TÜRKİYE ENDOKRİNOLOJİ VE METABOLİZMA DERNEĞİ BÜLTENİ

Üç ayda bir online yayınlanır

Sayı 79 • Temmuz – Ağustos – Eylül • 2022

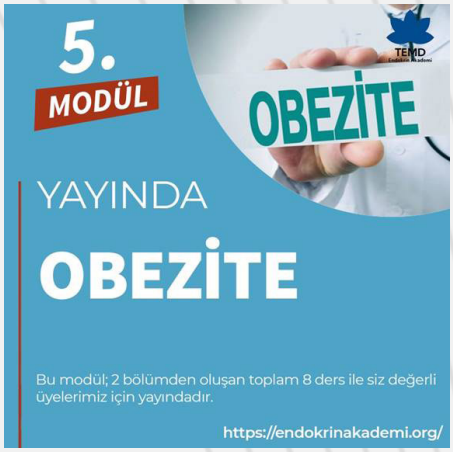
KEMİK ENDOKRİNOLOJİSİ, OSTEOPOROZ VE METABOLİK KEMİK HASTALIKLARI SEMPOZYUMU TAMAMLANDI

■ Bu yıl ilk kez düzenlenen, 1. Kemik Endokrinolojisi, Osteoporoz ve Metabolik Kemik Hastalıkları Sempozyumu, 3-4 Eylül 2022 tarihlerinde Point Barbaros Otel, İstanbul'da 128 meslektaşımızın yüzyüze ve 184 meslektaşımızın online katılımı ile gerçekleştirilmiştir. Emeği geçen tüm üyelerimize teşekkür eder, saygılarımızı sunarız.

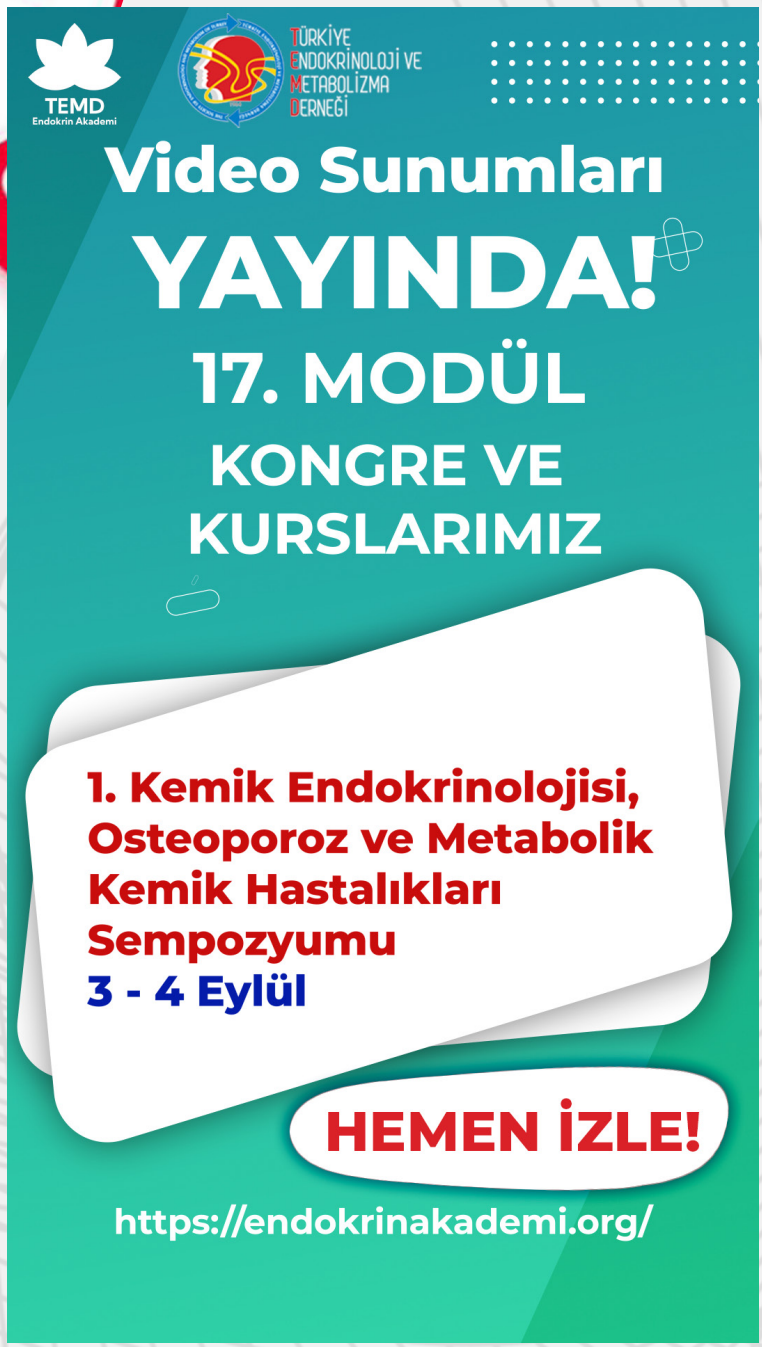
TEMD HİPOFİZ HASTALIKLARI SEMPOZYUMU "Hipofiz Yetmezliği" TAMAMLANDI

■ TEMD Hipofiz Hastalıkları Sempozyumu "Hipofiz Yetmezliği" 24 Eylül 2022 tarihinde Wyndham Grand Kayseri'de 78 meslektaşımızın yüzyüze ve 158 meslektaşımızın online katılımı ile gerçekleştirilmiştir. Emeği geçen tüm üyelerimize teşekkür eder, saygılarımızı sunarız.

