescriptions was estimated. Demographic, clinical parameters, and other medication usage between patients who were and were not prescribed SGLT2i and/or GLP-1 RA were reported in the percentages or mean ± standard deviations depending on the type of variable data.

RESULTS
Of the 1114 participants with T2DM and cardiovascular comorbidities, 567 were female (50.9%), mean age of 69.6 years (SD 12.4), mean HbA1c 7.2% (SD 1.8) and 607 (54.5%) were obese. Within the period, the prevalence of SGLT2i and GLP-1RA prescriptions were 4.4% and 1.3% respectively. Most of these medications were prescribed by cardiologists (60.3%) and endocrinologists (39.6%). The prescription rate of these medications was low even if the rate of SGLT2i prescription has increased dramatically in 2020 ($p = 0.003$)

CONCLUSION
The prescription rates of SGLT2 inhibitors and GLP-1 receptor agonists were low, especially in type 2 diabetes mellitus patients with cardiovascular comorbidities, even with a proven benefit of reduced morbidity and mortality from cardiovascular events. These medications should be considered to be prescribed in high-risk patients to improve cardiovascular outcomes independent of A1C.

KEYWORDS
cardiovascular disease, Sodium-glucose co-transporter 2 inhibitors, glucagon-like peptide 1 receptor agonists

PP-D-13

DIRECT MEDICAL COSTS OF TREATING DIABETIC FOOT ULCERS AMONG ADULT FILIPINOS AT THE PHILIPPINE GENERAL HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.82

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INTRODUCTION
Diabetic foot ulcers account for 16-20% of medicine admissions in the national referral center - the Philippine General Hospital (PGH). This study aimed to determine the direct medical costs of hospitalization for diabetic foot ulcers (DFU) among adult Filipinos.

METHODOLOGY
A cross-sectional analytic study design was used, with data taken from Filipino adults admitted for DFU from January to September 2019 and 2020.

RESULTS
There were 437 (308 from 2019, 127 from 2020) included patients, with 59% males, 45.31% from the National Capital Region, and 29.5% had hypertension as comorbidity. The mean age was 56.88 (range: 22-87, SD 11.66). The mean length of hospital stay was 15.5 days (1-102). Seventy percent of the patients underwent surgery. The average cost per patient in 2019 was Php 60,925 (USD 1,177), and Php 82,610 (USD 1,595) in 2020. The highest cost was from medications (antibiotics), followed by diagnostics and then operation fees. For national health insurance (Philhealth) members, coverage is not sufficient for DFU admissions because it only subsidizes a maximum of 50-70% of the total cost among surgical cases. The most common operation done was below-the-knee amputation (45.7% in 2019, 41.6% in 2020), debridement (25.3% in 2019, 13.48% in 2020), and ray amputation (19.5% in 2019, 16.9% in 2020). Most cases were University of Texas Staging System IID (37% in 2019, and 44.6% in 2020).

CONCLUSION
The cost per DFU patient is financially catastrophic for the minimum wage Filipino because it costs at least 40% of the annual income.

KEYWORDS
diabetic foot ulcer, direct medical costs

PP-D-14

EFFECT OF MEAL SEQUENCING ON GLP-1 HORMONE AND POSTPRANDIAL GLUCOSE EXCURSION IN PRE-DIABETIC PATIENTS: A CROSSOVER TRIAL

https://doi.org/10.15605/jafes.038.AFES.83

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INTRODUCTION
Meal sequencing is a novel approach for improving postprandial GLP-1 and glycemic responses. Previous studies have found that consumption of a fiber-enriched diet, high-protein or high-fat diet before a high-carbohydrate diet increased GLP-1 secretion and lowered postprandial glucose excursion. To determine such responses in Thai pre-diabetic subjects, we performed meal sequencing patterns using common Thai meal viands including “boiled vegetables,” “grilled pork,” and “sticky rice.”

METHODOLOGY
We conducted a crossover trial with a meal sequence test in 15 prediabetic adults aged 20 years or older. The participants ingested vegetables followed by meat and sticky rice (V-M-R) on day 1, vegetables with meat followed by sticky rice on day 2 (VM-R), and vegetables with meat and sticky rice on day 3 (VMR). GLP-1 levels and plasma glucose levels were measured at 0, 30, 60, and 120 min after ingestion.

RESULTS

The consumption of vegetables before meat and sticky rice (V-M-R) significantly increased GLP-1 AUC (0-120) than the consumption of vegetables with meat, followed by sticky rice (VM-R) or vegetables with meat and sticky rice (VMR) (V-M-R 5213.4 ± 2114.37 Vs VM-R 3869.02 ± 1362.68 Vs VMR 3426.16 ± 1478.15; p <0.05). Both V-M-R and VM-R induced significantly lower postprandial glucose AUC (0-30) and AUC (0-60) compared to VMR (At 30 min, V-M-R 3154.79 ± 336.9 Vs VM-R 3161.35 ± 230.17 Vs VMR 3585.87 ± 597.49; At 60 min, V-M-R 6664.83 ± 673.43 Vs VM-R 6594.59 ± 632.58 Vs VMR 7636.53 ± 1056.38, p <0.05).

CONCLUSION

The V-M-R meal sequence enhanced more GLP-1 release than other meal sequence patterns (VM-R and VMR) and produced less postprandial glucose excursion. The results provide the possibility of meal sequencing as a new non-pharmacological treatment for diabetic prevention in prediabetic patients.

KEYWORDS

meal sequencing, prediabetes, GLP-1, postprandial glucose

PP-D-15

HYPERTRIGLYCERIDAEMIA-INDUCED PANCREATITIS

https://doi.org/10.15605/jafes.038.AFES.84

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CASE

A 45-year-old male presented with a five-day duration of abdominal pain and yellow pustular skin eruptions on his eyebrow. His abdominal pain was worse after eating and was associated with nausea. The patient had diabetes mellitus since 37 years of age and receiving Gliclazide MR 60 mg twice daily and metformin 500 mg three times daily. He has a family history of diabetes, with his mother suffering from diabetes. He has a hepatitis B infection without current treatment. He was a previous smoker with a 10-pack-year history and stopped only 4 months prior. He has been an alcoholic beverage drinker (half a bottle of whisky) 3 days per week for the last 5 years. Physical examination revealed a fever of 102°F, tachycardia of 100, blood pressure of 130/70 mm Hg, respiratory rate of 16, and oxygen saturation of 96% on room air. He had abdominal tenderness in his right upper quadrant and epigastrium. His skin lesions were discovered to be eruptive xanthoma. Fundoscopy revealed a lipaemic retina. Blood tests revealed a triglyceride of 5460 mg/dl and cholesterol of 558 mg/dl, while liver function test was normal. Blood showed leukocytosis with neutrophil predominance and CRP was 229.04 mg/l. HbA1c was 8.9%. Amylase was initially 43 U/l, but when rechecked several hours later was 167 U/l. Blood glucose was 443 mg/dl. The abdominal x-ray and a chest x-ray revealed no abnormality. A USG of the abdomen showed an enlarged fatty liver and swollen pancreas. He was diagnosed with Hypertriglyceridemia-induced pancreatitis. The patient was kept nil by mouth and given aggressive fluid resuscitation alongside analgesia for pain review. His blood sugars were closely monitored as the VRII protocol had been started in the Emergency Department. An urgent CT scan was booked which confirmed pancreatitis. An insulin infusion FRII was started and an intravenous antibiotic was given. The patient made a good recovery and was followed up in the clinic for the management of his hyperlipoproteinemia.

KEYWORDS

hypertriglyceridaemia, pancreatitis., diabetes mellitus, alcoholic, amylase

PP-D-16

DIABETIC STRIATOPATHY IN A NEWLY DIAGNOSED TYPE 2 DIABETES MELLITUS: A RARE NEUROLOGIC COMPLICATION

https://doi.org/10.15605/jafes.038.AFES.85

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CASE

Chronic neurological complications are prevalent in patients with type 2 diabetes mellitus. Diabetic striatopathy is a rare, acute neurological complication of Diabetes Mellitus that commonly presents with non-ketotic hyperglycemia and involuntary movements, specifically hemichorea or hemiballismus. Striatal abnormalities on neuroimaging have been reported in most, but not all, cases.

We report the case of a 92-year-old Filipino female with no history of diabetes who presented with acute onset involuntary movements of the left upper extremity of a few hours duration, which progressed to right hemifacial spasm. She was diagnosed with a hyperosmolar hyperglycemic state and treated accordingly. Cranial CT scan findings were unremarkable. There was an immediate resolution of her neurologic symptoms after the correction of hyperglycemia.

The underdiagnosis of diabetic striatopathy highlights the importance of increasing awareness and understanding of this condition among clinicians to prevent delayed diagnosis and treatment. The prognosis for diabetic striatopathy is good with prompt glycemic control.

KEYWORDS
hyperkinetic movement disorder, diabetic striatopathy, nonketotic hyperglycemia, involuntary movement, neurologic complication

PP-D-17

CLINICAL, SUBCLINICAL CHARACTERISTICS AND RISK FACTORS OF THE NEW-ONSET DIABETES AFTER TRANSPLANTATION (NODAT) IN LIVING DONOR LIVER TRANSPLANTATION

https://doi.org/10.15605/jafes.038.AFES.86

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INTRODUCTION
With the increased number of long-term survivors after liver transplantation, new-onset diabetes after transplantation (NODAT) is becoming more significant in patient follow-up. However, the incidence of NODAT after living-donor liver transplantation (LDLT) has not been well elucidated. This study aimed to evaluate the incidence, characteristics, and risk factors for NODAT in adult LDLT recipients at a single center in Vietnam.

METHODOLOGY
This was a retrospective and prospective study of 122 patients who underwent living-donor liver transplantation without pre-transplant diabetes from October 2017 to July 2023 at 108 Military Central Hospital.

RESULTS
NODAT occurred in 22.9% of liver recipients with a median follow-up time of 19 months. NODAT cases diagnosed within one year after transplantation accounted for 89.2%, with a mean age of 53.96 (10-22 years), and 89.2% of patients were male. BMI >25 kg/m^2 accounted for 32.2%. The mean HbA1c in NODAT patients was 6.52 ± 0.78%. There was a negative correlation between NODAT and the patient's gender, obesity, and family history of diabetes. Other factors, such as hepatitis B and C virus infection, cytomegalovirus infection, the number of HLA antigen disparities between donor and recipient, dialysis, plasma exchange, or pulse steroid were not found to be associated with the incidence of NODAT. Recipient's age of more than 70 and post-transplant intensive care unit stay >15 days were risk factors for NODAT.

CONCLUSION
Nearly a quarter of the patients had NODAT. The diagnosis and treatment of NODAT play an important role in the management of patients post-transplantation. More studies are needed to determine the effects of recognition and treatment of hyperglycemia in recent transplant recipients

KEYWORDS
NODAT, diabetes, living donor liver transplantation

PP-D-18

MIXED PRESENTATION OF DIABETIC KETOACIDOSIS AND HYPEROSMOLAR HYPERGLYCEMIC STATE IN ELDERLY PATIENT AND RURAL AREA: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.87

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CASE
The mixed presentation of diabetic ketoacidosis (DKA) and hyperosmolar hyperglycemic state (HHS) portends a worse prognosis and poses a unique challenge in the management of the acute complications of diabetes mellitus. We present a referred case of a 72-year-old Indonesian female, with uncontrolled diabetes mellitus and hypertension, seen with decreased consciousness, Kussmaul breathing, tachycardia, and a one-week history of productive cough. Additional examination revealed extreme hyperglycemia, severe metabolic acidosis, ketonuria, and hyperosmolar state which showed a mixed presentation of DKA and HHS. The patient's condition was precipitated by pneumonia and complicated by the presentation of severe hyperkalemia. The patient was inadequately managed in the previous healthcare facility, but after fluid rehydration, insulin therapy, hyperkalemia, and acidosis management, and close monitoring of the patient in intensive care, the condition of the patient improved. This report emphasizes the importance of early recognition and prompt treatment of DKA and HHS in limited healthcare settings with special consideration for the elderly population.

KEYWORDS
diabetic ketoacidosis, hyperosmolar hyperglycemic state, type 2 diabetes, elderly population

PP-D-19

POSTPARTUM DIABETES SCREENING PROGRAM TO IDENTIFY RISK FACTOR(S) AND PROGRESSION TO PREDIABETES AND TYPE 2 DIABETES MELLITUS IN PATIENTS WITH PREVIOUS GESTATIONAL DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.88

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INTRODUCTION
Females with previous gestational diabetes mellitus (GDM) have a greater lifetime risk of developing type 2 diabetes. Despite the increasing knowledge and recommendations, the postpartum screening rate is still insufficient. A postpartum diabetes screening and education program was established in Siriraj Hospital to improve these missed opportunities. This study aimed to investigate the prevalence and risk factors for prediabetes and diabetes among women with previous GDM at 4-12 weeks postpartum who were followed up in this program.

METHODOLOGY
A retrospective cohort study was conducted in women with previous GDM. During the 4–12 weeks after delivery, a 75-g OGTT was performed. The subjects were categorized into normal glucose tolerance (NGT) and abnormal glucose tolerance (AGT) groups according to the American Diabetes Association criteria. Clinical and laboratory data during pregnancy and at 4-12 weeks after delivery were analyzed.

RESULTS
Between October 2020 and March 2022, 845 women with GDM were scheduled to have postpartum diabetes screening, however, 41.8% of women were lost to follow-up. 374 women with previous GDM were enrolled. 31.3% of them develop AGT, including IGT (25.9%), IFG (1.3%), IGT with IFG (1.1%), and type 2 diabetes (2.9%). Univariate analysis demonstrated that women with AGT had higher 1-hour plasma glucose (1-h PG) after a 50-gram glucose challenge test (50-g GCT) and more gestational weight gain in women with pre-pregnancy BMI >30 kg/m^2 than the NGT group. The proportion of breastfeeding was less in the AGT than NGT group. Multivariate analysis showed that higher 1-h PG after 50-g GCT was a risk factor for developing AGT (OR 1.008; 95% CI: 1.001-1.015; p = 0.036), while breastfeeding was found to be a protective factor for developing AGT (OR 0.388; 95% CI: 0.168-0.892, p = 0.026). ROC analysis revealed that 1-h PG after the 50-g GCT >160 mg/dl was predictive of postpartum abnormal glucose metabolism.

CONCLUSION
Despite, the knowledge of the potential harms of GDM, only 48% of women with previous GDM returned for postpartum diabetes screening. Of these, 31.3% of them develop prediabetes or diabetes during early postpartum screening. Women with high 1-h PG after a 50-g GCT, especially >160 mg/dL, should receive intensive strategy to make them return for follow-up visits and intensive lifestyle modification. Breastfeeding should be promoted in women with previous GDM to protect them from developing postpartum AGT. The postpartum diabetes program may enhance long-term follow-up in women with previous GDM.

KEYWORDS
gestational diabetes, postpartum diabetes, risk factors, abnormal glucose tolerance

PP-D-20

COMPARISON OF RENAL PROTECTIVE EFFECTS BETWEEN SGLT2 INHIBITORS AND DPP4 INHIBITORS IN TYPE 2 DIABETES IN REAL-WORLD CLINICAL PRACTICE

https://doi.org/10.15605/jafes.038.AFES.89

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INTRODUCTION
Recent prospective randomized studies have shown that sodium-glucose cotransporter 2 inhibitors (SGLT2i) had renal protective effects compared to placebo in patients with type 2 diabetes (T2D). In this study, we compared the renal composite outcomes between patients with T2D treated with SGLT2 inhibitors and those treated with dipeptidyl peptidase 4 inhibitors (DPP4i) using real-world clinical data.

METHODOLOGY
This retrospective observational study used the Observational Medical Outcomes Partnership Common Data Model (OMOP-CDM) database at four different university hospitals (Soonchunhyang University Hospitals in Seoul, Bucheon, Chunan, and Gumi) in Korea. The patients prescribed with SGLT2 inhibitors or DPP4 inhibitors for at least 90 days were included in the SGLT2 inhibitor or DPP4 inhibitor group, respectively. Subjects prescribed GLP-1 receptor agonists or insulin were excluded in both groups. Renal composite outcomes included a 30% decline in estimated glomerular filtration rate (eGFR) compared to baseline or creatinine doubling or dialysis or death from any cause.

RESULTS
After propensity score matching, clinical characteristics in each group at each hospital were well balanced at baseline. Our results from hospitals in Seoul, Bucheon, and Gumi have shown that SGLT2 inhibitor decreased renal composite outcomes compared to DPP4 inhibitor (hazard ratio (HR) 0.644, p = 0.020; HR 0.560, p <0.001; HR 0.657, p = 0.010, respectively). Furthermore, when all the data were combined, renal composite outcomes were significantly lower in the SGLT2 inhibitor group compared to the DPP4 inhibitor group (HR 0.659, p <0.001).

CONCLUSION
In conclusion, SGLT2 inhibitors effectively reduce renal composite outcomes compared to DPP4 inhibitors in real-world clinical practice.

KEYWORDS
SGLT2 Inhibitors, DPP4 Inhibitors, type 2 diabetes, renal composite outcomes

PP-D-21

TRANSLATING HbE1c FROM FASTING CAPILLARY BLOOD SUGAR AND HEMATOCRIT LEVEL IN SURIN HEMOGLOBIN E HOMOZYGOTE DIABETIC PATIENTS IN THAILAND

https://doi.org/10.15605/jafes.038.AFES.90

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INTRODUCTION
The major form of glycohemoglobin is hemoglobin A1c (HbA1c). The HbA1c fraction is abnormally elevated in chronic hyperglycemic diabetic patients and correlates positively with glycemic control. Previous studies suggest that hemoglobinopathies and hemolytic anemia affect the levels of HbA1c. This study aimed to determine the relationship between fasting capillary blood sugar and hematocrit on HbE1c levels in Surin hemoglobin E homozygote diabetic patients in Thailand.

METHODOLOGY
A cross-sectional study was conducted from 2009 to 2020. The population studied consisted of 93 patients (66 women and 27 men, mean age 62.9 ± 9.9 years). There were 808 blood tests. Patients who had iron deficiency anemia or anemia from chronic disease were excluded from the study. Hematologic investigations, fasting capillary blood sugar, hematocrit, and HbA1c levels were measured in all subjects. All patients were treated with either insulin, oral hypoglycemic drugs, or a physician-prescribed diet, with a laboratory investigation once a year during therapy. A model was developed to translate HbE1c (t-HbE1c) with two independent variables. The t-HbE1c was compared with capillary blood glucose measured before breakfast. A statistical analysis was carried out. Generalized mixed linear regression analysis was used for univariate and multivariate analyses. A p <0.05 was considered statistically significant.

RESULTS
In univariate linear regression analysis, t-HbE1c is associated with fasting capillary blood glucose. The model t-HbE1c equals 4.97 plus 0.012 multiplied by fasting capillary blood glucose has a p-value less than 0.001; while the model t-HbE1c equals 5.95 plus 0.036 multiplied by hematocrit, the p-value is less than 0.010 which is significant. The effect of hematocrit and fasting capillary blood glucose on t-HbE1c by multivariate regression was t-HbE1c equal to 3.92 plus 0.011 multiplied by the fasting capillary blood glucose plus 0.05 multiplied by hematocrit, and the p-value is less than 0.001 by random intercept and random slope.

CONCLUSION
With this data set, it can be concluded that, in an endemic area of hemoglobinopathy that is associated with high clinical variability, t-HbE1c levels are associated with hematocrit levels. In patients with hemoglobin E homozygotes, hematocrit levels have a highly significant effect on t-HbE1c levels. Physicians can use hematocrit levels to correct before any diagnostic or therapeutic decision is made based on t-HbE1c.

KEYWORDS
hemolytic anemia, hemoglobin E homozygote, glycated hemoglobin, HbA1c, t-HbE1c

PP-D-22

EFFECT OF HEMATOCRIT LEVELS ON HbA1c VALUES IN THE ENDEMIC AREA OF HEMOGLOBINOPATHY

https://doi.org/10.15605/jafes.038.AFES.91

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INTRODUCTION
The utility of HbA1c may be limited due to inaccuracies in patients with hemoglobinopathy. This study aims to determine the relationship between Dtx and HbA1c levels to assess the need for control of DTx to achieve HbA1c targets in populations with hemoglobinopathy.

METHODOLOGY
This is a cross-sectional study that was conducted at Surin Hospital. All the data from 2016 to 2018 were analyzed for the association between variables that may affect HbA1c.

RESULTS
Of all the 704 patients enrolled in this study, 347 patients had negative DCIP, 204 patients had HbEA and 153 patients had HbEE. In the analysis of the relationship between Hct and HbA1c, a linear association was found. Patients with high Hct also had higher levels of HbA1c. The univariable analysis found a similar relationship between the HbEA and the control group (Y = 5.14+0.017 Dtx, R-squared = 0.1970 and Y = 4.44 + 0.020 Dtx, R-squared = 0.3288, respectively). However, the steepness of the relationship is less steep for the HbEE group at Y = 5.43 + 0.011 Dtx, R-squared = 0.1744. Furthermore, Hct was found to be weakly associated with HbA1c levels, at Y = 5.5+ 0.055 Hct and R-square = 0.0243 or 2.43%, which is highly significant at p <0.001. In addition, exploratory model multivariable analysis separating all variables to become independent found that the type of hemoglobin does not affect HbA1c. Hence, the equation derived from multivariable regression analysis is Y = 2.88 + 0.016 DTx + 0.05 Hct.

CONCLUSION
Suggesting that HbA1c levels are affected by Hct levels, in addition to Dtx. The eHbA1c is used to estimate the level of DTx for individual self-control by patients with altered blood concentrations.

KEYWORDS
hemolytic anemia, hemoglobin E homozygote, glycated hemoglobin, HbA1c, estimate HbA1c

PP-D-23

IDENTIFYING RISK FACTORS RELATED TO PROGRESSIVE KIDNEY FAILURE IN HIGH-HEMATOCRIT, NORMAL-HEMOGLOBIN DIABETES PATIENTS SEEN IN SURIN HOSPITAL IN THAILAND

https://doi.org/10.15605/jafes.038.AFES.92

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INTRODUCTION
Diabetes is now the most common cause of end-stage renal disease (ESRD). This research aims to study the rate of decline in estimated glomerular filtration rate (eGFR) and risk factors related to progressive renal failure in high-hematocrit, normal-hemoglobin diabetic patients in Surin Hospital, Thailand.

METHODOLOGY
This case-control cohort study was conducted from 2009 to 2020. The patients' general clinical information, fasting plasma glucose (FPG), HbA1c levels, hematocrit (Hct), and eGFR were collected and divided into two groups; hematocrit higher than 42% (study group) and normal hematocrit level (hematocrit 36.1-40.0%, control group). The patients with confirmed diabetes were treated either with insulin, oral hypoglycemic drugs, or a physician-prescribed diet. The target of diabetes control follows standard treatment, not intensive control. The endpoint was a rate of decline of eGFR per year. The hypothesis was that the cumulative average duration of disease was equal, and the renal complications between the two groups were not different.