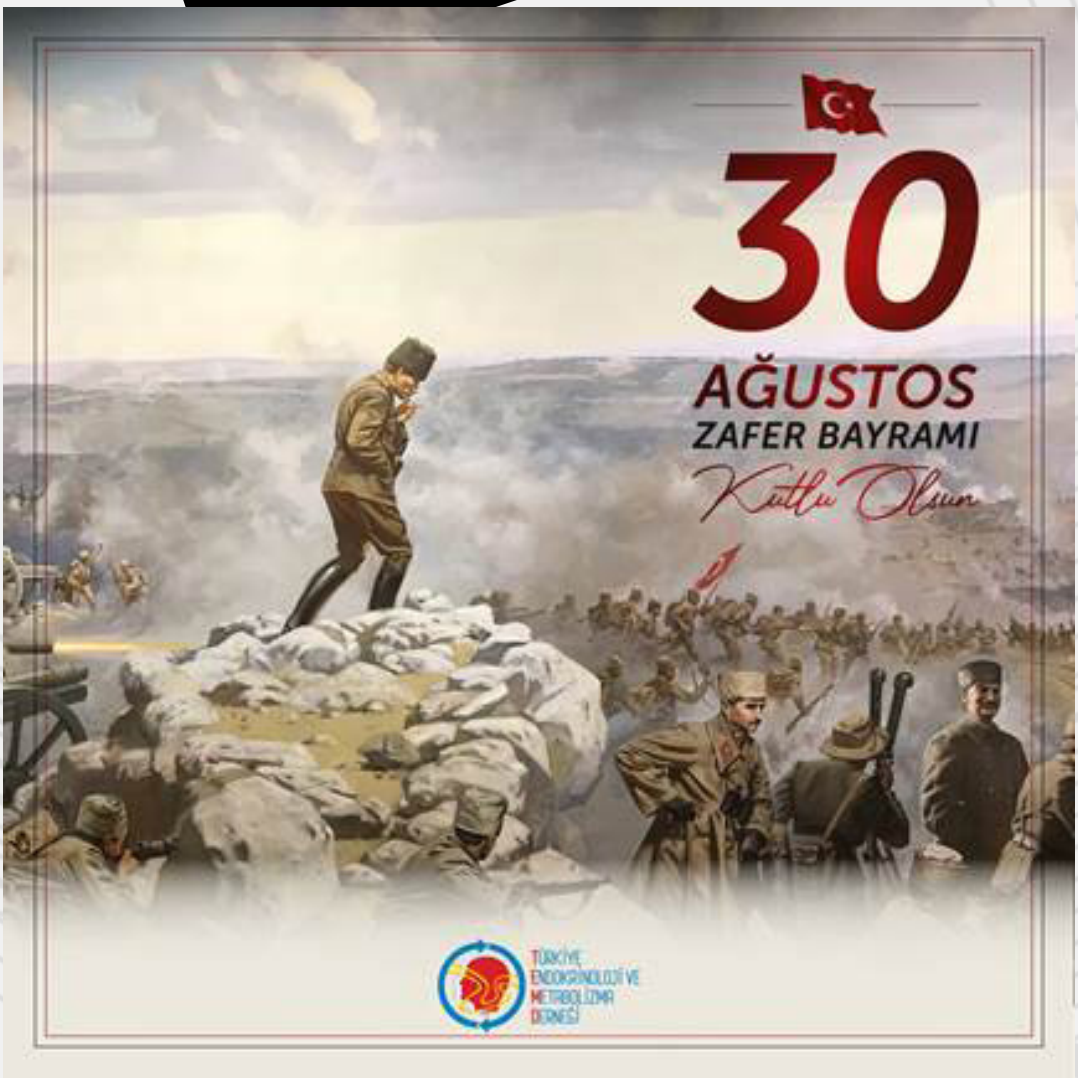
ENDOKRİN AKADEMİ MODÜLLERİ YAYINDA



ENDOKRİN AKADEMİ MODÜLLERİ YAYINDA...