RESULTS
From 2009 to 2020, there were 216 diabetic patients with 108 males (50%) included. A total of 1870 blood tests were done, 1248 (67%) in the study group and 622 (33%) in the control group. There were no significant differences concerning mean cholesterol (CHO) among the groups. The mean age and eGFR were significantly lower in the study group. The males in the study group had significantly higher mean systolic blood pressure (SBP), diastolic blood pressure (DBP), fasting plasma glucose (FPG), hemoglobin A1c (HbA1c), triglyceride (TG), high-density lipoprotein (HDL), low-density lipoprotein (LDL), serum creatinine (Cr), and duration of disease were significantly higher. The rate of decline in eGFR was significantly slower in the control group, at -0.134 ml/min/year (p <0.689) and -0.778 ml/min/year in the study group (p <0.008).

CONCLUSION

In a long-term cohort study, the high-hematocrit and normal-hemoglobin groups had faster progression to renal failure. Diabetic patients with high hematocrit levels should be monitored using HbA1c levels as an indicator for long-term glycemic control and may need intensive risk control.

KEYWORDS

diabetes mellitus, high hematocrit, normal hemoglobin, diabetic nephropathy, Surin Hospital

PP-D-24

EFFECTIVENESS OF A STRUCTURED TRI-PHASIC INTENSIVE WEIGHT MANAGEMENT PROGRAMME ON DIABETES REMISSION IN MULTI-ETHIC ASIANS: AN INTERIM ANALYSIS

https://doi.org/10.15605/jafes.038.AFES.93

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INTRODUCTION

Evidence from the primary care-led United Kingdom Diabetes Remission Clinical Trial (DiRECT) demonstrated that type 2 diabetes mellitus (T2D) can be reversible through an intensive, very low-calorie diet (VLCD)-based weight management programme. The structured programme comprised three phases: total diet replacement (Phase 1: ~3 months), food reintroduction (Phase 2: ~2 months) and weight maintenance (Phase 3: up to ~24 months). The generalizability of the findings to the Asian populations is unclear, given the distinctiveness of the Asian diabetes phenotype. Modeled after the DiRECT programme, we evaluated the effectiveness of the tri-phasic approach in weight loss and diabetes remission among multi-ethnic Asians with T2D.

METHODOLOGY

Since July 2022, T2D patients have been recruited into the programme at a secondary care diabetes centre in the northern region of Singapore. The inclusion criteria were age 21-65 years, clinically diagnosed with T2D, diabetes duration of 0-6 years, HbA1c ≥6% (on glucose-lowering medications) or ≥6.5% (on diet control), body mass index (BMI) of 27-45 kg/m^2 and no insulin use. The prescribed energy intake was 800 kcal (Phase 1), 1000 kcal (Phase 2) and 1200-1500 kcal (with exercise; Phase 3) per day. All glucose-lowering medications were stopped at programme initiation. The monthly percentage of total weight loss (%TWL) was calculated. Real-time glucose levels were monitored for 14 days from the initiation of each phase using the FreeStyle Libre system. Diabetes remission, defined as HbA1c <6.5% and fasting plasma glucose<7 mmol/L off glucose-lowering medications for at least 3 months, was assessed at the end of Phase 1 and Phase 2.

RESULTS

At the time of analysis, 16 patients (age: 34 ± 7 years, 68.8% men, BMI: 35.1 ± 4.2 kg/m^2) with a median diabetes duration of 2 years and mean baseline HbA1c of 6.94 ± 1.40% were enrolled into the programme, of which 12 and 11 of them had Phase 1 and Phase 2 data, respectively. A median daily Libre glucose reading of <7.0 mmol/L was recorded on Day 3 of VLCD without medications. On Phase 1 completion, body weight had dropped from baseline 103.2 to 94.0 kg (p = 0.003), achieving 8.5% TWL. Additionally, levels of HbA1c, triglycerides, and liver enzyme decreased while uric acid increased significantly (all p <0.05). Seventy-five percent(n = 9/12) of patients experienced diabetes remission. All patients who attained ≥10% TWL(n=5) had diabetes remission. Notably, the non-remitters in the <5% TWL(n = 2/5) and 5-9.9% TWL(n = 1/2) categories displayed relatively good glycemic control despite modest weight loss. At the end of Phase 2 (food reintroduction), mean weight had increased moderately from 94.0 to 98.4 kg (p = 0.003), corresponding to 4.3% TWL. Generally, the median daily glucose levels were kept within normal range during Phase 2. The diabetes remission rate decreased to 63.6% (n = 7/11), attributed to one patient with <5% TWL experiencing a diabetes relapse. Two patients shifted from the ≥10% TWL category to the 5-9.9% TWL category, but they remained in remission.

CONCLUSION

The short-term interim results show that Asians respond favorably to the weight management programme, achieving a high diabetes remission rate that is comparable to that of bariatric surgery, albeit having a variable degree of weight loss. However, longer observation is required to ascertain the sustainability of diabetes remission.

KEYWORDS

type 2 diabetes, weight loss, diabetes remission, very low-calorie diet

PP-D-25

CAROTID ATHEROSCLEROSIS ACCORDING TO THIGH AND WAIST CIRCUMFERENCE IN PREDIABETIC PATIENTS

https://doi.org/10.15605/jafes.038.AFES.94

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INTRODUCTION
Patients with diabetes are at a higher risk for cardiovascular diseases. Even patients with prediabetes have increased cardiovascular risk, and preventive measures are necessary. It is known that the thinner the thighs and the larger the waist circumference, the higher the risk of cardiovascular disease. Several studies have shown that thigh and waist circumference are associated with atherosclerosis in diabetic patients.

METHODOLOGY
This study investigated the relationship of thigh and waist circumference with carotid atherosclerosis in patients with prediabetes. This observational study included 337 Korean subjects with prediabetes, in whom anthropometric measurements and carotid ultrasonography were conducted. Carotid plaque was defined as focal structures encroaching the arterial lumen by ≥0.5 mm or 50% of the surrounding intima-media thickness (IMT) value or a thickness ≥1.5 mm.

RESULTS
As a result of the analysis, there was no relationship between carotid atherosclerosis and thigh and waist circumference in both men and women with prediabetes.

CONCLUSION
Results suggest that the relationship between cardiovascular risk and body type measured by thigh and waist circumference is unclear and may vary depending on glycemic status. However, further longitudinal studies are warranted.

KEYWORDS
carotid atherosclerosis, thigh circumference, waist circumference, prediabetes

PP-D-26

DEMOGRAPHIC PROFILE, GLYCEMIC CONTROL AND TREATMENT PATTERNS OF TYPE 1 DIABETES PATIENTS IN CENTRAL PAHANG

https://doi.org/10.15605/jafes.038.AFES.95

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INTRODUCTION
The burden of Type 1 diabetes (T1D) care in adulthood is often overshadowed by the increasing Type 2 diabetes prevalence. In addition to the complexity of transitional care from adolescence to adulthood, there are multiple barriers to the care of these patients. Identifying these barriers is crucial to facilitate creating personalized and focused care for T1D patients.

METHODOLOGY
This was a cross-sectional study recruiting all T1D patients who consulted in endocrinologist-led diabetes clinics in secondary and tertiary hospitals in Central Pahang, Malaysia. This included coverage areas of Bentong, Temerloh, Bera, Jengka, and Jerantut in Pahang. The study aimed to determine the demographic data, glycemic control, diabetes complications, and treatment patterns in T1D patients. Patient's electronic medical records were retrieved for data collection.

RESULTS
Fifty-eight patients were recruited into the study, with female predominance (63.8%), and the majority were of Malay ethnicity (67.2%). The mean age of the patients was 25.26, (SD = 7.5) with a mean age at diagnosis of 16.98 (SD = 6.9). The majority had a duration of illness of 7 years. Almost 66% of patients had prior testing for autoantibodies and c-peptide as diagnostic confirmation. Fifty percent of patients had childhood-onset diabetes, presenting early with diabetic ketoacidosis. For diabetes complications, 24.1% of patients had nephropathy, while 12.1% had diabetic retinopathy. Up to 10.3% had documented hypoglycemia, and 8.6% had DKA in the past six months. Despite poor glycemic control, there was still a statistically significant reduction of HbA1c from baseline compared to the latest follow-up (10.93% vs 9.92%, p <0.01). Only 32.1% of patients at the latest follow-up had HbA1c less than 8.5%. The mean total daily insulin usage was 0.84 SD 0.3 u/kg/day. Only 17.2% of T1D patients had prior exposure to continuous glucose monitoring utilization.

CONCLUSION

Enrolment in a specialized T1D clinic is important to deliver an appropriate and targeted approach to T1D patients. The poor control of T1D patients in this cohort reflects the barriers to care including treatment access, adequacy of glucose monitoring, disease understanding and peer and family support. Technology-based intervention in T1D patients is still underutilized and concerted effort to incorporate technology into treatment needs to be intensified.

KEYWORDS

type 1 diabetes, demographic, glycemic control

PP-D-27

TREATMENT ADHERENCE TO GUIDELINE EVALUATION IN T2D (TARGET-T2D) MALAYSIA: IMPACT OF SGLT-2I USE AMONG PATIENTS WITH T2DM ATTENDING TERTIARY CARE

https://doi.org/10.15605/jafes.038.AFES.96

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INTRODUCTION

Sodium-glucose cotransporter 2 (SGLT2) inhibitors have significant cardiovascular benefits, particularly in heart failure and chronic kidney disease.[1,2] However, its use has been limited by its side effects and health system resources.[3,4] Thus, TARGET-T2D was initiated to study the use of SGLT2i within our population to highlight the treatment gap between SGLT2i and non-SGLT2i users. We identified the differences between patients who received SGLT-2i and those who did not to highlight the importance of optimizing treatment in those who would benefit from the cardio- and renoprotective effects of SGLT2i.

METHODOLOGY

Cross-sectional data were collected at eight publicly-funded tertiary hospitals in the Greater Kuala Lumpur region from December 2021 to June 2022). Patients aged ≥18 years with T2D treated with oral glucose-lowering drugs and/or injectable therapy who had two or more outpatient visits within the preceding year were eligible. Various demographic, anthropometric, and metabolic data were included for data analysis. Analyses were stratified by prior atherosclerotic cardiovascular disease (ASCVD) and clinic type (Diabetes specialist versus General medicine clinics).

RESULTS

Four thousand seven hundred three patients were recruited, of which 38% received SGLT2Is (n = 1803). Almost all of them attended the Endocrine Subspecialty clinic, whilst only 10% of the population received their prescriptions from the General Medical Clinic. Those who received SGLT2I were significantly younger (mean age 58.8 ± 11.6 vs 60.8 ± 12.9, p <0.001) with earlier onset of T2DM. They had greater metabolic risks including longer duration of T2DM, higher HbA1c, larger BMI and WC, with higher proportions of patients who had underlying atherosclerotic cardiovascular disease (ASCVD)(35.4% vs 30.1%, p = 0.01) and HHF 4.8% vs 3.5%, p <0.01). In addition, those who received SGLT2i demonstrated lower systolic and diastolic blood pressures and slightly better lipid profiles. However, there were lower proportions of patients who had eGFR <60 mL/min/1.73 m^2 (25.8% vs 35.7%, p <0.001) and significant proteinuria with urinary albumin creatinine ratio (UACR) >3 mg/mmol (59.5% vs 63.8%, p = 0.021), among those who received SGLT2i versus the comparator group. Concerning treatment targets, attainment of individual and composite glycaemic, blood pressure, and lipid targets were significantly observed within the SGLT2I group versus the non-SGLT2i group. Multiple logistic regression models demonstrated that Endocrine clinic follow-ups, eGFR >45 mL/min/1.73 m^2, presence of ASCVD, and HHF are independent predictors for the use of SGLT2i within the study cohort.

CONCLUSION

Those who received SGLT2Is attended Endocrine Clinics and had the indications for its use including very high CV risks. However, a third of patients who did not receive the medication had the indications for it including the presence of ASCVD, eGFR <60 mL/min/1.73 m^2 and significant proteinuria with urinary ACR >3 mg/mmol. This underscores the importance of including SGLT2i in the treatment regime for patients with T2DM.

KEYWORDS

SGLT2 inhibitor, cardiovascular diseases, type 2 diabetes mellitus

PP-D-28

ASSOCIATION BETWEEN CHEMOTACTIC CYTOKINE RECEPTOR 5 (CCR5) GENE PROMOTER (59029 G/A) POLYMORPHISM AND DIABETIC NEPHROPATHY IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.97

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INTRODUCTION
Diabetic nephropathy is the leading cause of end-stage renal disease. Despite optimal glucose and blood pressure control, many patients still develop diabetic nephropathy. These patients might have some genetic risk factors associated with diabetic nephropathy.

METHODOLOGY
Ninety-eight patients with type 2 diabetes mellitus were included in this cross-sectional case-control study, which was conducted at No. (2) Military Hospital (500-bedded), Yangon. The study aimed to investigate the association between chemotactic cytokine receptor 5 (CCR5) gene promoter 59029 G/A polymorphism and diabetic nephropathy in patients with type 2 diabetes mellitus. Genotype frequencies (GG, GA, AA) were determined by polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP) method. Serum creatinine was measured to calculate the estimated glomerular filtration rate (eGFR); urine creatinine and urine albumin were measured to calculate urine albumin to creatinine ratio (ACR).

RESULTS
CCR5 59029 G/A genotype frequencies, namely, GG, GA and AA were found in 28.6%, 49.0% and 22.4%, respectively, in patients with diabetic nephropathy, and 30.6%, 44.9% and 24.5%, respectively in those without diabetic nephropathy. G allele frequency was 53.1%, and A allele frequency was 46.9% respectively, in both groups. Genotype frequencies did not deviate from Hardy-Weinberg equilibrium (HWE: $\chi 2 = 0.326$, $p = 0.567$). The odds ratio (OR) and 95% confidence interval (95% CI) were used to analyze the association of genotypes and alleles with diabetic nephropathy. The clinical characteristics were not significantly different between both groups ($p > 0.05$), apart from HbA1c and renal profile. The statistically significant association between the CCR5 59029 G/A genotypes and diabetic nephropathy was not found in different genetic models (co-dominant, dominant, recessive and allelic models) ($p > 0.05$).

CONCLUSION
The association between CCR5 gene promoter 59029 G/A polymorphism and diabetic nephropathy in patients with type 2 diabetes mellitus was not found in this study population.

KEYWORDS
CCR5, diabetic nephropathy, type 2 diabetes

PP-D-29

PREVALENCE AND FACTORS ASSOCIATED WITH DIABETES-RELATED EMOTIONAL DISTRESS (DRED) AMONG FILIPINO ADULT PATIENTS WITH TYPE 2 DIABETES MELLITUS USING A VALIDATED FILIPINO VERSION OF THE DIABETES DISTRESS SCALE (DDS)

https://doi.org/10.15605/jafes.038.AFES.98

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INTRODUCTION
Diabetes-related Distress refers to the significant negative psychological reactions related to having diabetes mellitus. There are limited studies involving diabetes distress and its association with glycemic control and other clinicodemographic factors among Filipinos. In addition, there is currently no Filipino-adapted Diabetes Distress Scale. This study aimed to translate the Diabetes Distress Scale into Filipino, and validate this version among Filipino Adult Patients with Type 2 DM, and assess the prevalence of diabetes-related distress and its association with Glycemic Control and other related factors.

METHODOLOGY
The English DDS was translated into the Filipino language and a subsequent cross-sectional validation study was done with 186 individuals with type 2 diabetes in a single-center tertiary hospital and assessed the prevalence and related factors of DRED. Descriptive statistics was used for categorical variables. Shapiro-Wilk test was used to determine the normality distribution. Continuous quantitative data were summarized using mean and standard deviation (SD), median, and interquartile range. Logistic regression was used to determine the association of clinicodemographic and metabolic factors with moderate to high diabetes-related distress. Odds ratios and corresponding 95% confidence intervals were reported.

RESULTS
The overall prevalence of diabetes distress for this study is 34.41% with a mean overall score of 2.02. The prevalence of moderate distress was highest for Regimen-related distress at 45.16% (95% CI: 37.87-52.61%), followed by Emotional-related distress at 39.78% (95% CI: 32.70-47.20%), and the lowest prevalence was found in the Physician-related distress domain at 11.29% (95% CI: 7.13-16.74%). Age was a significant predictor of diabetes distress (OR 0.97(0.95-1), p = 0.04). In contrast, educational level, marital status, socioeconomic status, duration of diabetes, presence of diabetic complications, number of medications, level of BMI, or glycemic control were not associated with diabetes distress.

CONCLUSION
This study has indicated that the Filipino DDS is a valid instrument in the assessment of diabetes-related distress among Filipino diabetic patients. A younger age was associated with the development of diabetes distress, while it was not associated with glycemic control and other related factors.

KEYWORDS
diabetes distress, type 2 diabetes, diabetes distress scale

PP-D-30

ENHANCING DIABETES CARE: EVALUATING THE EFFICACY OF TELEMEDICINE FOR INITIATING INSULIN THERAPY IN TYPE 2 DIABETES PATIENTS AT GRAND HANTHA DIABETES CENTER, MYANMAR

https://doi.org/10.15605/jafes.038.AFES.99

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INTRODUCTION
Amidst the COVID-19 outbreak in Myanmar, telemedicine has emerged as a crucial tool, enabling healthcare providers to conduct remote assessments, offer patient education, and provide guidance on initiating insulin therapy. Insulin therapy plays a vital role in managing uncontrolled diabetes with secondary oral antidiabetic (OAD) treatment failure. Its effectiveness in controlling blood glucose levels is well-known. However, there remains a concern about the risk of hypoglycemia and timely titration to reduce therapeutic inertia, particularly for individuals residing in remote districts where access to healthcare professionals (HCPs) is limited. In such challenging circumstances, junior doctors from diabetes centers supported patients throughout the initial three-month period of insulin initiation, providing valuable guidance and care. This study aims to ascertain the effectiveness and safety of initiating insulin therapy guided by experienced Medical Officers of GHDC (Grand Hantha Diabetes Center) using the Viber app on mobile phones, which is widely available and accessible in remote areas of Myanmar.

METHODOLOGY
A prospective three-month follow-up study was conducted on patients initiated on insulin therapy due to oral hypoglycemic agent (OHA) failure. These patients were enrolled in the GHDC and voluntarily participated in the study from March 2022 to June 2022. In total, 85 patients underwent assessments for pre-HbA1c and post-HbA1c levels, average fasting blood glucose (FBG) and average random blood sugar (RBS) levels (including postprandial blood sugar [PPBS] and pre-meal levels) during the duration of the study. Additionally, severe hypoglycemia, defined as blood glucose levels below 54 mg/dl or instances where assistance was required for recovery, was also noted.

RESULTS
Overall, consultations via the Viber app led to improvements in FBG and RBS during the second and third months compared to the first month, along with a significant reduction in HbA1c levels. Among the patients, 27 patients (32%) achieved a reduction of HbA1c less than 10% from the baseline, 28 patients (33%) achieved a reduction between 10% and 30%, and 17 patients (20%) achieved a reduction of over 30% from the baseline. Thirteen patients (15%) showed either an increase or no change in their results compared to the baseline. There was a satisfactory reduction in the following parameters: FBG decreased from a mean baseline of 167 to 129, Postprandial blood sugar decreased from 223 to 162, and premeal blood sugar decreased from 212 to 152. Among these patients, eight patients (9%) experienced hypoglycemic symptoms and required the intake of sugary drinks to alleviate the condition. None required admission.

CONCLUSION
Telemedicine is effective and safe for initiating insulin therapy in Type 2 Diabetes Patients during the COVID-19 outbreak.

KEYWORD
basal insulin

PP-D-31

RELATIONSHIP BETWEEN CARDIAC AUTONOMIC NEUROPATHY AND PLASMA HOMOCYSTEINE LEVEL IN PATIENTS WITH TYPE 2 DIABETES MELLITUS

https://doi.org/10.15605/jafes.038.AFES.100

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INTRODUCTION
Cardiac Autonomic Neuropathy is one of the diabetic complications that can lead to silent myocardial infarction, arrhythmia, and sudden death. Hyperhomocysteinemia was associated with macro- and microvascular complications of diabetes mellitus, including cardiac autonomic neuropathy.

METHODOLOGY
The study aimed to investigate the relationship between cardiac autonomic neuropathy and plasma homocysteine levels in patients with type 2 diabetes mellitus. Ninety-six patients with type 2 diabetes mellitus were included in this cross-sectional analytical study. Plasma homocysteine was measured by Cobas C311 analyzer. Diagnosis of cardiac autonomic neuropathy was based on Ewing's test and categorized into early CAN, severe CAN, and patients without CAN by using Bellavere's scoring system.

RESULTS
Among the patients, the majority (71.9%) did not have cardiac autonomic neuropathy (score <2). In those with cardiac autonomic neuropathy, early autonomic neuropathy (scores 2-4) was found among 24% of patients. Severe autonomic neuropathy (scores 5-10) was noted among 4.1% of patients. The mean ± SD level of plasma homocysteine was 14.08 ± 5.29 μmol/L. The range was from 4.24 to 28.21 μmol/L.

The mean ± SD level of plasma homocysteine level of patients without CAN was 11.84 ± 3.59 μmol/L. Among patients with CAN, the mean ± SD level of plasma homocysteine level of patients with early CAN was 19.88 ± 4.76 μmol/L while that of patients with severe CAN was 19.42 ± 4.13 μmol/L.

Post hoc comparison using the Tukey HSD test indicated that the mean values of plasma homocysteine levels for early CAN and severe CAN patients were significantly different from the mean values of plasma homocysteine levels for patients without CAN, with p <0.001 and 0.001 respectively.

In this study, older patients were more likely to develop CAN. CAN was detected more frequently among male patients. Smoking status, hypertension, and HbA1c level were not associated with CAN. Patients suffering from DM for more than 5 years were 2.75 times more likely to have CAN than patients with DM for less than 5 years. This finding was statistically significant with p = 0.034.

CONCLUSION
In this study, there was a relationship between cardiac autonomic neuropathy and plasma homocysteine level in patients with type 2 diabetes mellitus. To reduce the cardiovascular complication of cardiac autonomic neuropathy, early CAN diagnosis is useful to establish an adequate therapeutical strategy for glycaemic control and personalized treatment.

KEYWORDS
cardiac autonomic neuropathy, homocysteine, type 2 diabetes

PP-D-32

FULL TABLET AND HALF TABLET EMPAGLIFLOZIN PRESCRIPTION DEMOGRAPHIC AND GLYCEMIC CONTROL: A SINGLE CENTRE EXPERIENCE

https://doi.org/10.15605/jafes.038.AFES.101

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INTRODUCTION
Sodium-glucose co-transporter 2 (SGLT2) inhibitors prescription has been given greater emphasis in recent years, and it has been adopted as a first-line or second-line treatment in major international guidelines. In the public practice of the Ministry of Health hospital, the main SGLT2 inhibitor prescribed is empagliflozin. However, the prescription is still limited by cost despite efforts to increase prescription. The practice of prescribing half tablet empagliflozin (12.5 mg) has yet to be recommended but has been widely practiced in many centres in Malaysia. There is no evidence advising for or against this practice. Hospital Sultan Haji Ahmad Shah (HoSHAS), a tertiary hospital in Central Pahang, has initiated a prescription of half a tablet of empagliflozin (12.5 mg) in 2019. An assessment of this empagliflozin prescription pattern and its effects on glycemic control is essential to inform future prescription direction.

METHODOLOGY

This cross-sectional study was conducted in HoSHAS, a tertiary hospital in Temerloh, Pahang, Malaysia, in March 2023. All patients on treatment were included in the study. Electronic medical records were reviewed for patient demographic data and glycemic control at initiation, and the latest follow-up data were collected. The study aimed to determine the demographic profile of patients on empagliflozin and the difference in glycemic control between full-tablet empagliflozin (25 mg) and half-tablet empagliflozin (12.5 mg) in this cohort.

RESULTS

There were 167 patients on empagliflozin, which reflected a three-fold increase compared to 2021. The majority of patients (83%) were on half-tablet empagliflozin. The median age of patients was 54 (IQR: 44-63). Most were male (62.9%) and of Malay ethnicity (76.6%). In this cohort, 21.6% had a prior myocardial infarction, 10.8% with congestive heart failure, 22.2% with obesity, 73.7% with hypertension, and 46.7% with dyslipidemia. 23.4% of patients had diabetic retinopathy, while 19.2% had incident nephropathy. 57.5% and 38.9% of patients on empagliflozin were on concomitant insulin therapy and sulphonylurea, respectively. At the latest follow-up, 51.5% of patients had HbA1c below 8.5% with a mean HbA1c of 8.65 (SD = 1.9). There was no statistical difference in mean HbA1c reduction from initiation to latest follow up in the group on full-tablet and half-tablet empagliflozin 1.48% vs - 1.65%, p >0.05).

CONCLUSION

The use of SGLT2 inhibitors must be maximized further to provide cardio-renal and metabolic benefits to high-risk type 2 diabetes patients while balancing costs. This study demonstrated that the prescription of whole or half tablets did not cause differences in glycemic control. Therefore, such practice can be adopted, but further studies on the long-term effects of the dose on cardio-renal and metabolic outcomes need to be explored.

KEYWORDS

empagliflozin, type 2 diabetes, HbA1c

PP-D-33

HEMIBALLISMUS: A RARE PRESENTATION OF UNCONTROLLED DIABETES MELLITUS TYPE 2

https://doi.org/10.15605/jafes.038.AFES.102

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CASE

Diabetic striatopathy is a rare acute movement disorder with a prevalence of 1 in 100,000. This is characterized by sudden, non-purposeful jerking movements secondary to non-ketotic hyperglycemia.

We report a case of an 80-year-old female with type 2 diabetes who came in due to right-sided hemiballism with behavioral changes. Initial blood glucose was elevated with normal serum ketones. Glycated hemoglobin (HbA1c) was 13.7%, consistent with poorly controlled diabetes mellitus. On evaluation, T1-weighted hyperintensity signals involving the left lentiform nucleus were seen on magnetic resonance imaging, which was suggestive of diabetic striatopathy. She was given insulin therapy for glucose control and supportive medical management for the neurologic symptoms. Symptom relief was achieved on the third hospital day after good glycemic control was attained.

Proper identification and diagnosis are essential in managing diabetic striatopathy, with adequate glycemic control as the most effective therapeutic management.

KEYWORDS

type 2 diabetes, uncontrolled diabetes, hemiballismus, diabetic striatopathy, elderly

PP-D-34

DIABETES AND HYPOPITUITARISM AS IMMUNE-RELATED ENDOCRINOPATHIES ASSOCIATED WITH PEMBROLIZUMAB THERAPY IN A PATIENT WITH ADVANCED RENAL CELL CARCINOMA

https://doi.org/10.15605/jafes.038.AFES.103

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CASE
We report a 59-year-old Malaysian-Chinese male with bilateral renal cell carcinoma with liver metastases who developed diabetes and hypopituitarism after approximately ten months on pembrolizumab. He presented with a one-week history of lethargy, polyuria, polydipsia, and nocturia. He was admitted to a private hospital as a case of diabetic ketoacidosis and was discharged with basal-bolus insulin. Three days after discharge, he was admitted to the oncology ward for uncontrolled diabetes without ketosis. Blood tests showed high serum glucose, low morning cortisol 11 nmol/L, low ACTH and low testosterone with inappropriately normal FSH and LH. He was diagnosed with diabetes, secondary adrenal insufficiency and hypogonadotropic hypogonadism. His condition improved after administration of basal-bolus insulin and hydrocortisone. He experienced spontaneous recovery of the gonadal axis after three months.

KEYWORDS
pembrolizumab, diabetes, hypopituitarism

PP-D-35

A CASE REPORT OF DIABETIC KETOACIDOSIS IN A PREGNANT PATIENT NOT PREVIOUSLY KNOWN TO BE DIABETIC AND WITH NORMAL HbA1c LEVEL

https://doi.org/10.15605/jafes.038.AFES.104

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CASE
Diabetic ketoacidosis (DKA) in the pregnant population has grave effects on the fetus and mother if left untreated. It is unusual for a non-diabetic pregnant woman to develop DKA during pregnancy. This is a case of a 32-year-old Filipino gravida 3 para 2, 29 weeks and 3/7 days pregnant, who presented with shortness of breath. Laboratory tests showed an elevated blood glucose level >600 mg/dL, high anion gap metabolic acidosis, and ketonuria, but with a normal HbA1c level. The patient was managed as newly diagnosed diabetes mellitus in severe diabetic ketoacidosis. She was started on fluid replacement, insulin therapy, and antibiotic treatment for urinary tract infections. However, due to fetal demise, she underwent induction of labor and subsequent delivery. DKA may occur in pregnant women not previously known to have diabetes and confers a high mortality risk if left undetected. Thus, a high index of suspicion is needed even if patients initially showed normal glucose tolerance or HbA1c levels.

KEYWORDS
diabetic ketoacidosis in pregnancy, newly diagnosed diabetes mellitus

PP-D-36

THE ASSOCIATION OF BLOOD PRESSURE AND END-STAGE RENAL DISEASE IN ELDERLY DIABETES PATIENTS: A NATIONWIDE COHORT STUDY

https://doi.org/10.15605/jafes.038.AFES.105

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INTRODUCTION
There is insufficient evidence to determine a precise blood pressure target in older adults with diabetes mellitus. In this study, we evaluated the potential relationship between blood pressure levels and end-stage renal disease (ESRD) in older diabetes patients without ESRD using a nationwide longitudinal population dataset from the National Health Information Database (NHID).

METHODOLOGY
We performed an observational retrospective cohort study including 267,156 older (≥65 years old) patients with diabetes and without ESRD from 2009 to 2018 based on the NHID. We divided the participants into eight groups based on their systolic blood pressure (SBP) and diastolic blood pressure (DBP). The primary composite outcome was ESRD.

RESULTS
During a median follow-up of 7.26 years, the incidence rate of ESRD was 2.03 per 1,000 person-years. In multivariable Cox proportional hazard modeling, the risk of the primary outcome was lowest in groups with an SBP of 100–119 mmHg and DBP of <80 mmHg. In a subgroup analysis according to the use of hypertension medication, there was a significant difference in DBP (p for interaction = 0.026) but no difference in SBP (p for interaction = 0.247). The risk of ESRD was the lowest in patients with an SBP of 110–129 mmHg taking hypertension medication and the highest in the group with an SBP of ≥160 mmHg.

CONCLUSION
Maintaining blood pressure at less than 120/80 mmHg might prevent progression to ESRD in older diabetes patients without cardiovascular disease.

KEYWORDS
hypertension, end-stage renal disease, systolic blood pressure, diastolic blood pressure, pulse pressure

PP-D-37

DIABETIC FOOT ULCER WITH TUBERCULOSIS INFECTION

https://doi.org/10.15605/jafes.038.AFES.106

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CASE
Diabetic foot ulcer (DFU) is one of the most common diabetes complications that increases morbidity, mortality and treatment costs while reducing the quality of life as well. We describe a case of a non-healing foot ulcer caused by Mycobacterium tuberculosis in a 52-year-old Indonesian male with known diabetes where the diagnosis was not suspected initially. Despite the administration of culture-guided antibiotics, the wound did not improve and always appeared wet. The patient eventually received anti-tuberculosis drugs, causing a dramatic improvement in the wound. Diabetes mellitus is indeed a disease that can alter the host's immunity and lead to increased susceptibility to several diseases, including tuberculosis. In TB-endemic countries, tuberculosis should be considered as a differential diagnosis in DFUs that do not improve despite culture-guided antibiotic treatment.

KEYWORDS
diabetic foot ulcer, non-healing wound, tuberculosis

PP-D-38

DIABETIC EMERGENCIES: COMBINED HYPEROSMOLAR HYPERGLYCEMIC STATE AND DIABETIC KETOACIDOSIS

https://doi.org/10.15605/jafes.038.AFES.107

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CASE
There is no currently accepted definition for patients presenting with a combination of hyperglycemic hyperosmolar state and diabetic ketoacidosis. An overlap of both entities is associated with greater mortality than isolated HHS or DKA. We describe a case of a 69-year-old Filipino male with type 2 diabetes and dementia who presented with mixed HHS and DKA. The patient was tachycardic and tachypneic with dry oral mucosa and poor skin turgor associated with metabolic acidosis, ketonuria, elevated osmolarity, and anion gap. Non-adherence to insulin with concomitant atypical antipsychotic medication use may have precipitated the condition. Fluid repletion, insulin therapy, and correction of hyperosmolarity and acidosis resulted in the recovery of the patient without complications. This case highlighted the importance of defining management strategies for mixed types of diabetic emergencies to prevent mortality and morbidity.

KEYWORDS
type 2 diabetes, diabetic ketoacidosis, hyperosmolar hyperglycemic state, overlap

PP-D-39

CLINICAL RESULTS OF LONG-TERM LOBEGLITAZONE ADD-ON THERAPY IN TYPE 2 DIABETES

https://doi.org/10.15605/jafes.038.AFES.108

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INTRODUCTION
Considering the pathophysiology of type 2 diabetes, a metformin and DPP-4 inhibitor combination is the usual initial treatment option to relieve insulin resistance and improve insulin secretory dysfunction. Adding thiazolidinedione (TZD) was the next best step for delaying the progression of diabetes by preserving pancreatic beta cell function compared to sulfonylurea before launching of SGLT2 inhibitor. Lobeglitazone is another TZD launched in this country in 2016. This study wanted to determine the long-term effects of lobeglitazone when added to metformin and DPP-4 inhibitor combination therapy.

METHODOLOGY
We enrolled 196 patients who failed to reach the HbA1c target below 7% with metformin and DPP-4 inhibitor and were given add-on lobeglitazone. We checked the change in HbA1c and insulin resistance index between the groups on lobeglitazone segregated into those who discontinued the medication (stop group), who were lost to follow-up (lost group), and those who continuously took the medication (maintain group). Other clinical characteristics were also compared between groups.

RESULTS
The mean age and duration of diabetes was 61.4 and 10.1 years, respectively. The mean BMI was 26.6. The fasting c-peptide level was 2.62ng/mL and HOMA-IR was 3.87. The mean HbA1c level before add-on therapy was 7.82 ± 0.67. Lobeglitazone was discontinued in 56 patients after a mean of 3.5 years due to poor glucose control, while 51 patients were lost to follow-up. Ninety patients continued the medication for up to 5 years. HbA1c level after six months of add-on Lobeglitazone improved by 0.78 ± 0.99, 0.99 ± 0.98, and 0.92 ± 0.63 in each group. Initial HbA1c improvement was lower in those who stopped taking it. Diabetes duration was not different among the groups, but fasting C-peptide level and improvement of HOMA-IR were higher in those who maintained Lobeglitazone.

CONCLUSION
Lobeglitazone as an add-on to metformin and DPP-4 inhibitor combination was effective. The fasting C-peptide level and improvement of HOMA-IR were higher in the maintain group.

KEYWORDS
lobeglitazone, long term, combination, HOMA-IR

PP-D-40

COMPARISON OF THE CHRONIC KIDNEY DISEASE PROGRESSION IN TYPE 2 DIABETES BETWEEN DIABETES CLINIC AND INTERNAL MEDICINE CLINIC

https://doi.org/10.15605/jafes.038.AFES.109

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INTRODUCTION
There was no study to compare the rate of chronic kidney disease progression among patients with diabetes consulting in diabetes and internal medicine clinics. The present study aimed to compare the rate of renal progression and the risk factors for chronic kidney disease among patients in the diabetes and internal medicine clinics to improve the management and delay progression of renal impairment.

METHODOLOGY
Data were collected in Rajavithi Hospital from January 1, 2017 to January 30, 2021 in the retrospective cohort study. The inclusion criteria were patients with type 2 diabetes mellitus and CKD stage 3a or 3b in diabetes and internal medicine clinics. Baseline characteristics included age, sex, body weight, body mass index, comorbidities, blood chemistries composed of estimated glomerular filtration rate (eGFR), microalbuminuria, low-density lipoprotein (LDL), fasting blood sugar (FBS) and hemoglobin A1c (HbA1c) as well as medication prescription comprising of angiotensin-converting enzyme inhibitors (ACEIs) or angiotensin receptor blockers (ARBs), sodium-glucose cotransporter type 2 (SGLT2) inhibitor, glucagon-like peptide-1 receptor agonist (GLP-1 RA) and statins. In addition, data from nephrology consultations were also collected. The primary outcomes were GFR change and CKD stage progression after two years of follow-up.

RESULTS
The number of patients who had CKD stage progression for two years who were treated in a diabetes clinic was significantly lower than those treated in an internal medicine clinic (37.1% [n = 124] vs. 52.7% [n = 184], p <0.001) and the mean GFR change after two years was significantly different (-6.30 ± 4.21 vs. -8.51 ± 5.14, p <0.001). After adjusting for covariates in repeated measurement analysis, it was found that the GFR decline and CKD stage progression was slower in patients treated in the diabetes clinic than in those treated in the internal medicine clinic but the difference was not statistically significant. Patients using ACEIs or ARBs, statin, SGLT2 inhibitors, and GLP-1 RA and seeing nephrologists were significantly higher in the diabetes clinic than internal medicine clinic.

CONCLUSION
No significant difference was observed in the change of GFR or CKD stage progression between patients treated in the diabetes clinic and those treated in the internal medicine clinic, during the two-year follow-up period of our study. Further studies with longer follow-up periods are needed to investigate the long-term treatment outcomes for renal impairment in these patient populations.

KEYWORDS
chronic kidney disease, diabetes clinic, Internal medicine clinic, type 2 diabetes mellitus

PP-D-41

A CASE OF NEWLY DIAGNOSED DIABETES PRESENTING WITH CHOREOATHETOSIS

https://doi.org/10.15605/jafes.038.AFES.110

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CASE

An 84-year-old hypertensive Filipino female presented with a one-day history of involuntary repetitive rotatory movements of the left upper extremity without sensorimotor deficits and no history of head trauma. Cranial MRI revealed no acute infarct, hemorrhage, or discrete mass lesion. Laboratory work-up revealed elevated capillary blood glucose of 454 mg/dL, HbA1c of 11.1%, and a normal TSH of 1.75 uIU/ml (0.55-4.78). She had CKD3B (eGFR 36 ml/min) with normal hemoglobin 13.3 g/dL (11.6-15.5), BUN 15 mg/dL (9-23), sodium 135 mmol/L (135-145), Mg 1.7 mg/dL (1.6-2.6) and iCa 1.16 mg/dL (1.09-1.30), and low potassium 3.4 mmol/L (3.5-5.1). Urinalysis showed pyuria with glucosuria but no ketonuria. She was managed with diabetic choreoathetosis, type 2 diabetes mellitus newly diagnosed, and a complicated urinary tract infection. She was started on insulin glargine 12 units once daily with rescue doses of insulin glulisine and sitagliptin 50 mg once daily. Hypokalemia was corrected. There was resolution of choreoathetosis with an improvement of glycemia (105-164 mg/dL). She was discharged with Metformin 500 mg and Sitagliptin 50 mg twice daily.

KEYWORDS

diabetes, hyperglycemia, choreoathetosis, movement disorder

PP-D-42

A RETROSPECTIVE STUDY OF THE RELATIONSHIP OF GLYCOSYLATED HEMOGLOBIN (HbA1c) AND CLINICAL OUTCOMES OF PATIENTS WITH HEART FAILURE IN A TERTIARY HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.111

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INTRODUCTION

Diabetes mellitus type 2 is a risk factor for the development of cardiovascular diseases, which includes acute coronary syndrome, cerebrovascular disease and heart failure. In addition, heart failure is considered an insulin-resistant state and is associated with an increased risk for the development of diabetes mellitus type 2. There are limited studies about heart failure in the Philippines. Studies examining the relationship between Glycosylated Hemoglobin (HbA1c) and outcomes in patients with established heart failure have been limited and have reported inconsistent results. Therefore, this study will be conducted to determine the relationship between HbA1c and clinical outcomes of hospitalized patients with heart failure – both with diabetes and those without diabetes in terms of mortality, length of hospital stay, ICU admissions, respiratory failure and intubation rates. These clinical outcomes will be correlated with the HbA1c level of patients with diabetes using quintiles: Q1: HbA1c less than 6.5%; Q2: 6.6%-6.9%; Q3: 7.0%-7.9%; Q4: 8.0%-8.9%, and Q5: HbA1c 9.0% and above.

METHODOLOGY

The study utilized a single-center retrospective analysis of patients admitted to a tertiary hospital from February 1, 2022 to February 28, 2023. Data were collected through chart review of the patients. Inclusion criteria were patients more than 18 years of age. Exclusion criteria were severe anemia (hemoglobin of 8.0 mg/dl and below) and chronic steroid use. The study included 283 patients with heart failure, of which 158 patients were patients with diabetes mellitus type 2 and 125 patients were patients without diabetes.

RESULTS

Results showed that the lowest mortality risk was seen among those patients with modest glucose control at quintile 3 (HbA1c of 7.0%-7.9%), while the highest mortality risk was seen in quintile 4 (HbA1c 8.0%-8.9%). Similarly, this quintile group had the lowest risk of ICU admission and respiratory failure.

CONCLUSION

Based on the results of this retrospective study, there appears to be an association between mortality and HbA1c, as those with modest glucose control had the lowest mortality risk. Furthermore, significantly elevated HbA1c was also associated with an increased risk of mortality. This study has also shown some mortality risk even among heart failure patients with good glycemic control.

KEYWORDS

diabetes mellitus, heart failure, HbA1c, cardiovascular diseases

PP-D-43

EUGLYCEMIC DIABETIC KETOACIDOSIS IN AN UNTREATED BREAST CANCER PATIENT WITH SPONTANEOUS TUMOR LYSIS SYNDROME

https://doi.org/10.15605/jafes.038.AFES.112

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CASE

A 55-year-old Filipino female with diabetes and newly diagnosed breast cancer presented with euglycemic diabetic ketoacidosis after developing spontaneous tumor lysis syndrome (TLS).

The patient was recently diagnosed with invasive ductal breast carcinoma. She has uncontrolled T2DM, maintained on insulin glargine, sitagliptin+metformin and dapagliflozin+metformin.

She presented with nausea, vomiting, anorexia, epigastric pain, generalized weakness and shortness of breath.

She was awake and oriented but tachycardic with Kussmaul breathing. She was clinically dry with no urine output. RBS was 93 mg/dL. ABG revealed metabolic acidosis with ketonemia; hence, she was treated as euglycemic DKA. Dextrose-containing intravenous fluids together with insulin drip were started. Further workup showed elevated LDH 385 U/L, hypocalcemia 1.11 mmol/L, hyperphosphatemia 22.7 mg/dL, hyperuricemia 18.5 mg/dL, hyperkalemia 6.2 mmol/L, elevated creatinine 13.10 mg/dL. Acute kidney injury secondary to TLS was considered; hence, combined daily sessions of hemodialysis/hemoperfusion were started. Repeat laboratory examinations showed significant improvement after the third session. Euglycemic DKA resolved after 24 hours. She was later offered anti-HER2-positive chemotherapy.

KEYWORDS

diabetes mellitus, spontaneous tumor lysis syndrome, diabetic Ketoacidosis, DKA

PP-D-44

PREVALENCE OF VITAMIN B12 DEFICIENCY IN PATIENTS WITH DIABETES ON LONG-TERM USE OF METFORMIN

https://doi.org/10.15605/jafes.038.AFES.113

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INTRODUCTION

Metformin is one of the first-line medications for diabetes. Previous studies found a correlation between long-term use of metformin and vitamin B12 deficiency. Thus, patients treated with metformin are recommended to undergo periodic testing for vitamin B12 levels by the American Diabetes Association. There are few studies about the prevalence of metformin-associated vitamin B12 deficiency in Thailand. This study aims to determine the prevalence and associated factors of vitamin B12 deficiency among patients with diabetes in one tertiary care Hospital in Thailand.

METHODOLOGY

This is a cross-sectional study. Data were collected from patients with diabetes from 31st March 2018 to 30th August 2020 at the outpatient department of Phramongkutklao Hospital. Twelve-hour fasting blood samples were tested for vitamin B12 level, and the cut-off point for diagnosis of B12 deficiency is less than 200 pg/mL. Factors associated with vitamin B12 deficiency were determined.

RESULTS

All 184 participants met the criteria, and almost 60% were male. The median duration of diabetes was 8 (4, 13) years. The average dose of metformin was 1352.7 ± 645.1 mg/day. Sixty-four patients took vitamin B supplements before the blood test for vitamin B12 levels. There were seven participants (3.8%) diagnosed with metformin-associated with vitamin B12 deficiency. Results showed vitamin B12-deficient patients took 2050 ± 755.5 mg of metformin per day compared to 1325.1 ± 627.1 mg/day (p 0.003) of metformin in those with normal vitamin B12 levels. In addition, age and metformin dosage were associated with vitamin B12 deficiency with adjusted odds ratio of 1.1 (1.0-1.3) and 1.1 (1.0-1.2), respectively.

CONCLUSION

The prevalence of metformin-associated vitamin B12 deficiency is less than 5% in Phramongkutklao Hospital. We suggest against routinely checking for vitamin B12 levels in patients with diabetes who are currently on metformin unless there are clinical indications of deficiency.

KEYWORDS

metformin, diabetes mellitus, vitamin B12 deficiency

PP-D-45

MICROVASCULAR COMPLICATION PROFILE IN T2DM PATIENTS AT SURABAYA TERTIARY HOSPITAL

https://doi.org/10.15605/jafes.038.AFES.114

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INTRODUCTION
Chronic hyperglycemia in diabetes leads to organ dysfunction arising directly or indirectly. The chronic complications of diabetes are traditionally classified as macro- or microvascular, depending on the underlying pathophysiology. Retinopathy, nephropathy and neuropathy are microvascular complications of diabetes that may initially present subclinically. This study aims to examine the prevalence of diabetes-related microvascular disease.

METHODOLOGY
This was a cross-sectional observational study performed at the diabetes outpatient clinic of Dr. Soetomo General Hospital, carried out from July to December 2019. All participants underwent complete history taking and physical examination. Glycosylated hemoglobin (HbA1c) levels, glomerular filtration rate estimation (eGFR), and urinalysis parameters were collected from all subjects.

RESULTS
This study involved 100 T2DM patients consisting of 68 (40%) males and 100 (60%) females with an average age of 54.8 years. The average duration of diabetes is 6.65 years. The proportion of patients with HbA1c greater than seven was 68% (115 patients), and the rest had HbA1c of less than 7% (53 patients). Fifty-two patients (31%) had a normal eGFR, and 116 (69%) patients had an eGFR less than 60 ml/min/1.73m^2. Proteinuria was found in 125 (74%) patients, whereas the remaining 43 patients (26%) had no proteinuria. Eighty subjects (48%) had diabetic retinopathy, with a PDR proportion of 19% (32 subjects).

CONCLUSION
The prevalence of microvascular complications, namely diabetic kidney disease and diabetic retinopathy, is still frequent in this study. This study also shows that most patients have not achieved optimal glycemic control.

KEYWORDS
diabetic retinopathy, diabetic kidney disease, proteinuria, type 2 diabetes mellitus

PP-D-46

ANION GAP NORMALIZATION IN MEDICAL WARDS: AN ADOLESCENT CASE OF NEW-ONSET TYPE 1 DIABETES WITH SEVERE KETOACIDOSIS

https://doi.org/10.15605/jafes.038.AFES.115

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CASE
Most children with severe diabetic ketoacidosis without alterations in mental status can be managed safely in the medical unit (JPEM2022;36:174). A 15-year-old female was brought to the emergency department of a tertiary center in Beijing with a chief complaint of abdominal pain and vomiting for one day. Arterial blood gas showed pH 6.988, HCO3- 2.8mmol/L, BE -29.8, pCO2 12.0 mmHg, Na+ 131 mEq/L, glucose 666 mg/dL; Cr 0.72 mg/dL, HbA1c 15.6%, urine ketone >7.8 mmol/L. Abdominal CT/US imaging found no infection/malignancy. She was diagnosed with acute kidney injury and severe DKA. She was started on saline infusion (4L for the first 24 h; NEJM2018;378:2275), continuous venous insulin infusion and 5% glucose solution for 12 hours. Repeat ABG showed pH 7.346, HCO3- 16.4, Na+ 137. As soon as she was initiated on insulin glargine ten units, she was transferred to a medical ward in Tokyo. Further examinations revealed FPG 241 mg/dL, FCPR 0.29 ng/mL, α-GAD 64 0U/mL. She was diagnosed with type 1 diabetes and was discharged with a basal-bolus regimen with a total daily dose of 23 units. No neurological impairment observed. AG normalization time was approximately eight hours in PICU setting and was <12 h, in this case, in medical ward.

KEYWORDS
diabetic ketoacidosis, anion gap normalization time, neurologic outcome, adolescent type 1 diabetes

PP-D-47

SUCCESSFUL USE OF SUBCUTANEOUS CONTINUOUS GLUCOSE MONITORING (CGM) IN A DIABETIC PATIENT WITH ACUTE CORONARY SYNDROME (ACS) UNDERGOING CORONARY ARTERY BYPASS GRAFT (CABG) SURGERY: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.116

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CASE

Type 2 diabetes mellitus patients undergoing CABG for multi-vessel coronary artery disease (CAD) have a prevalence of greater than 30%. Previous trials demonstrated that subcutaneous CGM is less reliable in cardiac surgeries related to electrocautery interference, signal loss, and hypoperfusion.

We present a case of a 59-year-old Filipino male, hypertensive, with poorly controlled diabetes, admitted for chest pain and was managed as ACS Non—ST-segment Elevation Myocardial Infarction (NSTEMI). The coronary angiogram showed CAD-3 vessel disease (99% occlusion left anterior descending artery). FreeStyle Libre (FSL) subcutaneous sensor was attached prior to CABG. Insulin intravenous infusion was started. CGM measured glucose levels completely without signal loss in the peri-operative phases within the target blood glucose in the ICU (90-180 mg/dl (time in the range [TIR]: within 100%, above 0%, below 0%). The patient was discharged and improved on the eighth postoperative day.

CGM subcutaneous devices are capable of intensive glucose monitoring during major cardiac surgery while reducing workload. Investigations with larger patient numbers are needed.

KEYWORDS

subcutaneous CGM, CABG, type 2 diabetes, peri-operative glucose, cardiac surgery

PP-D-48

HIGH STRESS HYPERGLYCEMIA RATIO VERSUS ABSOLUTE HYPERGLYCEMIA AS PREDICTOR OF POOR OUTCOME AMONG PATIENTS WITH TYPE 2 DIABETES MELLITUS AND MODERATE TO CRITICAL COVID-19 INFECTION ADMITTED AT UNIVERSITY OF SANTO TOMAS HOSPITAL FROM 2020-2021: A RETROSPECTIVE STUDY

https://doi.org/10.15605/jafes.038.AFES.117

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INTRODUCTION

Patients with diabetes are vulnerable and highly susceptible to contracting COVID-19. Stress Hyperglycemia Ratio (SHR) may provide prognostic information in hospitalized patients. It is debatable whether stress hyperglycemia directly leads to poor outcomes or is simply a marker of increased stress and inflammation. This study investigates whether high SHR is associated with poor clinical outcomes among patients with Type 2 Diabetes Mellitus (T2DM) and moderate to critical COVID-19 infection. Moreover, this study aims to compare high SHR versus absolute hyperglycemia as a predictor of poor outcomes.

METHODOLOGY

A retrospective chart review involving 146 patients with moderate to critical COVID-19 and T2DM was done from March 2020 to December 2021. To determine the SHR level associated with in-hospital mortality, the area under the receiver operating curve was initially conducted to categorize SHR into low and high levels.

RESULTS

The association of high SHR levels and absolute hyperglycemia with the outcomes (Hypoxemia SpO2 1.082) is associated with poorer outcomes, increased invasive mechanical ventilatory support likelihood, and increased mortality.

CONCLUSION

The results demonstrated that High SHR could be a better prognostic marker than absolute hyperglycemia.

KEYWORDS

stress hyperglycemia ratio, absolute hyperglycemia, type 2 diabetes mellitus, COVID-19, poor outcome

PP-D-49

PREVALENCE TREND AND ASSOCIATED FACTORS OF HYPERTRIGLYCERIDEMIA AND RESIDUAL CARDIOVASCULAR RISK IN PATIENTS WITH TYPE 2 DIABETES: NATIONWIDE STUDY

https://doi.org/10.15605/jafes.038.AFES.118

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INTRODUCTION
Triglyceride (TG) levels are associated with atherosclerotic cardiovascular disease (ASCVD) events even when low-density lipoprotein-cholesterol (LDL-C) levels are achieved. The study aimed to assess the prevalence trend of hypertriglyceridemia and residual cardiovascular risk among patients with type 2 diabetes in Thailand.

METHODOLOGY
Nationwide cross-sectional annual surveys in 2014, 2015, and 2018 were analyzed. Included patients with type 2 diabetes were ≥20 years old and had morning fasting TG values available. The proportion of participants who had hypertriglyceridemia was calculated according to statin or fibrate use, as well as in patients including those with LDL-C levels <100 milligrams per deciliter for identification of the residual cardiovascular risk. Odds ratio and logistic regression were utilized for analysis association.

RESULTS
A total of 92,291 participants met the study entry criteria and were included in the analysis. Mean ± SD TG levels were 175.6 ± 0.7, 169.5 ± 0.6, and 165.1 ± 0.6 mg/dL, consecutively. Of these, participants had TG levels ≥200 mg/dL and LDL-C <100 mg/dL, translating to a prevalence trend of 25.3%, 22.6%, and 21.8%. The trend of statin use was increasing from 59%, 62% to 69%, while fibrate use was lower from 14%, 11% to 7%. Statin use was an associated factor of hypertriglyceridemia and residual ASCVD risk with an adjusted odds ratio of 0.57 (0.54-0.60).

CONCLUSION
There was still a prevalence of hypertriglyceridemia and residual ASVCVD risk of about one-fourth to one-fifth in patients with diabetes who received continuous care in Thailand.

KEYWORDS
triglyceride, TG, atherosclerotic cardiovascular disease, ASCVD, low-density lipoprotein-cholesterol, LDL-C

MISCELLANEOUS

PP-M-01

A NEW CARE DELIVERY MODEL: DRUG REFILL SERVICES (DRS) IN A BUSY ENDOCRINE CLINIC OF A TERTIARY MEDICAL CENTRE

https://doi.org/10.15605/jafes.038.AFES.119

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INTRODUCTION
A stable and trustworthy healthcare practitioner-patient relationship is of critical importance in chronic care delivery. The quality of outpatient health care services in the public sector is often limited by physician manpower which might be enhanced by a new care delivery model—Drug Refill Services (DRS) involving pharmacists taking on an active role in patient care in the outpatient clinics.

METHODOLOGY
DRS was delivered via a doctor-pharmacist team-based co-care delivery model. Patients fulfilling the DRS inclusion criteria would see a doctor at a more prolonged duration as compared to the usual non-DRS routine, with added regular interim consultations by pharmacists. Thereby, the doctor would be allowed more time to spend on other new and/or complex cases.

RESULTS
Since the inception of the DRS program in January 2018, 200 patients with endocrine diseases fulfilling the inclusion criteria were recruited until December 2022. A total of 669 pharmacist-DRS consultations (658 DRS clinic attendances and 11 telephone interviews during the COVID-19 pandemic) were recorded. Follow-up durations by doctors became longer, from 28 weeks to 62 weeks on average. The total number of pharmacist consultations with drug-related problems identified was 119 (17.7%). The number of episodes when a doctor was consulted by a pharmacist during pharmacist consultations was 18 (2.7%). The DRS led to enhanced drug compliance, reduced frequency of doctor visits, and lengthened follow-up duration by doctors.

CONCLUSION
With the help of pharmacists, the DRS has successfully improved the quality of patient care and lengthened the doctors' visit follow-up duration of stable patients with diabetes, thereby releasing the capacity for doctors to see more new/complex patients with endocrine diseases every week in the busy outpatient diabetic clinic in the public sector.

KEYWORDS
diabetes, pharmacist, team-based, drug-refill, endocrinologist

PP-M-02

ELEVATED LP(A) IS A RISK FACTOR FOR PREMATURE ISCHAEMIC HEART DISEASE IN A MULTI-ETHNIC COHORT

https://doi.org/10.15605/jafes.038.AFES.120

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INTRODUCTION
Elevated plasma lipoprotein(a) [Lp(a)] is a common inherited condition independently associated with ischaemic heart disease (IHD). A Mendelian randomisation study recently suggested that elevated plasma Lp(a) concentrations confer a similar causal risk as heterozygous familial hypercholesterolemia for premature IHD.

METHODOLOGY
This study was a cross-sectional analysis aimed to assess whether elevated Lp(a) concentrations were associated with premature IHD in a South-East Asian cohort. Plasma Lp(a) levels were measured in consecutively recruited patients with IHD who were admitted to the hospital. Information on the age of diagnosis of IHD and the presence of comorbidities at the time of initial diagnosis of IHD were obtained from history taking and electronic medical records. Premature IHD was defined as IHD diagnosed <45 years of age for males and <50 years for females. The relationship was examined by regression model adjusting for age, gender, ethnicity, diabetes, hypertension, hyperlipidaemia and smoking.

RESULTS
Of the total of 521 patients included, 82.2% were male, 46.5% were newly diagnosed with IHD, and 9.5% had premature IHD. The median age was 63.4 years while the median age of onset of IHD was 59.2 years. Our multi-ethnic cohort included Chinese (49.3%), Malay (31.3%), Indian (12.7%) and other (6.7%) ethnicities. The Lp(a) distribution was positively skewed to the right for all ethnicities. At the 90th and 95th percentiles, Lp(a) concentrations were ~155 nmol/L and 195 nmol/L, respectively. Univariable and multivariable regression analysis identified Lp(a) ≥155 nmol/L to be associated with premature IHD.

CONCLUSION
Elevated Lp(a) was associated with premature onset of IHD in our multi-ethnic cohort. Lp(a) levels should be routinely measured in all individuals with established or at high risk for IHD. More studies are required to evaluate the Lp(a) threshold that would be clinically useful to identify individuals at risk for premature IHD.

KEYWORDS
hypercholesterolemia, Lp(a), ischaemic heart disease, premature IHD

PP-M-03

WHEN THE ENEMY IS NOT HIDING: A CASE OF SEVERE CUSHING'S SYNDROME SECONDARY TO ACTH-SECRETING NASAL PARAGANGLIOMA

https://doi.org/10.15605/jafes.038.AFES.121

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CASE
Ectopic secretion of ACTH is often an endocrine emergency because of its intensity of hypercortisolism. Only 5% of paragangliomas of the head and neck region are hormonally active. A 35-year-old Malaysian female developed a generalized seizure. She had Cushingoid features with profound hypokalemia and hyperglycemia. She had elevated levels of morning cortisol (12,136 nmol/L, >19 times elevated) and 24-hour urine cortisol (71,442.6 nmol/day, >60 times elevated), unsuppressed cortisol following overnight dexamethasone test, and elevated ACTH (49.9 pmol/L). Imaging studies revealed a locally invasive sinonasal tumour extending into the cranium with bilateral adrenal gland hyperplasia. Ketoconazole and metyrapone combination therapy failed to control hypercortisolemia. Etomidate infusion was then started preoperatively in preparation for bilateral adrenalectomy. Tumour resection was performed successfully via endoscopic and transcranial approaches. Pathological examination confirmed neuroendocrine tumour cells of low Ki-67 proliferative index with positive staining for ACTH.

KEYWORDS
severe Cushing's syndrome, ectopic ACTH secretion, head and neck paraganglioma

PP-M-04

BILATERAL FEMORAL FRACTURE IN A YOUNG FILIPINO FEMALE WITH PROBABLE AUTOIMMUNE POLYENDOCRINE SYNDROME TYPE 4

https://doi.org/10.15605/jafes.038.AFES.122

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CASE
Autoimmune polyendocrine syndrome (APS) type 4 is a clustering of at least two or more endocrine diseases which do not fall into other APS categories. A 35-year-old Filipino female with a height of 127 cm sustained bilateral distal femoral pathologic fractures from a low-impact fall. She underwent bilateral minimally invasive plate osteosynthesis. Secondary osteoporosis was attributed to chronic steroid use (prednisone 10 mg for 24 months) for rheumatoid arthritis, premature ovarian failure at 20 years of age without hormone replacement therapy and persistently elevated TSH amid high-dose levothyroxine (4.25 µg/kg/day). A consideration of celiac disease was also made. APS is a rare complex syndrome which may lead to various complications. The presence of hypogonadism, hypothyroidism, celiac disease, rheumatoid arthritis, inadequately treated hypothyroidism and chronic steroid use further increased the risk for secondary osteoporosis. Early screening and treatment would have prevented the occurrence of pathologic fractures.

KEYWORDS
autoimmune polyendocrine syndrome, hypothyroidism, pathologic fracture, premature ovarian failure, primary hypothyroidism

PP-M-05

METASTATIC GLUCAGONOMA PRESENTING AS NECROLYTIC MIGRATORY ERYTHEMA: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.123

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CASE
A 68-year-old Filipino male presented with a two-month history of generalized pruritic erythematous plaques associated with epigastric pain, progressive weight loss and angular cheilosis. Skin biopsy revealed necrolytic migratory erythema. Abdominal CT imaging showed a 2.0 x 2.5 x 3.7 cm pancreatic tail mass with hepatic nodules suggestive of metastasis. Other workups showed anemia, elevated HbA1c, and normal liver function tests. Plasma glucagon was >2.5 times the upper limit of normal. He was diagnosed with metastatic glucagonoma and given octreotide LAR 30 mg monthly. Surgery was not done due to the presence of liver metastasis and poor nutritional status. After 14 months of octreotide, improvement of skin lesions and no progression of the pancreatic tail mass on CT imaging were noted. Prompt recognition of necrolytic migratory erythema allows earlier diagnosis of glucagonoma. In patients with unresectable disease, somatostatin analogs may be used to delay progression.

KEYWORDS
glucagonoma, neuroendocrine tumor, octreotide

PP-M-06

CASE REPORT ON PARATHYROID CARCINOMA: THE RISK OF LOCO-REGIONAL DISEASE PROGRESSION AND THE ROLE OF RADIATION AND MEDICAL THERAPY POST-OPERATIVELY

https://doi.org/10.15605/jafes.038.AFES.124

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CASE
Parathyroid carcinoma is an extremely rare endocrine neoplasm, accounting for less than 1% of patients with primary hyperparathyroidism. The infrequency of this disease poses a challenge to the clinician as to the appropriate management after surgical resection. We present the case of a 63-year-old Filipino female with primary hyperparathyroidism, multinodular goiter and chronic kidney disease stage 4 who underwent total thyroidectomy with excision of a parathyroid mass. Pathological diagnosis revealed a 3-cm and 2.8-cm multifocal GATA3-positive parathyroid carcinoma with capsule invasion. Adjuvant radiation therapy was offered but the patient opted for observation and close monitoring. Eight months postoperatively, her calcium and intact parathyroid hormone levels were normal without the need for bisphosphonates, calcimimetics or denosumab. In this report, we review the risk for loco-regional disease progression and the role of radiation and medical therapy in the post-operative care of patients with parathyroid carcinoma.

KEYWORDS
parathyroid carcinoma, radiation therapy, loco-regional disease progression, calcimimetics

PP-M-07

CLINICAL FEATURES, MANAGEMENT AND OUTCOMES OF PATIENTS WITH INSULINOMA: A 14-YEAR SINGLE-CENTER EXPERIENCE IN THE PHILIPPINES

https://doi.org/10.15605/jafes.038.AFES.125

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INTRODUCTION
This study determined the clinical, biochemical, imaging and histopathologic features and subsequent management and outcomes of patients with insulinoma in a tertiary hospital within 14 years.

METHODOLOGY
In a retrospective review of medical records from 2007 to 2021, 14 patients diagnosed with insulinoma were identified and their pertinent clinical profiles, management, and outcomes were retrieved. Vital status was determined by phone call using the provided contact information after obtaining verbal consent. Descriptive statistics were performed to summarize data.

RESULTS

Among the 14 patients included, the majority were females (71.43%) with a median age of onset at 48.14±14.7 years. Neuroglycopenic symptoms were the more common presentation rather than adrenergic symptoms. Fasting hypoglycemia was unanimously present. The median onset of hypoglycemia during a 72-hour fast was at 5 hours (IQR 9.06). Median serum insulin [41.8 μIU/mL (IQR 43.57)] was inappropriately normal in the presence of hypoglycemia. Median C-peptide was elevated [6.68 ng/mL (IQR 16.71)]. The use of any combination of diagnostic tests, such as abdominal CT scan, MRI, endoscopic ultrasound and intra-arterial calcium stimulation localized 92.9% of the tumors preoperatively. Intraoperatively, tumors were more commonly seen in the head of the pancreas (53.85%), with decreasing frequency in the body (23.08%), neck (15.38%) and tail (7.69%). Most tumors are solitary (85.71%), with a mean tumor largest dimension of 2.04 ± 0.7 cm. They are commonly benign (92.31%). Only one patient had multiple metastatic masses at presentation. Of the five specimens sent for Ki-67 staining, four were found to be moderate- to high-grade well-differentiated neuroendocrine tumors. All except one underwent surgery, due to the inability to localize the tumor preoperatively. Among the patients with known vital status (eight out of 14), six were alive without recurrence, while two had died related to insulinoma.

CONCLUSION

Although insulinoma remains a rare disease, it may present relatively more frequently in specialized centers. While some clinical characteristics were comparable to other cohorts, there were some distinctive features in our setting.

KEYWORDS

insulinoma, pancreatic neoplasms

PP-M-08

PROBLEM DIAGNOSIS AND MANAGEMENT OF BUERGER'S DISEASE WITH COMPLICATIONS OF DISUSE ATROPHY

https://doi.org/10.15605/jafes.038.AFES.126

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CASE

Thromboangiitis obliterans or Buerger's disease is a non-atherosclerotic segmental inflammatory disease that affects small- and medium-sized arteries and veins. Cigarette consumption or exposure is still considered the main cause of its occurrence and progression. There is no consensus or specific markers that can be used in the diagnosis of this disease. The diagnosis is generally made based on clinical criteria and by exclusion of other causes of vascular occlusion. Management includes conservative, interventional, and surgical therapy. Effective treatment modalities for Buerger's disease are still limited. A 36-year-old female presented with a one-year history of blackish wounds on her feet. The patient was given medical and surgical therapy with fairly good responses. Buerger's disease can cause disability due to blood vessel occlusion, resulting in tissue damage requiring amputation. This contributes to the immense financial and social burden of the condition.

KEYWORDS

Buerger's disease, diagnosis, management, disuse atrophy

PP-M-09

FAHR'S DISEASE: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.127

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CASE

Fahr's Disease is a rare degenerative disorder characterized clinically by multiple neurological and psychiatric symptoms including cognitive impairment, movement disorders and seizure. It is due to abnormal deposition of calcium in areas of the brain parenchyma that control movement, including the basal ganglia and the cerebral cortex. It is a rare disorder with a documented prevalence of <1/1,000,000, with a higher incidence reported among males and a typical age of onset in the 3rd and 5th decade of life. We present the case of two females, age 19 and 43 years, who presented with generalized tonic-clonic seizures. Plain cranial CT scans both revealed bilateral calcifications in the brain parenchyma, including basal ganglia, corona radiata, gray-white matter junction and cerebellar folia. There were no masses, infarcts or hemorrhages. The patients were treated with calcium, calcitriol and anti-convulsant and advised regular follow-up.

KEYWORDS

Fahr's disease, seizure, hypocalcemia, calcium

PP-M-10

HYPOGLYCEMIA RESOLUTION AFTER A BIOCHEMICALLY CONFIRMED, HISTOLOGY-NEGATIVE PANCREATIC INSULINOMA SURGERY: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.128

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CASE
A 50-year-old 80-kg Filipino female presented with blank stares and hypoglycemia resolving after intravenous glucose infusion. A 72-hour fast revealed hypoglycemia (43.90 mg/dL) and elevated serum C-peptide (5.90 ng/mL) and serum insulin (60.86 μIU/mL) after 14 hours, confirming hyperinsulinemic hypoglycemia. Abdominal CT showed a 1.4 x 1.3 x 1.3 cm exophytic, isodense nodule along the inferior margin of the pancreatic body. Endoscopic ultrasound also revealed a 1.0 x 1.7 cm hypoechoic pancreatic nodule. She underwent a distal pancreatectomy. Investigation of unresolved hypoglycemia revealed a persistent pancreatic nodule, prompting extended pancreatectomy with intraoperative ultrasound guidance. Post-operatively, hypoglycemia no longer recurred. Histopathology revealed benign pancreatic tissue with fat necrosis, hemorrhage and microcalcifications. Six months postoperatively, she had 21% weight loss. No pancreatic nodule was visualized on repeat CT. The negative histopathologic findings may be due to the early stages of insulinoma or the beginning of hyperplasia. Post-operative weight loss may indicate successful insulinoma resection.

KEYWORDS
insulinoma, hypoglycemia, hyperinsulinemia, 72-hour fast

PP-M-11

EXPERIENCE OF SEVERE HYPERTRIGLYCERIDEMIA MANAGEMENT IN A TERTIARY CENTRE: A CASE SERIES

https://doi.org/10.15605/jafes.038.AFES.129

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CASE
Severe hypertriglyceridemia is defined by levels typically >10 mmol/L. It is often caused by uncontrolled diabetes mellitus, obesity, metabolic syndrome, chronic liver disease, excessive alcohol consumption, and genetic disorders. It is a risk factor for coronary artery disease and acute pancreatitis. We report successful inpatient reduction of severe hypertriglyceridemia in five individuals with intravenous insulin infusion, lipid-lowering oral agents and restriction of dietary carbohydrate and fat intake. More than half of them had underlying diabetes mellitus and triglyceride levels >30 mmol/L on admission. Insulin treatment was given for at least seven days. A lower rate of 0.05 unit/kg per hour insulin infusion and dextrose infusion was initiated for the patient without diabetes. None of them had severe hypoglycemia reported during their stay. They were discharged with triglyceride levels less than 10 mmol/L and subsequently followed up in our centre.

KEYWORDS
diabetes mellitus, severe hypertriglyceridemia, insulin infusion, inpatient

PP-M-12

ARTERIAL STIFFNESS DETERMINED BY CARDIO-ANKLE VASCULAR INDEX IN PATIENTS WITH FAMILIAL HYPERCHOLESTEROLEMIA

https://doi.org/10.15605/jafes.038.AFES.130

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INTRODUCTION

Measurement of arterial stiffness is recommended for enhancing cardiovascular risk stratification, especially in high CV risk patients with familial hypercholesterolemia (FH). Therefore, early detection of arterial stiffness in FH patients with no established atherosclerotic cardiovascular disease is a rationale strategy. Cardio-ankle vascular index (CAVI) is generally used as a tool to measure arterial stiffness. However, there are few studies about arterial stiffness measurement in patients with FH. This study aims to compare arterial stiffness between patients with dyslipidemia with and without FH.

METHODOLOGY

A cross-sectional study was performed between 2019 to 2021 in Phramongkutklao Hospital. Patients with dyslipidemia were recruited. The Dutch Lipid Clinic Network (DLCN) criteria was used for the diagnosis and classification of participants with FH and control (non-FH). Arterial stiffness was determined by CAVI in all participants. A correlation between CAVI and hypercholesterolemia was performed. Factors associated with abnormal arterial stiffness (CAVI >8.0) were determined.

RESULTS

All 55 participants completed the study. Baseline characteristics were comparable between the FH and non-FH groups, except for mean low-density lipoprotein-cholesterol (220.1 ± 45.6 and 147.85 ± 50.1, respectively) (p <0.001). Based on DLCN criteria, there were no definite cases, 5 (9.09%) probable, 21 (38.18%) possible, 26 (47.28%) unlikely and 3 (5.45%) as others. Mean ± SD of CAVI in FH and control groups were 7.5 ± 1.7, and 7.3 ± 1.8, respectively (p = 0.819). The correlation between LDL-cholesterol level and CAVI was also not significant (r = 0.24, p = 0.12). Factors associated with abnormal arterial stiffness were age and hypertension,

CONCLUSION

Arterial stiffness, determined by CAVI was not found to enhance CV risk in patients with possible or probable FH in this study. Factors associated with abnormal arterial stiffness were age and hypertension.

KEYWORDS

arterial stiffness, cardio-ankle vascular index, familial hypercholesterolemia

PP-M-13

MULTIPLE ENDOCRINE NEOPLASIA TYPE 2A (MEN 2A) AMONG THREE FILIPINO SIBLINGS: A CASE SERIES

https://doi.org/10.15605/jafes.038.AFES.131

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CASE

MEN2A is a rare familial cancer syndrome caused by *RET* proto-oncogene mutations with autosomal dominant inheritance. We describe the cases of three Filipino female siblings. The eldest, 26 years old, was diagnosed with medullary thyroid cancer (MTC) stage II after total thyroidectomy. Surveillance showed increasing serum calcitonin and a right adrenal incidentaloma. Although biochemical tests were normal, histopathologic examination post-adrenalectomy revealed pheochromocytoma. The second, 25 years old, was diagnosed with MTC stage IVA and pheochromocytoma after total thyroidectomy and unilateral adrenalectomy. The youngest, 20 years old, ran an aggressive course. She had MTC Stage IVC and bilateral pheochromocytoma and underwent total thyroidectomy with modified radical neck dissection and bilateral adrenalectomy. Her calcitonin levels remain >1000 pg/mL, prompting consideration of systemic therapies. Genetic analysis of all three revealed *RET* mutation (p.Cys634Arg). *RET* mutation analysis for MEN2 suspected patients should be included to facilitate family screening and prevent disease-related morbidity.

KEYWORDS

multiple endocrine neoplasia, MEN2, adrenal, medullary thyroid cancer, pheochromocytoma

OBESITY

PP-O-01

EVALUATION OF STATIN AND OTHER LIPID-LOWERING THERAPIES AMONG PATIENTS WITH ISCHAEMIC HEART DISEASE ADMITTED TO THE HOSPITAL: TWO-YEAR FOLLOW-UP STUDY

https://doi.org/10.15605/jafes.038.AFES.132

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INTRODUCTION

American and European cardiovascular guidelines recommend high-intensity statin therapy in patients with ischemic heart disease (IHD) in the absence of statin intolerance. Combination therapy with ezetimibe and/or proprotein convertase subtilisin/kexin type 9 (PCSK9) inhibitors should be considered in patients with suboptimal low-density lipoprotein-cholesterol (LDL-C). It remains unclear whether the current prescription of lipid-lowering therapies (LLT) in the real-world setting adheres to these recommendations. Hence, we sought to assess the prescription pattern of LLT in patients with IHD and their LDL-C goal attainment rates.

METHODOLOGY

Five hundred fifty-five patients with IHD who were admitted to the hospital were recruited. Their LLT prescriptions and corresponding LDL-C levels at baseline, and at 6, 12 and 24 months were assessed.

RESULTS

Our study participants were mostly males (82.3%), of Chinese ethnicity (48.5%) and newly diagnosed with IHD (47%). High-intensity statin prescription increased from 45.4% at hospital admission to 87.5% at discharge and remained similarly high at 80-84% at 6, 12 and 24 months. Other LLTs were concomitantly prescribed to 19.3% of patients at discharge and increased to 44.5% at 24 months. Ezetimibe was the most common second-line LLT prescribed (40.8%, n=187) followed by inclisiran (n = 5) and anti-PCSK9 monoclonal antibodies (n = 4). However, the LDL-C goal of <1.8 mmol/L was achieved in only 44% of patients at 6 and 12 months, and 47.2% at 24 months. When LDC-goal of <1.4 mmol/L was adopted, only 21-22% of patients achieved goal LDL-C targets at 6, 12 and 24 months. The highest percentage of patients achieving LDL-C <1.4 mmol/L was at 24 months (22%).

CONCLUSION

LDL-C goals were not achieved in more than half of our study cohort despite high prescription rates of high-intensity statin. The second and third line LLT are under-prescribed. More efforts should be made to improve LDL-C control in these high-risk cohorts of patients.

KEYWORDS

statin, lipid-lowering therapy, cardiovascular disease, low-density lipoprotein

PP-O-02

ASSOCIATION OF FOOD INTAKE WITH METABOLIC SYNDROME AMONG FILIPINO ADULTS IN THE 8TH PHILIPPINE NATIONAL NUTRITION AND HEALTH SURVEY (NNHeS)

https://doi.org/10.15605/jafes.038.AFES.133

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INTRODUCTION

The prevalence of metabolic syndrome among Filipino adults was found to be 12-15%. Diet has been one of the identified modifiable risk factors targeted to prevent disease or complications. The association of each macronutrient component with metabolic syndrome remains unclear. There is no Philippine data on macronutrient intake and metabolic syndrome. The primary objective of this study is to determine the association of food intake with metabolic syndrome among Filipino adults.

METHODOLOGY

This study utilized a cross-sectional analytic design. Data was obtained from the results of the 8th Philippine NNHeS done in 2013 from the Public Use Files of the Food and Nutrition Research Institute. Filipino adults from different regions of the Philippines who consented to participate in the interview, anthropometrics, blood collection for clinical data, and other measurements were included in this study.

RESULTS

There were 8,056 adults included in the 8th NNHeS. The prevalence of metabolic syndrome was 32%. Multivariate analysis showed that increased total protein intake (OR 1.391), and daily consumption of meat and poultry (OR 1.397), and condiments and spices (OR 1.329) were associated with increased risks for metabolic syndrome. Decreased vegetable intake was also associated with an increased risk for metabolic syndrome, as well as higher socioeconomic status, female sex, and old age.

CONCLUSION
Increased total protein intake, daily consumption of meat, poultry, condiments and spices, and decreased vegetable intake are associated with an increased risk for metabolic syndrome.

KEYWORDS
metabolic syndrome, food intake

PP-O-03

FETAL ABDOMINAL OBESITY AND ADVERSE PERINATAL OUTCOMES IN OLDER AND OBESE PREGNANT WOMEN WITH NORMAL GLUCOSE TOLERANCE

https://doi.org/10.15605/jafes.038.AFES.134

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INTRODUCTION
We previously observed an increased prevalence of fetal abdominal obesity (FAO) in older with/without obese women with gestational diabetes mellitus. We investigated whether the increased risk of FAO was also present in older with/without obese women with normal glucose tolerance (NGT).

METHODOLOGY
We retrospectively reviewed 6,721 individuals with NGT, diagnosed by 50-g glucose challenge test (GCT) <140 mg/dL or normal subsequent 100-g oral glucose tolerance test if GCT ≥140 mg/dL. FAO was investigated ultrasonographically using ratios of gestational age with abdominal circumference, biparietal diameter, and femur length. The NGT subjects were divided into group 1 (age<35 years and pre-pregnant body mass index (BMI) <25 kg/m^2), group 2 (age<35 & BMI≥25), group 3 (age ≥35 and BMI <25), and group 4 (age ≥35 and ≥25).

RESULTS
FAO ratios of groups 3 and 4 were significantly higher than group 1. Relative to group 1, the adjusted odds ratio for FAO in group 3 was 1.42 (95% CI; 1.17-1.73, p <0.05), and in group 4 was 1.90 (1.15-3.15, p <0.05). The odds ratio for large gestational age (LGA) at birth, relative to group 1, were 3.06 (1.96-4.77, p <0.005), 1.47 (1.16-1.86, p <0.005), and 2.82 (1.64-4.84, p <0.005) in group 2, 3 and 4, respectively. The odds ratio for primary cesarean delivery in group 3 was 1.33 (1.18-1.51, p <0.005).

CONCLUSION
Increased risk of FAO at 24-28 GW and the ensuing adverse perinatal outcomes of LGA and primary cesarean delivery were observed in the older with/without obesity but not in the younger/non-obese NGT women.

KEYWORDS
normal glucose tolerance, fetal abdominal obesity, macrosomia, pregnancy, high-risk

PP-O-04

WEIGHT BIAS AMONG MEDICAL STUDENTS IN A SOUTHEAST ASIAN MEDICAL SCHOOL

https://doi.org/10.15605/jafes.038.AFES.135

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INTRODUCTION
Weight bias is a preconceived negative notion towards individuals who are overweight and obese. These biases can be explicit, which are negative attitudes consciously held and outwardly expressed; or implicit, which may be covert and subconscious. Both implicit and explicit weight biases have been documented to be prevalent among medical students in multiple countries and may potentially persist into their professional careers and compromise healthcare delivery to patients who are overweight and obese.

METHODOLOGY
In this cross-sectional study carried out from July to August 2023, undergraduate medical students at various stages of training from the University of Malaya were recruited using systematic stratified sampling and invited to complete a questionnaire. After demographic data including age, race, sex, body mass index, and stage of training were collected, they were required to complete an online Implicit Association Test, a computerized image-word association task to elicit any implicit weight bias. This was followed by a questionnaire comprising the Attitudes Towards Obese Persons (ATOP) scale and Anti-fat Attitudes (AFA) questionnaire, to document their explicit weight biases. The ATOP scale is a 20-item Likert rating scale, which requires respondents to indicate the extent to which they agree or disagree with statements regarding people who are overweight/obese, with a total score ranging from 0 to 120. Higher ATOP scores reflect more positive attitudes towards individuals with obesity. The AFA questionnaire

consists of 3 subscales, dislike, fear of fat, and willpower, and also uses a Likert-type response format from 0 to 9. Higher scores indicate stronger anti-fat attitudes.

RESULTS

A total of 200 medical students from pre-clinical and clinical years completed the survey. The respondents were predominantly female (58.40%), with a median age of 22.0 years. A majority (72.5%) of respondents had an implicit preference towards thin people. Overall, students identifying as female held more positive attitudes (77.56 ± 13.37) compared to students identifying as male (73.27 ± 13.61) (p <0.05) on the ATOP scale. There was a positive correlation (R = 0.214) between Body Mass Index (BMI) and more positive attitudes towards obese persons (p <0.05). Overall, the respondents scored highest for AFA-Fear (11.79 ± 8.82) followed by AFA-Willpower (10.08 ± 5.61) and AFA-Dislike (9.50 ± 8.82). There was a positive correlation between BMI and AFA-Fear scores (p <0.01). There were no significant gender differences in the AFA scores. Age, ethnicity, stage of medical training, and hometown of origin were not significantly associated with implicit or explicit biases.

CONCLUSION

The study demonstrates the high prevalence of implicit weight bias and the extent of explicit weight biases among medical students at the University of Malaya. BMI and gender were important factors associated with these biases. The phenomenon of weight bias must be highlighted in medical education to prevent it from negatively affecting healthcare delivery in the future.

KEYWORDS

obesity, overweight, weight bias, stigma, medical students

PP-O-05

PICWICKIAN SYNDROME, A RARE CASE AND DREADFUL COMPLICATION IN MORBID OBESITY: A CASE SERIES

https://doi.org/10.15605/jafes.038.AFES.136

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CASE

Picwickian Syndrome or Obesity hypoventilation syndrome (OHS) is a respiratory consequence of morbid obesity that is characterized by alveolar hypoventilation during sleep and wakefulness. The disorder involves a complex interaction between impaired respiratory mechanics, ventilatory drive, and sleep-disordered breathing. The first case: A 65-year-old female, from West Java Indonesia, with a BMI of 62.5 kg/m^2, presented to the hospital with unconsciousness and respiratory distress. On admission, she was noted to have multiorgan dysfunction including respiratory failure and renal failure. She was diagnosed with Sepsis et causa Community-Acquired Pneumonia with MODS encephalopathy, morbid obesity with Picwickian syndrome, and tuberculosis. The second case: A 27-year-old male, from West Java Indonesia, with a BMI of 50.6 kg/m^2. He came to the hospital with respiratory distress. He was diagnosed with Sepsis due to hospital-acquired pneumonia with MODS, respiratory failure, encephalopathy, morbid obesity with Pickwickian syndrome, hypokalemia, and exit site infection.

KEYWORDS

Pickwickian syndrome, obesity hypoventilation syndrome, morbid obesity, obese, body mass index

PP-O-06

CORRELATION OF VISCERAL ADIPOSITY INDEX AND TRIGLYCERIDE INDEX WITH TRADITIONAL RISK FACTORS OF CARDIOVASCULAR DISEASE AMONG URBAN POPULATIONS: A CROSS-SECTIONAL STUDY

https://doi.org/10.15605/jafes.038.AFES.137

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INTRODUCTION

Metabolic syndrome (MetS) and its components are important risk factors for cardiovascular diseases (CVDs). The early detection of individuals at risk of developing metabolic syndrome can prevent the development of CVD. The visceral adiposity index (VAI) is a non-imaging marker of visceral adiposity and is reportedly beneficial in predicting MetS and CVDs. The triglyceride-glucose (TyG) index has been identified as a reliable alternative biomarker of insulin resistance (IR) and is associated with the development of cardiovascular disease (CVD). This study aimed to determine the correlation of VAI and TyG index with risk factors of CVD and MetS.

METHODOLOGY

Subjects were taken from Lipid and Diabetes Study data in Makassar, South of Sulawesi, aged 18-70 y.o that met inclusion criteria. Anthropometric measurements were recorded. Triglyceride, HDL-C, LDL-C, total cholesterol, and FPG were examined. Fasting plasma glucose ≥100 mg/dl is defined as prediabetes, while FPG ≥126 mg/dl

is diagnosed as diabetes. The NCEP-ATP III guidelines modified for Asian was used for diagnosing MetS. The visceral adiposity index is divided into quartiles and the 4th quartile is considered high-risk. TyG index ≥4.49 was considered as high risk. Chi-square tests were used to assess the association of VAI and TyG with risk factors of CVD and MetS, p <0.05 defined as statistical significance.

RESULTS

A total of 2737 subjects were included in this study, consisting of 741 (27.1%) males and 1996 (72.9%) females with a mean age of 45.07 ± 12.15 years old. There was a statistically significant relationship between TyG index and age >45 yo (p = 0.000), smoking status (p = 0.001), central obesity (p = 0.000), hypertension (p = 0.000) and diabetes (p = 0.000). The number of MetS is increased in the high TyG index group with OR 8.416 (95% CI: 6.344 -11.164, p = 0.000). Visceral adiposity index was correlated with age >45 yo (p = 0.000), central obesity (p = 0.000), hypertension (p = 0.003), and diabetes (p = 0.000). Metabolic syndrome is increased in the highest VAI group with OR 13.715 (95% CI:11.133-16.896, p = 0.000).

CONCLUSION

The VAI and TyG index showed a positive correlation with traditional risk factors of CVD and MetS, indicating that VAI and TyG index might be useful as screening tools for MetS.

KEYWORDS

visceral adiposity index, triglyceride-glucose index, risk factors cardiovascular disease, metabolic syndrome

PP-O-07

PERCEPTIONS, ATTITUDES, AND POTENTIAL BARRIERS TO EFFECTIVE OBESITY CARE IN THAILAND: A SURVEY OF PEOPLE WITH OBESITY AND HEALTH CARE PROFESSIONALS FROM THE ACTION APAC STUDY

https://doi.org/10.15605/jafes.038.AFES.138

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INTRODUCTION

Obesity remains largely underdiagnosed and undertreated globally. The ACTION (Awareness, Care, and Treatment in Obesity Management Asia Pacific) study identified obesity perceptions among people with obesity (PwO) and health care professionals (HCPs) in nine countries. Here, we report the findings from Thailand.

METHODOLOGY

This was an online survey of eligible PwO (≥18-year-old; body mass index:≥25 kg/m^2) and HCPs (≥2 years in practice) between 14 April 2022 and 23 May 2022.

RESULTS

A total of 1,503 PwO and 200 HCPs completed the survey. One in three PwO perceived themselves as normal/overweight. PwO wanted to lose 24% of their current weight, the mean frequency of weight loss (WL) attempts was 4, and 57% regained weight after maintaining it for ≥6 months. Most PwO (65%) and HCPs (90%) recognized obesity as a chronic disease. However, 51% of PwO assumed self-responsibility and less than half (48%) were motivated to lose weight. PwO were most motivated to lose weight by a desire to feel better physically (31%). Only 49% discussed weight with their HCPs in the past 5 years, and 34% cited assuming self-responsibility for WL as the top reason for not discussing it. Nearly half (48%) of PwO were motivated to lose weight and cited a lack of exercise (63%) as a major WL barrier. Notably, 48% of PwO and 69% of HCPs agreed that a lack of understanding of obesity was a barrier. Most (71%) PwO preferred to lose weight by themselves rather than taking medications. Although 70% of HCPs were likely to review the WL medications with their PwO, only 11% recommended them. Both were concerned about side effects (PwO:68%; HCP:60%) and the long-term safety of anti-obesity medications (PwO:67%; HCP: 58%). In addition, cost was a major barrier for both (PwO:62%; HCP:68%) to consider WL medications.

CONCLUSION

There were gaps and misperceptions of obesity disease understanding and management among PwO and HCPs in Thailand. This underscores the need to improve obesity education and encourage effective obesity management and counseling by HCPs.

KEYWORDS

obesity, perception, attitude, weight loss, Thailand

PITUITARY

PP-P-01

MISLEADING DIAGNOSIS OF SECONDARY ADRENAL INSUFFICIENCY IN A THAI PATIENT WITH RATHKE'S CLEFT CYST: A DIAGNOSTIC CHALLENGE IN PITUITARY INCIDENTALOMA

https://doi.org/10.15605/jafes.038.AFES.139

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CASE
Rathke's cleft cysts (RCCs) are common sellar/suprasellar tumors with variable clinical presentations. We report a 56-year-old Thai male who initially received an incorrect diagnosis of secondary adrenal insufficiency despite presenting with weight loss and low basal serum cortisol.

The patient complained of 8 kg weight loss, insomnia, and decreased sexual desire. Morning cortisol was 3.7 μg/dL. The patient had a prior diagnosis of adrenal insufficiency. At our hospital, serum cortisol was 3.0 μg/dL., ACTH was 10.3 pg/mL and other pituitary hormones were normal. The pituitary MRI revealed a small pituitary lesion consistent with Rathke's cleft cyst. ACTH stimulation test confirmed normal adrenal function.

Psychological treatment for insomnia was initiated, and the patient improved without steroids. Follow-up tests remained unremarkable.

It is crucial to conduct thorough clinical assessments and hormonal tests to avoid erroneous diagnoses of symptomatic Rathke's cleft cysts in patients with reduced basal cortisol levels.

KEYWORDS
secondary adrenal insufficiency, Rathke's cleft cyst, insomnia, stress, pituitary mass

PP-P-02

SHEEHAN SYNDROME MANIFESTING AS MIXED ADRENAL AND MYXEDEMA CRISIS: A RARE CASE

https://doi.org/10.15605/jafes.038.AFES.140

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CASE
Sheehan syndrome rarely arises as a complication of postpartum hemorrhage with the advancement in obstetric management. We present a 36-year-old Indonesian female with shock, bradycardia, refractory hypoglycemia, a and 3-day history of fever, productive cough, and vomiting. She had a puffy face and a muffled heart sound. With a history of massive postpartum bleeding 1 year ago and amenorrhea since then, she was presumed to have hypopituitarism manifesting as adrenal and myxedema crisis precipitated by infection. Additional examination showed anemia, hyponatremia, and decreased levels of TSH, prolactin, LH, FSH, cortisol, estradiol, and progesterone. Her pituitary MRI showed a marked decrease in the gland size. The condition of the patient improved with proper management of infection and prompt hormone replacement. This case emphasizes the need for awareness about Sheehan syndrome which could potentially result in a grave prognosis with delayed management, especially among physicians working in developing countries with limited healthcare facilities.

KEYWORDS
Sheehan syndrome, hypopituitarism, adrenal crisis, myxedema crisis

PP-P-03

THE CLUE IS IN THE THYROID FUNCTION TEST

https://doi.org/10.15605/jafes.038.AFES.141

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CASE
Less than 50 cases of primary pituitary lymphoma (PPL) have been reported in the literature. We present a 52-year-old Malaysian male who was diagnosed with PPL after being investigated for four years. Our patient presented with alternating third and sixth nerve palsies. Initial CT of the brain was normal. His thyroid function tests then showed low free T4 of 6.9 pmol/l (11.5-22.7) and low TSH of 0.08 miu/l (0.55-4.78). Further anterior pituitary assessment showed low cortisol and central hypogonadism. A large homogenous infiltrative lesion in the sella, measuring 5.1 x 3.3 x 3.4 cm was found on pituitary MRI. He underwent debulking of the tumor. Histopathology examination revealed a diagnosis of non-Hodgkin's lymphoma. He subsequently underwent chemotherapy followed by radical whole-brain radiotherapy. Low Free T4 and TSH in the setting of multiple cranial nerve palsies is an important clue to suspect a pituitary lesion.

KEYWORDS
primary pituitary lymphoma, central hypothyroidism

PP-P-04

TUMOR MIMIC: A RARE CASE OF PITUITARY ADENOMA MANIFESTING AS CENTRAL DIABETES INSIPIDUS

https://doi.org/10.15605/jafes.038.AFES.142

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CASE
Central diabetes insipidus is a common complication following transsphenoidal surgery for pituitary adenomas, but CDI as an initial presentation in pituitary adenomas is extremely rare. We report a 67-year-old Filipino male with pituitary macroadenoma presenting as central diabetes insipidus, manifesting with a two-month history of severe frontotemporal headache, increased thirst, and polyuria managed with desmopressin followed by transsphenoidal surgery. Three months postoperatively, the thyroid and adrenocorticotropic axis remained intact, and pituitary bright spot recovery was observed. He was clinically stable; hence desmopressin was gradually tapered and discontinued.

Treatment options for preoperative CDI may include surgical or medical management, with some cases reported as self-limiting. More clinical studies are needed to understand the course of this condition entirely. This case highlights a unique presentation of central diabetes insipidus in a pituitary macroadenoma and the possibility of complete resolution of symptoms post-transsphenoidal surgery.

KEYWORDS
preoperative, pituitary adenoma, central diabetes insipidus

PP-P-05

ECTOPIC ACTH-PRODUCING THYMIC NEUROENDOCRINE TUMOR MASQUERADING AS PITUITARY CUSHING'S DISEASE

https://doi.org/10.15605/jafes.038.AFES.143

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CASE
Ectopic adrenocorticotrophic hormone (ACTH) syndrome is a challenging diagnosis. It is responsible for 10-20% of Cushing's syndrome. We describe a 23-year-old Malaysian male who presented with Cushingoid features and severe hypokalaemia. Based on biochemical and radiological findings, he was initially diagnosed with pituitary Cushing's disease and underwent pituitary adenomectomy. However, plasma ACTH level and serum cortisol were persistently raised postoperatively. The histopathological examination of the pituitary lesion revealed pituitary hyperplasia with negative ACTH staining.

Further evaluation disclosed a sizeable mediastinal mass proven to be a carcinoid tumor. He achieved hypocortisolism after excision of the mediastinal mass with improved clinical parameters. This case prompts us to have a high index of suspicion for ectopic ACTH syndrome in cases of florid Cushing's with stark biochemical parameters such as severe hypokalaemia and metabolic alkalosis.

KEYWORDS
ectopic ACTH, carcinoid tumor, Cushing's syndrome, pituitary hyperplasia

PP-P-06

AN UNUSUAL CASE OF INVASIVE TSH-SECRETING PITUITARY MACROADENOMA IN REMISSION AFTER SURGERY

https://doi.org/10.15605/jafes.038.AFES.144

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CASE
TSHomas are often large and invasive. Adjunctive therapy is usually required post-surgery. A 36-year-old Chinese Singaporean male presented with thyrotoxic symptoms. He had elevated FT4 of 36.24 pmol/L (10-20), and normal TSH of 1.70 mIU/L (0.4-4.0), consistent in different laboratories. SHBG was elevated at 81.7 nmol/L (15-50). Alpha-subunit was elevated at 3.9 ng/ml ((<0.5); molar ratio to TSH was 15.5. MRI showed a 2.3 x 1.7 x 1.9 cm pituitary mass with suprasellar extension, bowing of optic chiasm, and abutting of bilateral carotid arteries. Other pituitary hormones and visual fields were normal. He underwent trans-sphenoidal surgery. Histology confirmed thyrotroph adenoma. The symptoms resolved promptly. FT4 normalised within 1 week. Initially suppressed TSH normalised 1.5 years post-surgery. MRI 1 year later showed 0.3x0.9x0.7cm pituitary mass. He is now in remission 13 years post-surgery without adjunctive therapy. Though uncommon, invasive macro-TSHomas may be cured with surgery. Patients should be counseled appropriately.

KEYWORD
TSHoma

PP-P-07

DIFFUSE LARGE B-CELL LYMPHOMA PRESENTING WITH DIABETES INSIPIDUS: A RARE CASE WITH CHALLENGES IN DIAGNOSIS AND MANAGEMENT

https://doi.org/10.15605/jafes.038.AFES.145

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CASE
Diffuse large B-cell lymphoma that initially presents as a hypothalamic-pituitary axis disorder is rare. A 55-year-old female presented to a community hospital with hyponatremia. Morning cortisol level was 5.34 mcg/dL hence, she was prescribed prednisolone. Her level of consciousness subsequently declined prompting referral to our hospital. She was diagnosed to have central diabetes insipidus and hypothyroidism. Her brain MRI showed a contrast-enhancing lesion with restricted diffusion involving the optic tracts, hypothalamus, internal capsules, and midbrain. Vasogenic edema was also noted. Other lesions were seen at the parietal, subcortical white matter, and periventricular region, suggestive of lymphoma. A whole-body CT scan and bone marrow biopsy did not show extracranial involvement. Stereotactic brain biopsy demonstrated diffuse large B-cell lymphoma. The patient eventually completed a course of cranial radiotherapy. Her neurologic condition eventually improved. Three months after the diagnosis, while waiting for chemotherapy, she developed liver failure and septicemia. Abdominal CT showed possible liver metastases.

KEYWORDS
diabetes insipidus, diffuse large B-cell lymphoma, hypothalamus

PP-P-08

VISUAL COMPROMISE IN PREGNANCY: AN UNPRECEDENTED CASE OF NON-FUNCTIONING PITUITARY MACROADENOMA

https://doi.org/10.15605/jafes.038.AFES.146

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CASE
Non-functioning pituitary macroadenoma (NFPA) diagnosed during pregnancy is extremely rare. A 24-year-old Malaysian female presented at 20 weeks age of gestation with bilateral blurring of vision. She had bitemporal hemianopia with no Cushing's or acromegalic features. She had intact anterior pituitary hormones and normal prolactin. Brain imaging revealed a pituitary macroadenoma (3 x 2 cm) with optic chiasm compression without evidence of apoplexy or cavernous sinus involvement. She was commenced on cabergoline to reduce the tumour size. Despite this, she developed progressively worsening vision. She underwent an emergency caesarean section and delivered a baby boy prematurely. Subsequently, she had transsphenoidal surgery 2 weeks post-delivery. Histopathology confirmed pituitary adenoma. Post-operatively, there was complete resolution of bitemporal hemianopia, with no residual tumour on imaging and she remained eupituitary. We present a unique case of visual compromise from an enlarging NFPA during pregnancy with complete resolution of symptoms post-resection.

KEYWORDS
non-functioning pituitary macroadenoma, pregnancy, complete resolution

PP-P-09

A CASE OF A TSH AND GH CO-SECRETING PITUITARY MACROADENOMA IN A 56-YEAR-OLD FILIPINO WOMAN

https://doi.org/10.15605/jafes.038.AFES.147

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CASE
A 56-year-old Filipino female with gradual development of acromegalic features consulted for an enlarging goiter, associated with palpitations, heat intolerance, and weight loss. Thyroid function tests showed persistently elevated FT4, FT3, and TSH levels, despite the use of thioamides. Cranial MRI showed a 2.2 x 2.7 x 2.2 cm complex sellar-suprasellar mass with extension to nearby structures. A hormonal work-up confirmed growth hormone secretion, with associated hypocortisolism and hypogonadotropic hypogonadism. Thyroid ultrasound showed multiple nodules suspicious of malignancy. Octreotide-LAR 30 mg was given, rendering the patient euthyroid prior to total thyroidectomy. Histopathology showed multinodular colloid adenomatous goiter. TSH remained elevated despite levothyroxine replacement. She then underwent transsphenoidal excision of the pituitary mass. Post-operatively, levels of TSH and GH decreased significantly, despite the presence of tumor residuals. To our knowledge, this is the first reported case of a co-secreting TSH and GH pituitary macroadenoma in the Philippines. This case highlights the importance of multidisciplinary care in managing plurihormonal pituitary tumors.

KEYWORDS
pituitary tumor, TSH secreting, gh secreting, acromegaly, multinodular goiter, secondary hyperthyroidism, hypocortisolism, hypogonadotropic hypogonadism, total thyroidectomy, transsphenoidal excision, plurihormonal pituitary tumor

PP-P-10

PANHYPOPITUITARISM AND CEREBRAL SALT WASTING IN A 19-YEAR-OLD FILIPINO MALE WITH ASEPTIC MENINGITIS: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.148

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CASE
A 19-year-old Filipino male had a fever, headache and decreased sensorium. Cranial MRI showed diffuse leptomeningeal enhancement without a discrete mass or hemorrhage. The sella was unremarkable. He had elevated opening pressure upon lumbar puncture. Ceftriaxone, anti-Koch's, dexamethasone, and mannitol were started.

He had severe hyponatremia (108 mg/dl) and seizure episodes. Workup showed low TSH (0.37 uIU/ml), fT3 (1.61 pg/ml), fT4 (0.82 ng/dl), and low serum cortisol (1.9 mg/dl). Additional hormone testing revealed low IGF-1 (102 ng/ml), FSH (0.65 mIU/ml) and free testosterone (0.178 ng/ml = 2.96%). Dexamethasone was continued. Levothyroxine was started. His serum sodium improved with no recurrence of seizures.

On the 3rd week, even after mannitol discontinuation, he became clinically dry, relatively hypotensive (90/60 mmHg), and hyponatremic (131 mg/dl) with increased urine output at 200–300 ml/hr. The workup showed serum osmolality of 287 mOsm/kg, elevated urine osmolality at 509 mOsm/kg, and elevated urine sodium of 187 mmol/L. He was given intravenous PNSS and 2% NaCl. He was also started on NaCl tablets and fludrocortisone. His serum sodium levels improved and his blood pressure normalized. He was eventually discharged stable.

KEYWORDS
panhypopituitarism, cerebral salt wasting, hyponatremia

PP-P-11

INVASIVE CORTICOTROPH PITUITARY MACROADENOMA: CASE REPORT AND LITERATURE REVIEW

https://doi.org/10.15605/jafes.038.AFES.149

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CASE
A 57-year-old Thai female presented with severe hypertension and generalized edema 5 months ago. She developed proximal muscle weakness, and bitemporal hemianopia 2 months prior to admission. She had moon facies, facial plethora and purplish abdominal striae. In addition, she had accentuated hyperpigmentation on the skin creases and knuckle areas. Biochemical results were compatible with adrenocorticotropic hormone (ACTH)-dependent Cushing's syndrome. Magnetic resonance imaging demonstrated a 5.9 x 5.1 x 6.7 cm pituitary macroadenoma, extending to the cavernous sinus and left optic tract. Transsphenoidal pituitary tumor resection was performed. Histopathology confirmed a pituitary adenoma with positive staining for ACTH and somatostatin. Follow-up MRI showed residual tumor, hence adjuvant radiotherapy was given. Based on the 2022 PitNET WHO classification, she is categorized as having an invasive and non-proliferative corticotroph pituitary tumor. Three years after surgery, there was still no evidence of tumor progression.

KEYWORDS
Cushing's syndrome, pituitary macroadenoma, ACTH, proximal muscle weakness, corticotroph

PP-P-12

DIFFUSE LARGE B-CELL LYMPHOMA WITH ISOLATED CENTRAL NERVOUS SYSTEM RELAPSE WITH COMPLETE CENTRAL DIABETES INSIPIDUS: CASE REPORT AND LITERATURE REVIEW

https://doi.org/10.15605/jafes.038.AFES.150

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CASE
A 35-year-old Thai female was diagnosed with diffuse large B cell lymphoma (DLBCL) stage IV with CNS involvement in March 2021. She was lost to follow-up after chemotherapy. In October 2022, she presented with cauda equina syndrome and subsequently received whole-brain therapy. She developed complete central diabetes insipidus (DI) and secondary hypothyroidism nine months later. The hypothalamic-pituitary-adrenal axis remained intact at that time. MRI of the brain revealed a faint posterior pituitary bright spot, intact pituitary stalk, and brain parenchymal involvement compatible with disease progression. One month after brain radiotherapy, she developed adrenal insufficiency (AI). We reviewed a series of cases similar to our patient with DLBCL relapse, isolated CNS involvement, initial DI and hypothyroidism, and subsequent AI. We suggest careful evaluation of pituitary function in patients with DLBCL with CNS involvement for early diagnosis and optimal pituitary hormone replacement therapy.

KEYWORDS
diffuse large B cell lymphoma, hypopituitarism

PP-P-13

MACROPROLACTINOMA PRESENTING WITH PITUITARY APOPLEXY: A CASE REPORT AND LITERATURE REVIEW

https://doi.org/10.15605/jafes.038.AFES.151

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CASE
A 59-year-old female with no illness or medications presented with a thunderclap headache and bitemporal hemianopia for one week. Visual acuity was reduced to finger counting OS. MRI revealed a 2 x 3 x 3 cm cystic-solid lesion with internal hemorrhage at the sellar-suprasellar region with superior displacement of optic chiasm and optic tract. Tests showed serum prolactin 209.9 ng/mL [1:100 dilution, 72% recovery after PEG precipitation (reference >60%)]; normal TSH; and low FT4, IGF-I, FSH and serum cortisol, consistent with pituitary macroadenoma with apoplexy, optic chiasm and optic nerve compression, central hypothyroidism, secondary adrenal insufficiency and hyperprolactinemia from stalk effect. Endoscopic endonasal surgery revealed a blood clot. Visual symptoms did not improve. Post-operative serum prolactin was 213 ng/mL. She was treated as a pituitary neuroendocrine tumor (PitNET) with PIT1 lineage of lactotroph tumors which express dopamine D2 receptor. She was managed medically with a dopamine agonist.

KEYWORDS
PitNET, pituitary apoplexy, hyperprolactinemia, macro-prolactinoma, pituitary adenoma

REPRODUCTIVE

PP-R-01

OVARIAN LEYDIG CELL TUMOR: A MYSTERIOUS CAUSE OF SEVERE VIRILIZATION

https://doi.org/10.15605/jafes.038.AFES.152

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CASE

A 41-year-old woman with uterine bleeding and progressive virilization for 5 years was referred to our hospital because of worsening anemia. Abdominal CT and transvaginal ultrasound showed an enlarged uterus and left ovary without any tumor. She underwent abdominal hysterectomy and was diagnosed with leiomyoma then evaluated for virilization. Laboratory findings were a total testosterone level of 644 ng/dl (reference, 14-53 ng/dl), DHEAS and 17-OHP levels were normal. 8 am cortisol level after 1 mg dexamethasone suppression test was suppressible. According to markedly high testosterone levels and normal adrenal androgen levels, an androgen-secreting ovarian tumor was highly suggestive. Since the patient suffered from severe virilization and did not desire fertility, she underwent bilateral oophorectomy. The histopathology result showed a Leydig cell tumor on the left ovary. At the follow-up clinic, where she is receiving estrogen replacement, her testosterone level returned to a normal level and virilization was gradually improved.

KEYWORDS

Leydig cell tumor, virilization, hirsutism, androgen-secreting tumor

PP-R-02

46,XY 5-ALPHA REDUCTASE 2 DEFICIENCY SYNDROME IN A 19-YEAR-OLD PHENOTYPIC FILIPINO FEMALE: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.153

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CASE

Steroid 5 alpha-reductase 2 deficiency is a rare autosomal recessive disease caused by genetic mutation which results in the non-conversion of Testosterone to Dihydrotestosterone. The case is a nineteen-year-old, born from a none consanguineous marriage, reared as a female, who presented with primary amenorrhea. At the age of thirteen, she developed virilization with no development of secondary female sex characteristics. There were two palpable soft and non-tender inguinal masses measuring three centimeters. The external genitalia showed an acuminate pubic hair, a three-centimeter phallus-like structure, with fused labio-scrotal folds with ruggae, an empty scrotal sac, and a three-centimeter blind vaginal pouch where urine passes through. The testosterone level was at a normal level, with a testosterone-dihydrotestosterone ratio of less than ten. The karyotype result revealed a male, 46,XY chromosome with no aberrations. The genetic analysis showed two pathogenetic variants of the SRD5A2 gene. After a multidisciplinary discussion, the patient adopted the male gender.

KEYWORDS

disorder of sexual development, 5-alpha-reductase 2 deficiency

THYROID

PP-T-01

THIONAMIDE-ASSOCIATED NECROTIZING AUTOIMMUNE MYOPATHY (NAM) IN GRAVES' DISEASE: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.154

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CASE

Necrotizing Autoimmune Myopathy (NAM) has never been reported as a cause of myositis in thionamide-treated Graves' disease (GD). A 21-year-old Thai female presented with a 12-month history of palpitations. A diagnosis of GD was confirmed by elevated serum anti-TSH receptor antibody. Methimazole (MMI) 20 mg/day was started. Eleven weeks after therapy, she complained of generalized muscle pain. Elevated serum CK level at 791 U/L (<170) was found. MMI was switched to Propylthiouracil (PTU) 450 mg/day but serum CK level further rose to 2,538 U/L with worsening myalgia. Radioactive iodine (RAI) 30 mCi was given and she developed hypothyroidism at 9 weeks after treatment. She unexpectedly developed rhabdomyolysis (peak serum CK level at 13,084 U/L) while having a mild COVID-19 infection at 10 weeks after RAI. Finally, the diagnosis of NAM was established based on muscle biopsy. Our case highlighted NAM as an unusual cause of thionamide-associated myositis.

KEYWORDS

anti-thyroid drugs (ATDs), Thionamide, Necrotizing Autoimmune Myopathy (NAM), Graves'disease, Myositis

PP-T-02

EVALUATION OF LEARNING METHODS SIMILAR TO DEEP LEARNING AND DEVICE USING DEEP LEARNING FOR THE DIAGNOSIS OF THYROID NODULES

https://doi.org/10.15605/jafes.038.AFES.155

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INTRODUCTION

We recently developed a deep convolutional neural network algorithm (SEveRance Artificial intelligence program, SERA) using 13,560 ultrasound images of thyroid nodules labeled benign and malignant and this algorithm showed comparable diagnostic performance with experienced radiologists. We assessed whether the self-learning method similar to deep learning could be adapted for human learning as an ancillary approach to one-on-one education.

METHODOLOGY

Twenty-one internal medicine residents studied the "learning set" in three replicates which were composed of 3,000 images selected from 13,560 thyroid nodules and their diagnostic performances were evaluated before the study and after every learning session using the "test set" which was composed of 120 thyroid nodule images. The diagnostic performances of eight radiology residents were evaluated before and after one-on-one education using the same "test set". After final test, all readers once again evaluated the "test set" with the assistance of SERA.

RESULTS

Before the study, the mean area under the receiver operating characteristic (AUROC) of internal medicine residents was considerably lower than that of radiology residents (0.578 and 0.701, respectively). Diagnostic performance of internal medicine residents, although not as much as radiology residents who received one-on-one education (AUROC = 0.735), increased throughout the learning program (AUROC = 0.665, 0.689, and 0.709, respectively). All diagnostic performances of internal medicine and radiology residents were better with the assistance of SERA (AUROC 0.755 and 0.768, respectively).

CONCLUSION
A novel iterative learning method using selected ultrasound images from big data sets can help beginners learn to differentiate between benign and malignant thyroid nodules. With the assistance of SERA, the diagnostic performances of readers with various experiences in thyroid imaging could be further improved.

KEYWORDS
deep learning, thyroid nodule, ultrasound, learning program, diagnostic performance

PP-T-03

A CASE OF SCLEROSING EPITHELIOID FIBROSARCOMA WITH METASTASES TO THE THYROID

https://doi.org/10.15605/jafes.038.AFES.156

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CASE
Sclerosing Epithelioid Fibrosarcoma (SEF) is a rare form of sarcoma with slow growth, often with local recurrences/distant metastases. Treatment is by wide excision and adjuvant chemotherapy/radiotherapy. A 36-year-old Filipino female was first diagnosed with SEF when she presented with abdominal pain and elevated lipases and amylases. CT showed lesions in the pancreas, left erector spinae, axilla, lateral chest wall, left lower lung lobe, and liver. Biopsy revealed round cell sarcoma consistent with SEF. She underwent wide excision of the masses and adjuvant chemotherapy. After 6 months, an enlarging mass was noted on the thyroid. Thyroid function tests were normal. On thyroid ultrasound, a 2.6 x 1.8 x 2.4 cm, hypoechoic, solid nodule in the right lobe and a 0.3 x 0.2 x 0.3 cm hypoechoic solid nodule in the left lobe were seen. She underwent a total thyroidectomy. Histopathologic examination of the thyroid mass confirmed SEF.

KEYWORDS
thyroid, sclerosing epithelioid fibrosarcoma, thyroid metastases, sarcoma

PP-T-04

FOLLICULAR VARIANT OF PTCA INITIALLY PRESENTING AS WIDESPREAD METASTASES

https://doi.org/10.15605/jafes.038.AFES.157

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CASE
Papillary thyroid carcinoma accounts for most cases of thyroid cancer with most cases having good prognosis and low incidence of metastases. The follicular variant (FV) is the most common. First described in the 1960s, the understanding of FV-PTC began to evolve with molecular profiling demonstrating a similarity with FTC, and clinical behavior profiling showing that a subtype may behave like PTC with a propensity for lymph node metastases. We are presented with an unusual case of an infiltrative FV-PTC presenting with widespread multiple metastases on diagnosis.

A 64-year-old female presented with a 1-year history of a slowly enlarging mass on the left mandible, associated with an enlarging anterior neck mass. On examination, there was a 7 x 8 x 3 cm hard, fixed, left mandibular mass and a palpable right thyroid nodule measuring 2.5 x 2 cm. There was no difficulty in swallowing or breathing, but she had some difficulty in eating due to trismus. There were no associated symptoms of hypo- nor hyperthyroidism. Investigations revealed a euthyroid status. CT scan showed a solid lobulated heterogeneously enhancing mass measuring 4.2 x 5.1 x 5.2 cm on the body and angle of the left mandible. Ultrasound showed multiple thyroid nodules, the largest - a mixed cystic and solid mass measuring 2.9 x 2.7 x 2.17 cm on the right thyroid lobe, for which FNA was performed. Histopathology showed benign follicular nodules. An incision biopsy of the mandibular mass showed the presence of thyroid tissue. Further imaging showed metastases to the left frontal and parietal bone, T7 vertebra, and bilateral lungs. With a pre-operative diagnosis of a primary thyroid malignancy, the case was discussed in a multi-disciplinary tumor board meeting. The patient then underwent total thyroidectomy with segmental mandibulectomy. Histopathology post-op showed a metastatic multifocal infiltrative follicular variant of PTC. RAI was administered post-surgery and suppressive thyroxine therapy was started. Steroids were given during RAI, with no untoward events post-treatment. Post-ablative whole-body scanning revealed increased tracer uptake in multiple areas: left frontal and parietal bone, bilateral thyroidal beds, left supraclavicular lymph node, the sternomanubrial junction, bilateral lung lobes, right humeral head, and T7 vertebra. Further doses of RAI were planned and she is currently maintained on

suppressive thyroxine therapy. Diagnosis of FV-PTC may be a greater challenge than conventional forms because of possible false-negative results on cytology. The infiltrative subtype has greater metastatic potential and higher recurrence rates. Multidisciplinary team management and careful preparation prior to treatment with RAI are indicated in these cases.

KEYWORDS
thyroid, follicular variant, papillary thyroid cancer, PTCA, thyroid cancer

PP-T-05

MANAGEMENT OF HYPOTHYROIDISM IN GASTRIC OUTLET OBSTRUCTION USING LEVOTHYROXINE SOLUTION VIA ILEOSTOMY ROUTE

https://doi.org/10.15605/jafes.038.AFES.158

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CASE

A 64-year-old Filipino female with colon adenocarcinoma previously underwent hemicolectomy and ileostomy creation. She was maintained on oral levothyroxine 75µg tablet once daily for post-surgical hypothyroidism. She was placed on prolonged nothing per orem due to gastric outlet obstruction which hindered the delivery of oral levothyroxine resulting in hypothyroidism. Her thyroid function test showed elevated TSH at 23.2 uIU/ml and low normal free T4 at 0.7 ng/dl. Levothyroxine solution was prepared by dissolving 2 tablets of 150 µg levothyroxine in 50ml of plain saline solution administered via ileostomy route using a French 24 foley catheter and dwelling for 2 hours before removal. We delivered levothyroxine solution via the ileostomy route at a dose range of 6.3 to 15 µg per kilogram per day to achieve euthyroid state with a normal free T4 level. A cost-effective and safe alternative route of levothyroxine administration for conditions prohibiting the enteral route of administration can be used.

KEYWORDS
levothyroxine, hypothyroidism, ileostomy, malignant obstruction

PP-T-06

ASSOCIATION BETWEEN THYROID HORMONES WITHIN NORMAL TO SUBCLINICAL DYSFUNCTION AND LEFT VENTRICULAR DIASTOLIC DYSFUNCTION

https://doi.org/10.15605/jafes.038.AFES.159

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INTRODUCTION

Thyroid hormones play critical roles in modulating the cardiovascular system. However, the effects of subclinical thyroid dysfunction and euthyroidism on cardiac function remain unclear. We investigated the association between left ventricular (LV) diastolic dysfunction and subclinical thyroid dysfunction or thyroid hormone levels within the reference range and LV diastolic dysfunction in a large cohort.

METHODOLOGY

This cross-sectional study included 26,289 participants (22,197 euthyroid, 3,671 with subclinical hypothyroidism, and 421 with subclinical thyrotoxicosis) who underwent regular health checkups. The cardiac structure and function were evaluated using echocardiography. LV diastolic dysfunction with normal ejection fraction (EF) was defined as follows: EF of >50% and (a) E/e' ratio >15, or (b) E/e' ratio of 8–15 and left atrial volume index ≥34 mL/m^2.

RESULTS

Subclinical hypothyroidism was significantly associated with cardiac indices regarding LV diastolic dysfunction, and the risk of having LV diastolic dysfunction was also increased in participants with subclinical hypothyroidism (adjusted odds ratio [AOR] 1.36, 95% confidence interval [CI], 1.01–1.89) compared to euthyroid participants. The risk of having diastolic dysfunction was even greater in participants who had relatively severe hypothyroidism (thyroid stimulating hormone [TSH] ≥10.0 uIU/mL (AOR, 1.99; 95% CI: 1.07–5.00). Subclinical thyrotoxicosis was not associated with diastolic dysfunction. Among the thyroid hormones, only serum triiodothyronine (T3) was significantly and inversely associated with LV diastolic dysfunction even within the normal range.

CONCLUSION
Subclinical hypothyroidism is significantly associated with LV diastolic dysfunction. Subclinical thyrotoxicosis is, in part, associated with changes in the indices of LV structure or function, but its association with the presence of diastolic dysfunction was not significant. Serum T3 is a relatively important contributor to LV diastolic dysfunction compared to TSH or free thyroxine.

KEYWORDS
thyroid hormone, subclinical hypothyroidism, subclinical thyrotoxicosis, diastolic dysfunction

PP-T-07

MATURE CYSTIC TERATOMA WITH PAPILLARY THYROID CARCINOMA IN A PATIENT WITH THYROID NODULES

https://doi.org/10.15605/jafes.038.AFES.160

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CASE
We present a 37-year-old Filipino female who was apparently well and has never been hospitalized. She underwent an annual wellness medical exam where an incidental finding of an ovarian new growth on the left was found.

Laparoscopic surgery was done and histopathology revealed mature cystic teratoma with papillary thyroid carcinoma, composed of thyroid follicle with a 0.2 cm area. Thyroid work-up showed normal thyroid function tests, and ultrasound described nodules on the left lobe, the largest measuring 1.7 x 1.3 x 1.0cm, TIRADS 3. Fine needle aspiration biopsy was done showing colloid goiter with cystic change. This highlights the management issue arising from a rare case of papillary thyroid carcinoma in an ovarian teratoma in a patient with thyroid nodules.

Treatment options range from aggressive measures including bilateral salpingo-oophorectomy and total thyroidectomy with subsequent radioactive iodine therapy, to surgical removal of the teratoma with serial monitoring of the thyroid with ultrasonography.

KEYWORDS
papillary thyroid carcinoma, teratoma

PP-T-08

MALIGNANCY RISK OF FOLLICULAR NEOPLASM WITH VARIABLE CUT-OFFS OF TUMOR SIZE: A SYSTEMIC REVIEW AND META-ANALYSIS

https://doi.org/10.15605/jafes.038.AFES.161

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INTRODUCTION
The decision on diagnostic lobectomy for follicular neoplasm has challenged clinicians. This meta-analysis investigates whether an appropriate size cut-off exists to recommend thyroid surgery for thyroid nodules diagnosed as follicular neoplasm by fine-needle aspiration.

METHODOLOGY
Ovid-Medline, EMBASE, Cochrane, and KoreaMed databases were used to search studies reporting the malignancy rate of follicular neoplasm/suspicious for a follicular neoplasm (FN/SFN) according to tumor size through July 2022. The search terms 'fine needle aspiration,' 'follicular neoplasm,' 'lobectomy,' 'surgery,' and 'thyroidectomy' were used.

RESULTS
Fourteen observational studies with 2016 cases of FN/SFN nodules with postsurgical pathologic reports were included, and two studies reported malignancy rates with various tumor sizes. The pooled malignancy risk of FN/SFN nodules according to size as below: the odds ratio (OR) 2.29 (95% CI: 1.68–3.11) with cut-off of 4 cm (nine studies), OR 2.39 (95% CI: 1.45–3.95) with cut-off of 3 cm (three studies), and OR 1.81 (95% CI: 0.94–3.50) with cut-off of 2 cm (five studies). However, tumors ≥2 cm also showed a higher risk (OR 2.43, 95% CI: 1.54–3.82) based on the leave-one-out meta-analysis after removing one influence study.

CONCLUSION
Tumor size alone is not sufficient for determining diagnostic lobectomy for FN/SFN nodules; however, clinicians are warranted to monitor carefully FN/SFN nodules, especially in tumors larger than 2 cm, and discuss appropriate timing of surgery for FN/SFN nodules with patients.

KEYWORDS
follicular neoplasm, malignancy risk, tumor size cut-off, diagnostic lobectomy

PP-T-09

ALTERNATIVE LEVOTHYROXINE ADMINISTRATION VIA THE RECTAL ROUTE: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.162

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CASE
Hypothyroidism is commonly replaced with oral levothyroxine, however, there are cases wherein the oral route may not be available or contraindicated, and parenteral preparations are not accessible. We report an alternative way of administering levothyroxine in a 70-year-old Filipino male diagnosed with post-surgical hypothyroidism. The accidental removal of the nasogastric tube served as a dilemma on how to continue levothyroxine replacement prior to gastrostomy tube insertion. With no definite guidelines, levothyroxine was prepared in a saline solution in increasing dosage via rectal enema. Serial-free T4 and T3 were measured until normalization just prior to surgery. High doses of levothyroxine enema proved as an alternative and effective way of managing hypothyroidism when the conventional route is contraindicated and parenteral preparations are not available. This case report however does not recommend rectal administration over the oral route, but this can be a useful guide for future cases that may require levothyroxine administration via the rectal route.

KEYWORDS
levothyroxine, hypothyroidism, rectal enema

PP-T-10

A 31-YEAR-OLD MAN WITH GRAVES' DISEASE, EVAN'S SYNDROME AND IMPAIRED LIVER FUNCTION

https://doi.org/10.15605/jafes.038.AFES.163

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CASE
Graves' disease (GD) is an autoimmune disease of the thyroid gland and is the most prevalent cause of hyperthyroidism. Autoimmune hemolytic anemia (AIHA) in GD can appear alone or together with Immune thrombocytopenic purpura (ITP), as part of Evan's syndrome (ES).

We report a case of Graves' Disease with Evan's Syndrome and Impaired Liver Function. A 31-year-old male was admitted due to weakness, palpitations, jaundice, and weight loss. Graves' disease was diagnosed based on existing clinical manifestations, with a total Wayne Index score of 26, elevated FT4, decreased TSH, and positive Thyrotropin Receptor Antibody (TRAb). ES in this patient was based on laboratory results of anemia, thrombocytopenia, reticulocytosis, hyperbilirubinemia, and positive direct antiglobulin test (DAT). The patient was considered to have secondary, rather than primary ES because it was suspected to be caused by GD as an autoimmune disease. He was given thyrozole, propranolol, Kalium Slow Release (KSR), methylprednisolone, and Ursodeoxycholic Acid (UDCA) for impaired liver function. In summary, we reported a 31-year-old male with GD, hematological abnormalities, and impaired liver function. The patient was treated for two weeks and with clinical and laboratory improvements after administering antithyroid, steroid, and UDCA therapy.

KEYWORDS
Graves' disease, autoimmune hemolytic anemia, Evan's syndrome

PP-T-11

A RARE CASE OF MYXEDEMA COMA IN A CRITICALLY ILL PATIENT WITH SEPTIC SHOCK: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.164

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CASE
Myxedema coma is a rare and life-threatening disorder of hypothyroidism occurring in 0.22 per 1 million people per year diagnosed clinically. We report an 87-year-old female, known to have non-ischemic dilated cardiomyopathy, and COPD, presenting with a 2-day history of colds progressing to desaturations at room air. At the ER, was only responsive to vigorous tapping, without spontaneous movement of extremities and eye-opening prompting intubation. At the ER, capillary blood glucose was unreadably low, and hypotensive hence started on vasopressors and inotropes. Laboratory tests showed hyponatremia (129 meqs/L), elevated Creatinine (1.3 mg/dl), an elevated TSH (56.61 uIU/ml), and low FT4 (0.29 ng/dl) and FT3 (1.00 pg/ml). We started loading doses of Levothyroxine per orem and per rectum and Liothyronine, as IV Levothyroxine was not available, however, succumbed to her disease on the 1st day of admission. Prompt treatment and recognition of myxedema coma should be done to prevent mortality in this rare disorder.

KEYWORDS
myxedema coma, hypothyroidism, septic shock, thyroid, thyroid stimulating hormone

PP-T-12

METHIMAZOLE-INDUCED AGRANULOCYTOSIS AND THYROID STORM TREATED WITH LITHIUM AND TOTAL THYROIDECTOMY

https://doi.org/10.15605/jafes.038.AFES.165

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CASE

A 54-year-old Filipino female diagnosed case of nodular toxic goiter for 1 month on Methimazole developed palpitations, high-grade fever, and mouth sores. She presented at the emergency room with dyspnea, jaundice, diarrhea, and atrial fibrillation and managed as a thyroid storm. Her thyroid function test showed suppressed TSH with elevated FT3 and FT4, positive TRAb, and CBC revealed agranulocytosis with an absolute neutrophilic count of 60. The patient was started on colony-stimulating factor and broad-spectrum antibiotics for febrile neutropenia. Furthermore, the patient was treated with hydrocortisone, propranolol, and lithium. Though lithium carbonate is not utilized as a standard regimen in the management of thyroid storm, it is known to inhibit the release of thyroid hormone from the thyroid gland. The patient was rendered euthyroid on medical treatment using lithium prior to the contemplated total thyroidectomy given the presence of hypofunctioning nodules on thyroid scintigraphy. Postoperatively, histopathologic examination revealed multinodular colloid adenomatous goiter.

KEYWORDS

methimazole-induced agranulocytosis, thyroid storm, lithium carbonate, thyroidectomy

PP-T-13

THYROID HORMONE LEVELS AS A PROGNOSTIC PREDICTOR FACTOR IN SEPSIS PATIENTS

https://doi.org/10.15605/jafes.038.AFES.166

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INTRODUCTION

Sepsis is a systemic inflammatory response syndrome with high mortality. Early and accurate prediction of outcome in sepsis is important. In critically ill patients, there is significant disturbance of the Hypothalamic–Pituitary–Thyroid (HPT) axis. Changes in thyroid hormone in critical conditions such as sepsis are associated with high mortality. This condition is manifested by a normal or low decrease in serum free triiodothyronine (FT3), free thyroxine (FT4) and thyroid-stimulating hormone (TSH). Thyroid hormone levels can decrease significantly as sepsis progresses. Therefore, this study is important to describe the profile of thyroid function in septic patients.

METHODOLOGY

This was a cross-sectional, observational study conducted at RSUP Dr. Wahidin Sudirohusodo, Makassar, South Sulawesi. The study was conducted from January 2023 to May 2023. Patients diagnosed with sepsis were examined for thyroid hormone levels. The primary endpoint was the patient survival rate. The secondary end point was death during treatment. The statistical tests used were the Mann Whitney test and the Kruskall Wallis test. Statistical test results are considered significant if the p value

Keywords

sepsis, thyroid hormone, free triiodothyronine, mortality

PP-T-14

RAPID DIAGNOSIS AND EXCELLENT TREATMENT IN EXTREMELY RARE AND LIFE-THREATENING THYROID STORM

https://doi.org/10.15605/jafes.038.AFES.167

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CASE
Thyroid storm is a life-threatening condition that requires rapid diagnosis, and emergent treatment and has extremely high mortality. Rapid diagnosis of this disease can be made using Burch and Wartofsky Criteria, supported by other examinations. Aggressive treatments for thyroid storm must be done as soon as possible, delayed treatment can increase the mortality rate to 90%. In Indonesia, treatment is based on the formula "T-424.1.666.6.8.24.6" which was developed by an expert Endocrinologist in Surabaya, Askandar Tjokroprawiro. We present two patients with thyroid storm, both of whom came in with full-blown symptoms of thyroid storm. However, the time onset of diagnosis and initial treatment since the first symptoms appeared was different. The first patient was diagnosed and treated earlier, but the second one was not. This case series was made to highlight that with rapid diagnosis and early, excellent treatment, thyroid storm can be fully treated.

KEYWORDS
thyroid storm, critical illness, autoimmune disease, thyroid treatments

PP-T-15

MARINE-LENHART SYNDROME WITH COEXISTING METASTATIC PAPILLARY THYROID CARCINOMA

https://doi.org/10.15605/jafes.038.AFES.168

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CASE
Graves' disease with accompanying autonomously functioning thyroid nodules (AFTN) is known as Marine-Lenhart Syndrome (MLS). Malignant nodules can coexist with MLS. Papillary Thyroid Carcinoma (PTC) with distant metastases could cause serious complications. A 43-year-old Indonesian female developed hyperthyroidism due to the coexistence of Graves' disease and AFTN (MLS) in the right lobe of the Thyroid gland. A suspicious malignant nodule was located on the other side of the thyroid, which was detected by thyroid scanning. A total thyroidectomy was performed and thyroid tissue was histologically diagnosed as papillary thyroid carcinoma. We report the presence of PTC with intrapulmonary metastases in MLS.

KEYWORDS
Marine-Lenhart syndrome, papillary thyroid carcinoma, intrapulmonary metastases

PP-T-16

PAPILLARY THYROID CARCINOMA PRESENTING AS A BENIGN ECTOPIC THYROID MASS IN THE ANTERIOR MEDIASTINUM. A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.169

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CASE
An incidental papillary thyroid carcinoma (PTC) presenting as a mediastinal mass with benign ectopic thyroid cells is a rare occurrence. We present a case of a 33-year-old Filipino female who presented with sudden onset difficulty of breathing and chest heaviness. On workup, she was found to have an anterior mediastinal mass, which showed ectopic

thyroid cells on biopsy. Thyroid ultrasound revealed a 1.25 x 1 x 1.13 cm nodule on the thyroid gland which showed suspicious for PTC on fine needle aspiration biopsy. The patient underwent total thyroidectomy and excision of the anterior mediastinal mass. The histopathologic report of the thyroid mass revealed a conventional unifocal PTC, while the excised tissues comprising the mediastinal mass were consistent with benign ectopic thyroid tissues with colloid goiter. Since thyroid cancer is considered as low-risk, suppression therapy and active surveillance is the choice of management for this unusual case.

KEYWORDS
ectopic thyroid tissue, papillary thyroid cancer, anterior mediastinal mass

PP-T-17

THYROTOXICOSIS SECONDARY TO A MOLAR PREGNANCY

https://doi.org/10.15605/jafes.038.AFES.170

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CASE
Rarely, hydatidiform moles (H-moles) may cause thyrotoxicosis due to the homology of excessively secreted placental human chorionic gonadotropin (hCG) with TSH.

A 46-year-old Filipino female presented with tachycardia, hypertension (250/120 mmHg), b-hCG >10,000 mIU/mL, suppressed TSH 0.006 mIU/L, and high FT3 19.04 pg/mL (NV: 2.02 - 4.43) and FT4 7.77 ng/dL (NV: 0.93 - 1.71). The uterus was enlarged with contractions. Antihypertensives and Propylthiouracil (PTU) were given to facilitate urgent hysterectomy due to profuse bleeding. Post-operatively, FT4 decreased (3.94 ng/dl). Antihypertensives were continued, PTU was discontinued and she was discharged stable. On follow-up, hCG decreased to 1021 mIU/mL, and she was euthyroid (FT4 9.27 pmol/L).

This case highlights an uncommon etiology of thyrotoxicosis which requires early recognition and intervention. Molar evacuation is the definitive treatment. To date, there are no existing guidelines with regard to the use of anti-thyroid medications perioperatively.

KEYWORDS
thyrotoxicosis, molar pregnancy, H-mole

PP-T-18

PAPILLARY THYROID CARCINOMA, FOLLICULAR AND TALL CELL VARIANT, ARISING FROM A MATURE TERATOMA

https://doi.org/10.15605/jafes.038.AFES.171

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CASE
The malignant transformation of monodermal ovarian teratoma into a tall cell variant of papillary thyroid carcinoma is exceptionally rare. We report its first case in Southeast Asia wherein a 33-year-old Filipino female presented with a 5-month history of painless, progressively enlarging abdomen. Ultrasonography showed a large well-circumscribed, cystic mass with floating internal echoes occupying the pelvoabdominal region and an ovarian new growth. The patient then underwent exploratory laparotomy with left salpingo-oophorectomy, right oophorocystectomy, and endometriotic implant fulguration. Histopathology revealed papillary thyroid carcinoma, follicular and tall cell variant arising from a mature teratoma with a TTF-1+/CK7+/CK20- immunophenotype. The patient is currently undergoing surveillance with no signs of recurrence and has been advised of total thyroidectomy. Since clinical practice guidelines have yet to be established concerning this tumor, existing literature was further reviewed focusing on the appropriate diagnostics and management. Generally, an excellent prognosis is expected.

KEYWORDS
tall cell variant, follicular variant, papillary thyroid carcinoma, malignant struma ovarii

PP-T-19

INTRATHYROID THYROGLOSSAL DUCT CYST WITH CHRONIC LYMPHOCYTIC THYROIDITIS IN AN ADULT FILIPINO: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.172

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CASE
Intra-thyroid thyroglossal duct cyst (TDC) in adults is rare. It is even rare for intrathyroidal TDC to present with chronic lymphocytic thyroiditis.

We report a case of a 23-year-old Filipino female who presented with a three-year history of recurrent thyroid mass and recurrent aspiration of thyroid cyst. A well-defined, non-tender, firm-hard, movable midline mass was noted on physical examination. On sonogram, a cystic focus with smooth borders and no internal echogenicity extending to the isthmus measuring 2.9 x 3.5 x 1.1 cm was seen. The thyroid function test was normal. She underwent left thyroid lobectomy and isthmectomy revealing a cystic nodule with 7.5 ml purulent discharge. Histopathology showed intra-thyroidal thyroglossal duct cyst and chronic lymphocytic thyroiditis.

Most cases of intra-thyroidal TDC present as an anterior neck mass and are diagnosed postoperatively. Proper head and neck examination with radiologic imaging is necessary to recognize patients who could benefit from more aggressive treatment.

Based on the literature, this is the first case reported by an adult Filipino.

KEYWORDS
intra-thyroid thyroglossal duct cyst, thyroid abscess, chronic lymphocytic thyroiditis

PP-T-20

METHIMAZOLE RESISTANCE IN GRAVES' DISEASE: A CASE SERIES

https://doi.org/10.15605/jafes.038.AFES.173

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CASE
In this case series, we present 4 Filipino patients with Graves' disease who range in age from 22 to 51, 3 of whom were female. At first, beta-blockers and methimazole (MMI) were used for treatment. However, even at the highest doses of MMI, hyperthyroidism was not controlled during serial thyroid function monitoring. These patients were deemed to have methimazole resistance. Treatment was shifted to high-dose propylthiouracil (PTU), to which they became responsive, at least initially. After becoming euthyroid or nearly euthyroid, they underwent radioactive iodine ablation (RAIA). Post-ablation, thyrotoxicosis was controlled, and they were maintained on levothyroxine supplementation thereafter.

These cases highlight an important yet uncommon clinical entity of methimazole-resistant Graves' disease. The success of the regimen, shifting MMI to PTU, followed by RAIA once euthyroid, offers clinicians a guide to managing these not-so-common cases.

KEYWORDS
Graves' Disease, methimazole, methimazole resistance

PP-T-21

LIFE-THREATENING INFECTION IN THIAMAZOLE INDUCED AGRANULOCYTOSIS: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.174

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CASE
Idiosyncratic antithyroid drug (ATD)-induced neutropenia and agranulocytosis are rare but potentially fatal. Severe sepsis was found in half of the patients, and the mortality rate was 6.7%. Cross-reactive ATD-induced agranulocytosis occurs in 15.2% of cases. A 23-year-old female with a history of Graves' disease was admitted to the emergency

room with abdominal pain and a sore throat. She was on thiamazole treatment for 3 months. There were signs of sepsis and diffuse abdominal pain. Leucocytes were 470/μL and the absolute neutrophil count was 19/μL. This case has been assessed and managed as appendicitis with severe sepsis. Appendicular perforation was discovered during laparotomy exploratory. Propylthiouracil (PTU) was introduced to replace thiamazole and granulocyte colony-stimulating factors (GCSF) have been given to shorten the recovery time. Leucocyte counts returned to normal after 14 days of treatment. There was no agranulocytosis cross-reaction by PTU. Early diagnosis is essential for proper treatment and a good prognosis.

KEYWORDS
thiamazole, PTU, G-CSF, agranulocytosis, sepsis

PP-T-22

RESOLUTION OF THYROTOXICOSIS-ASSOCIATED SEVERE PULMONARY HYPERTENSION WITH TREATMENT OF THYROTOXICOSIS: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.175

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CASE
Pulmonary hypertension among pregnant women carries high mortality for the mother and fetus. Pulmonary hypertension has been associated with thyrotoxicosis. We report a case of reversible severe pulmonary hypertension secondary to thyrotoxicosis in a 35-year-old pregnant female, who was diagnosed with Graves' disease in 2019. She was admitted for thyroid storm at 12 weeks of gestation [Free T4 59 (9-19), TSH <0.008 (0.35 - 4.94)]. She was treated as per thyroid storm management. A holosystolic murmur was heard at the left sternal edge. Initial echocardiogram showed severe tricuspid regurgitation with pulmonary artery systolic pressure (PASP 73 mmHg). The patient wished to continue with pregnancy despite counseling for termination of pregnancy. She was subsequently followed up by a multidisciplinary team. During the third trimester, T4 was 21 and TSH was <0.008. Repeat 2D-echocardiogram at 36 weeks of pregnancy showed resolution of severe tricuspid regurgitation and pulmonary hypertension (PASP 15 mmHg). She successfully delivered at 36 weeks of pregnancy.

KEYWORDS
thyroid storm, severe pulmonary hypertension, severe tricuspid regurgitation, pregnancy

PP-T-23

A RARE CASE OF PERITONEAL METASTASIS FROM FOLLICULAR THYROID CARCINOMA WITHOUT PRIMARY LESION IN A PATIENT WITH HYPOPITUITARISM

https://doi.org/10.15605/jafes.038.AFES.176

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CASE
A 44-year-old female presented with multiple peritoneal nodules. Despite negative CT scans of the chest, abdomen, and gynecologic examination, a peritoneal biopsy confirmed metastatic tumor cells displaying thyroid follicular cell characteristics, supported by positive CK-7, thyroglobulin, and TTF-1 markers.

A thyroid ultrasound detected a small left thyroid nodule, expected to have no impact on the thyroid function test. However, it revealed low FT4 and normal TSH levels, suggesting secondary hypothyroidism. A pituitary MRI revealed a reduced pituitary gland height and a 0.4 cm less enhancing nodule in the right anterior lobe.

The patient underwent total thyroidectomy, however, no evidence of follicular thyroid carcinoma was observed.

After radioactive iodine (RAI) treatment, a whole body scan revealed thyroid remnants and multiple peritoneal nodules with radioiodine uptake in the follow-up scan. Non-stimulated thyroglobulin levels at 3 and 6 months after RAI were 1798 and 1182 ng/mL, respectively, prompting the decision for a second RAI therapy.

KEYWORDS
follicular thyroid carcinoma, peritoneal metastasis

PP-T-24

THE PREVALENCE AND ASSOCIATED RISK FACTORS OF REBOUND HYPERTHYROIDISM IN GRAVES' DISEASE AFTER ANTI-THYROID DRUG DOSE REDUCTION (PARAGON STUDY)

https://doi.org/10.15605/jafes.038.AFES.177

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INTRODUCTION
Graves' disease (GD) is a disorder of thyroid hormone overproduction caused by TSH receptor antibody (TRAb). Antithyroid drug (ATD) with a titration regimen is a treatment option for GD. Once euthyroidism is achieved, the ATD dose should be reduced and continued to the lowest maintenance dose to keep thyroid hormone level within normal range. The prevalence of rebound hyperthyroidism after ATD dose reduction has been undetermined to date. Furthermore, its associated risk factors are not well described.

METHODOLOGY
This retrospective study focused on GD patients receiving ATD treatment with a titration regimen in Rajavithi Hospital from July 1, 2012 to July 31, 2022. Inclusion criteria were: patients aged over 18 years old, diagnosed with GD, treated with ATD, and subsequent ATD reduction at the discretion of treating physicians after the initial phase of treatment. Exclusion criteria were prior diagnosis of thyroid storm, prior RAI thyroid surgery, pregnancy, history of drug allergy to ATD, a block and replace regimen, and other medications known to interfere with thyroid function test.

RESULTS
A total of 550 patients who were diagnosed with GD and treated with ATD were included in this study. After ATD reduction, there were 66 patients (12%) in the rebound hyperthyroidism group (RH group) and 484 patients (88%) in the non-rebound hyperthyroidism group (NRH group). The risk factors independently associated with rebound hyperthyroidism after ATD reduction were use of beta-blocker (adjusted OR = 4.947; 95% CI: 1.050-23.309, p = 0.043), FT4 at diagnosis ≥3.4 (adjusted OR= 3.325; 95% CI: 1.244-8.887, p = 0.017) and low TSH at ATD reduction (adjusted OR = 4.864; 95% CI: 1.477-16.022, p = 0.009).

CONCLUSION
This study was the first to provide the prevalence of rebound hyperthyroidism after ATD reduction, which was 12% among GD patients. The use of beta-blocker, FT4 at diagnosis ≥3.4 ng/d, and low TSH at ATD reduction were the risk factors associated with rebound hyperthyroidism after ATD reduction.

KEYWORDS
rebound hyperthyroidism, Graves' disease, antithyroid drug, titration regimen, dose reduction

PP-T-25

THE ACCURACY OF THYROID PALPATION COMPARED TO POINT-OF-CARE ULTRASOUND (POCUS) OF THE THYROID IN THE DETECTION OF CLINICALLY RELEVANT NODULES AMONG ADULT FILIPINOS LIVING IN A COMMUNITY SETTING

https://doi.org/10.15605/jafes.038.AFES.178

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INTRODUCTION
Thyroid palpation is one of the initial steps in accessing any suspicious nodule of the thyroid and is part of the general physical examination of the neck. It's accuracy is affected by patient factors such as weight and neck circumference, in addition to the clinicians' experience. This study will determine the accuracy of thyroid palpation compared to point-of-care ultrasound (POCUS) in detecting clinically relevant nodules, defined as more than 1.0 cm based on the American Thyroid Association 2015 recommendation.

METHODOLOGY
The study method was cross-sectional, enrolling 290 Filipino adults, yielding a 99% statistical power with a 0.4 kappa agreement. Inclusion criteria are as follows: >18 years old, no previously known thyroid disease, residing in a 1st class municipality in Batangas City, Philippines. Pregnant and lactating women, those taking thionamides or levothyroxine, with previous thyroid surgery or neck radiation were excluded from the study. Included participants were subjected to the modified rose method of thyroid palpation by two board-certified endocrinologists with at least 10 years of experience followed by POCUS of the thyroid conducted by another endocrinologist with specialized training in thyroid ultrasonography. All examiners were blinded from each other's results.

RESULTS

The overall agreement between thyroid palpation and POCUS was moderate, with a Kappa value of 0.516 (p<0.001). The prevalence of clinically relevant thyroid nodules among adult Filipinos with no known thyroid disease as determined by POCUS was 48.77% (95% CI: 42.34 - 55.23). Regarding nodule size, there was a non-significant increase in the odds of being palpated for nodules between 1.0-1.5 cm as compared to those less than 1.0 cm (OR=1.46, 95% CI: 0.68-3.09, p = 0.323). However, nodules greater than 1.5 cm exhibited a substantially higher likelihood of being palpated (OR=6.42, 95% CI: 3.31-12.79, p <0.001). The agreement for thyroid palpation performed by both endocrinologists was found to be moderate, with a Kappa value of 0.552 (p <.001).

When compared to POCUS, thyroid palpation had a sensitivity of 89.19% (95% CI: 81.68-93.85) and a specificity of 60.71% (95% CI: 51.01-69.64) across all locations. In addition, thyroid palpation had a positive predictive value of 85.71% (95% CI: 77.63-91.21) with a 68% negative predictive value (95% CI: 58.44–76.26). The positive likelihood ratio was 2.27 (95% CI: 1.42-3.62) while the negative likelihood ratio was 0.18 (95% CI: 0.09-0.37). Lastly, the proportion of accurate diagnosis—true positives and negatives—out of all cases was 81.37% (95% CI: 72.73-87.74) when thyroid palpation was compared to POCUS.

CONCLUSION

Thyroid palpation, when performed by experienced endocrinologists, yields a high sensitivity of detecting clinically relevant nodules. However, thyroid palpation also missed 10.8 % and incorrectly identified 39.3% of clinically relevant nodules. This study provides evidence to support the use of POCUS as part of routine outpatient evaluation of the thyroid to improve the accuracy of detecting clinically relevant thyroid nodules.

KEYWORDS

thyroid palpation, POCUS, clinically relevant thyroid nodules

PP-T-26

NORMOKALEMIC PERIODIC PARALYSIS IN A 24-YEAR-OLD-FILIPINO MALE WITH GRAVES' DISEASE

https://doi.org/10.15605/jafes.038.AFES.179

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CASE

Thyrotoxic periodic paralysis is a rare event typically presenting with hypokalemia and weakness that occurs primarily among Asians. Rarer still is thyrotoxic periodic paralysis with normokalemia, of which only 6 cases have been reported in the Asian population. There have been no reports of this phenomenon among Filipinos.

This is a case of a 24-year-old Filipino male with Graves' disease on treatment presenting with sudden onset bilateral lower extremity weakness. The patient was treated a week prior with prednisone since he initially exhibited hypersensitivity reactions to methimazole. On the day of the consult, the work-up showed normokalemia, with normal sodium and calcium levels and a suppressed TSH. He was given propranolol and propylthiouracil. Serum potassium monitoring was done. There was no decreased serum potassium levels, hence, the patient was discharged and continued outpatient treatment for hyperthyroidism.

This is the first case report of normokalemic thyrotoxic periodic paralysis in the Filipino population.

KEYWORDS

Graves' disease, normokalemic periodic paralysis, thyrotoxic periodic paralysis, Filipino

PP-T-27

POST I-131 THERAPY HYPERTHYROIDISM AND THYROID SWELLING RESULTING IN UPPER AIRWAY OBSTRUCTION IN A PATIENT TREATED FOR TOXIC MULTINODULAR GOITER: A CASE REPORT

https://doi.org/10.15605/jafes.038.AFES.180

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CASE

I-131 therapy is well-established as an efficient and safe treatment for hyperthyroidism. Complications such as post-therapy hyperthyroidism and thyroid swelling rarely occurred. We present a case of I-131 therapy-induced hyperthyroidism and thyroid swelling that resulted in upper airway obstruction in a patient treated for toxic multinodular goiter. (TNMG)

A 63-year-old Thai female presented with a palpable thyroid mass. She had palpitations and mild dyspnea on exertion. Physical examination showed thyroid enlargement of approximately 60 grams with palpable multiple nodules of the right thyroid lobe and a single palpable nodule measuring 3-4 cm in the left thyroid lobe. Laboratory investigation showed FT4: 2.07 ng/dL (0.93-1.7) and TSH <0.01 uIU/mL (0.27-4.2). Thyroid ultrasound revealed multiple thyroid nodules with a maximum size of 4x3x6.3 cm (the right and left thyroid volume was 57 mL and 51 mL, respectively). A thyroid scan revealed heterogeneously increased radiotracer uptake in the enlarged lobulated

thyroid gland with multiple foci of relatively decreased and increased radiotracer uptake which were compatible with toxic multinodular goiter. She was diagnosed with TMNG and underwent 25 mCi of I-131. After 2 months of I-131 therapy, she came to the emergency department with dyspnea, palpitation, dysphagia, and thyroid enlargement. Physical examination revealed an increased size of the thyroid gland, approximately 80 grams, with an inspiratory stridor. Laboratory investigation showed FT3: 13.41 pg/ml (1.6-4), FT4: 2.35 ng / dL (0.7-1.48) and anti-TSH-R: 33.42 IU/L (0-1.75). The chest film and computed tomography showed a narrowing of the tracheal lumen (4 mm in diameter). Furthermore, her serum calcium was 11.6 mg/dL (8.5-10.5), phosphate was 3 mg/dL (2.3-4.7), and iPTH was 130 pg/mL (15-65). A parathyroid MIBI scan was done which revealed a 0.9 x 1.1 cm non-MIBI avid nodule located at the upper pole of the left thyroid lobe, suspected for a parathyroid adenoma. She was diagnosed with post-I-131 therapy hyperthyroidism that caused upper airway obstruction concomitant with primary hyperparathyroidism. She was admitted to the intensive care unit and treated with propylthiouracil, dexamethasone, and propranolol. Subsequently, she underwent total thyroidectomy with left upper and lower parathyroidectomy, resulting in an improvement in her symptoms.

Our patient developed rebound hyperthyroidism with swelling of the thyroid after the I-131 treatment for 2 months, which resulted in impending upper airways. The present case highlights the need for physicians to be aware that rebound hyperthyroidism may present later than usual and may also cause thyroid swelling in some cases.

KEYWORDS
post-I-131 hyperthyroidism, thyroid swelling, rebound hyperthyroidism, upper airway obstruction, toxic multinodular goiter.

PP-T-28

THYROID ASSOCIATED OPHTHALMOPATHY IN A 63-YEAR-OLD FEMALE WITH HASHIMOTO'S THYROIDITIS

https://doi.org/10.15605/jafes.038.AFES.181

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CASE
Thyroid-associated ophthalmopathy (TAO) affects extraocular muscles and orbital connective tissue. Generally associated with Graves' disease with positive TRAb, and Hashimoto's disease as well. Although usually mild, severe forms of Hashimoto TAO may need serious treatment.

A 63-year-old Indonesian female came with a blurred, bulging, and double vision of the right eye 7 months prior accompanied by a prominent sign of hypothyroidism. Physical examination showed proptosis, swollen eyelid, and conjunctival injection of the right eye. The point Clinical Activity Score (CAS) was 5. Laboratory results showed high TSH, low FT4, TRAb of 9.74 IU/L, and anti-TPO of 62.47 IU/mL. Thyroid sonography revealed a right lobe hypoechoic nodule. Thyroid scan revealed cold nodule and FNAB showed benign struma adenomatosa. CT scan of the orbits showed bilateral proptosis with general muscle thickening. Hashimoto's thyroiditis and moderate-severe active TAO were established and treated with levothyroxine replacement, 4 cycles of high-dose steroid injection, and artificial tear drops.

We reported a rare case of severe TAO with Hashimoto's thyroiditis who needed steroid pulse therapy.

KEYWORDS
anti-TPO, Hashimoto's thyroiditis, hypothyroidism, ophthalmopathy, TRAb

PP-T-29

THYROTOXICOSIS WITH HIGH TRIIODOTHYRONINE (T3) AND LOW THYROXINE (T4): A CASE SERIES AND REVIEW OF CLINICAL AND MANAGEMENT

https://doi.org/10.15605/jafes.038.AFES.182

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INTRODUCTION
The thyroid function test with high FT3 and low FT4 is uncommon in hyperthyroidism patients. There is no clear treatment guideline, causing difficulty in adjusting the medication. The mechanism of this group of thyrotoxicosis is the increased conversion of T4 to T3 in the peripheral tissue. There has been an increase in dehydrogenase types 1 and 2 in a few reports. Furthermore, no relationship with thyroid cancer has been studied. This study aims to review clinical management and outcomes in thyrotoxicosis patients with high FT3, low FT4, and TSH.

METHODOLOGY
The data, including gender, age, TSH, FT3, FT4, medication, surgery, and tumor pathology, were collected retrospectively between 2015-2022 from Rajavithi Hospital's database. The inclusion criteria for selecting patients were: (1) 18 years old or over; and (2) at least one laboratory result shows low TSH with high FT3 and low FT4 levels.

RESULTS
Between 2015-2022, we found 13 cases of thyrotoxicosis with at least 1 laboratory result showing low TSH, high FT3, and low FT4. Despite antithyroid drug alone or a block and replacement regimen, we were unable to maintain both FT3 and FT4 in the normal range. Eight patients were treated with a "block and replace regimen," 3 patients were treated with antithyroid drug alone, 2 patients had not taken any medication due to early surgery, and another refused treatment. Eleven patients underwent thyroidectomy, 5 patients had follicular thyroid carcinoma, 1 case had papillary thyroid cancer and 5 patients had benign hyperfunctioning adenoma.

CONCLUSION
This result suggests that the patients with high FT3 and low FT4 were unlikely to maintain FT3 and FT4 in the normal range with either an antithyroid drug alone or block and replace regimen. The mechanism of T3 thyrotoxicosis patients is caused by the increased conversion of thyroxine (T4) to triiodothyronine (T3). Moreover, we found a high malignancy rate in this type of patient.

KEYWORDS
thyrotoxicosis, triiodothyronine, (T3), thyroxine, (T4), hyperthyroid, discordance

PP-T-30

HYPOTHYROIDISM ASSOCIATED HYPOKALEMIA PERIODIC PARALYSIS

https://doi.org/10.15605/jafes.038.AFES.183

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CASE
A 29-year-old female, recently delivered a baby girl, present with recurrent attacks of acute weakness in all 4 limbs. The patient had a history of hyperthyroidism during the 3rd trimester of her pregnancy in 2022. She didn't receive treatment for hypothyroidism at that time. On examination, the patient had quadriparesis with hypotonia, diminished deep tendon reflexes, delayed relaxation of ankle jerks and flexor plantar response, and prominent muscle weakness in both legs. She had normal mental function without any cranial nerve, sensory, or sphincter involvement. The blood test showed hypokalemia at 1.8 mmol/l, T4: 4.11 pmol/l, T3: 2.93 pmol/l, TSH: >100 mUI, anti-TPO: 191.3 UI/ml, anti-Tg: 557 UI/ml and 24-hr urine K: 25 mmol/24 h. The patient was treated with: KCl 3 g by syringe pump in 5 ml/H, kaleorid 600 mg 6 cp, and levothyroxine 75 ug. Recurrent hypokalemic paralysis is an extremely unusual presentation of hypothyroidism. To the best of our knowledge, this is the fourth reported case of hypothyroidism associated with recurrent hypokalemic paralysis.

KEYWORDS
hypothyroidism, hypokalemic periodic paralysis

PP-T-31

AGGRESSIVE SYNCHRONOUS PAPILLARY AND FOLLICULAR THYROID CARCINOMAS IN A PATIENT PRESENTING WITH HYPERTHYROIDISM FROM GRAVES' DISEASE

https://doi.org/10.15605/jafes.038.AFES.184

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CASE
We report a case of an uncommonly aggressive presentation of the rare entity of synchronous papillary (PTC) and follicular thyroid carcinomas (FTC) in a 67-year-old female initially presenting with thyrotoxicosis from Graves' disease. She was found to have 2 thyroid nodules with extensive intra-cardiac tumour thrombus, symptomatic left pelvis bony metastasis with pathological fracture, pulmonary metastases, and mediastinal lymph node metastases. Further investigations suggested a diagnosis of synchronous papillary and metastatic follicular thyroid cancer. Treatment with radical surgery followed by adjuvant therapeutic radioiodine ablation was proposed, but the patient declined all forms of cancer-specific therapy and elected solely a palliative approach to treatment.

KEYWORDS
papillary thyroid carcinoma, follicular thyroid carcinoma, synchronous thyroid cancer, Graves' disease

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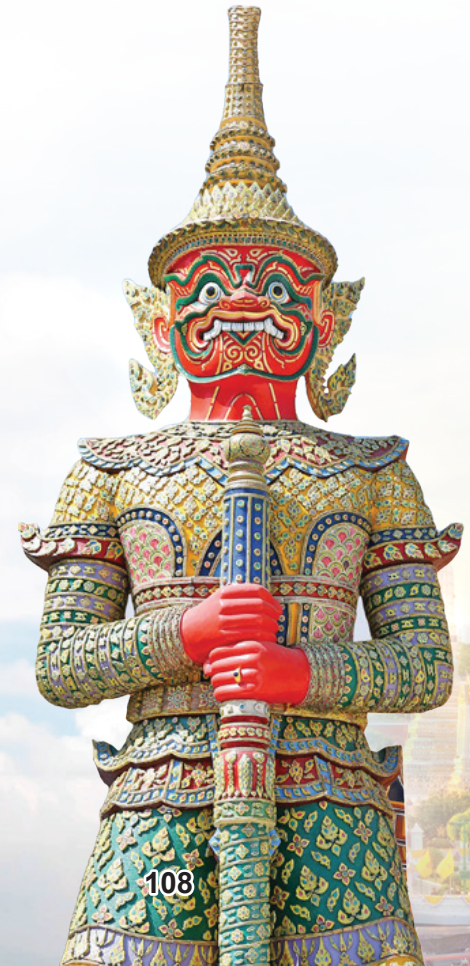

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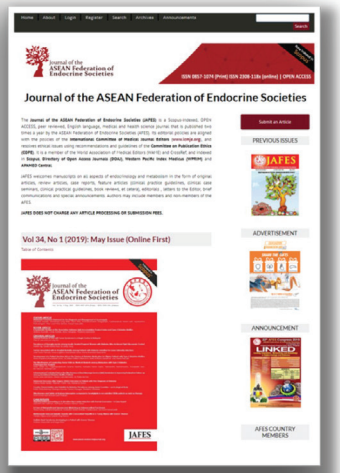

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