Acımız taze, üzüntümüz sonsuz...
Güzel günlerde,
mutlu bayramlar
yaşamak dileğimizle...
Bayramınız kutlu olsun....
TÜRKİYE ENDOKRİNOLOJİ VE METABOLİZMA DERNEĞİ


30
AĞUSTOS
ZAFER BAYRAMI
Kutlu Olsun
TÜRKİYE ENDOKRİNOLOJİ VE METABOLİZMA DERNEĞİ

KONGRE, KURSLAR VE SEMPOZYUMLAR

Bilimsel program açıklanmıştır.
İncelemek için lütfen tıklayın.

http://endokurs.org/

Bildiri Son Gönderim Tarihi: 21 Ağustos 2022

TÜRKİYE ENDOKRİNOLOJİ VE METABOLİZMA DERNEĞİ

ENDOKURS 6

Mezuniyet Sonrası Eğitim Kursu

14-16 Ekim 2022
Adana HiltonSA

www.endokurs.org


TÜRKİYE
ENDOKRİNOLOJİ VE
METABOLİZMA
DERNEĞİ
44. TÜRKİYE
ENDOKRİNOLOJİ
ve METABOLİZMA
HASTALIKLARI
KONGRESİ
12-13 MAYIS 2023
THE MARMARA TAKSİM
İSTANBUL
TÜRKİYE
ENDOKRİNOLOJİ VE
METABOLİZMA
DERNEĞİ
Bilimsel Sekreterya
Türkiye Endokrinoloji ve Metabolizma
Derneği
Meşrutiyet Cad. Ali Bey Apt.
No:29 D:12, 06420 Kızılay
Çankaya - Ankara T: 0312 425 20 72
info@temd.org.tr www.temd.org.tr
Feniks
Organizasyon Sekreteryası
Feniks Kongre Organizasyon
Turan Güneş Bulvarı 713. Cad. No: 9-13
Çankaya - Ankara
T: 0312 442 70 40
feniks@feniksturizm.com.tr
www.feniksturizm.com.tr
www.temhk.org

GÜNCELLENEN KILAVUZLARIMIZ

Değerli Üyemiz,

"Hipertansiyon Tanı ve Tedavi Kılavuzu-2022", "Diabetes Mellitus ve Komplikasyonlarının Tanı, Tedavi ve İzlem Kılavuzu 2022" ve **"Osteoporoz ve Metabolik Kemik Hastalıkları Tanı ve Tedavi Kılavuzu-2022"** kılavuzlarımız güncellenmiş ve web sayfamızda yayınlanmaya başlamıştır.

Emeği geçen tüm üyelerimize ve çalışma grubu başkanlarımıza teşekkür ederiz.

Saygılarımızla,

TEMD Yönetim Kurulu

Hipertansiyon Tanı ve Tedavi Kılavuzu-2022

https://file.temd.org.tr/Uploads/publications/guides/documents/Hipertansiyon-Kilavuzu-2022.pdf

Diabetes Mellitus ve Komplikasyonlarının Tanı, Tedavi ve İzlem Kılavuzu 2022

https://file.temd.org.tr/Uploads/publications/guides/documents/diabetes-mellitus_2022.pdf

Osteoporoz ve Metabolik Kemik Hastalıkları Tanı ve Tedavi Kılavuzu-2022

https://file.temd.org.tr/Uploads/publications/guides/documents/OSTEOPOROZ_MKH2022.pdf

ULUSAL VE ULUSLARARASI BİLİMSEL KONGRE VE SEMPOZYUMLAR

- 12 - 15 Ekim 2022
  VII. Ulusal Diyabetik Ayak Enfeksiyonları Simpozyumu (UDAIS 2022)
  Mirage Park Resort Hotel, Kemer-Antalya
  https://www.udais2022.org

- 13 - 16 Ekim 20222
  Mezuniyet Sonrası Eğitim Kursu - ENDOKURS 6
  Adana HiltonSA
  http://endokurs.org/

- 19 - 23 Ekim 2022
  24. Ulusal İç Hastalıkları Kongresi
  Titanic Otel & Kongre Merkezi, Antalya
  https://2022.ichastaliklari.org/tr/

- 19 - 23 Ekim 2022
  91st Annual Meeting of the American Thyroid Association
  Palais de Congres de Montreal, Montreal, Quebec, Canada
  https://www.thyroid.org/91st-annual-meeting-ata/

- 20 – 23 Ekim 2022
  EndoBridge 2022
  Cornelia Diamond Kongre Merkezi, Antalya
  https://www.endobridge.org/

- 4-5 Kasım 2022
  17. Hipofiz Sempozyumu
  Ankara Üniversitesi Tıp Fakültesi Morfoloji Binası Abdülkadir Noyan Konferans Salonu, Ankara
  https://hipofiz2022.org/

- 02 - 05 Mart 2023
  12. Ulusal Obezite ve Eşlik Eden Hastalıklar Kongresi
  Antalya
  https://obezitekongresi.org/

- 4 - 7 Mayıs 2023
  IOF-WCO-IOF-ESCEO, World Congress on Osteoporosis, Osteoarthrisis and Musculoskeletal Diseases – Virtual Congress
  CCIB Congress Center, Barcelona, Spain
  https://virtual.wco-iof-esceo.org/

- 12 - 13 Mayıs 2023
  44. Türkiye Endokrinoloji ve Metabolizma Hastalıkları Kongresi
  The Marmara Taksim, İstanbul
  http://www.temhk.org/

- 13-16 Mayıs 2023
  25th European Congress Of Endocrınology - ECE 2023
  İstanbul
  https://www.ese-hormones.org/events-deadlines/european-congress-of-endocrinology/ece-2023/

- 15 – 18 Haziran 2023
  ENDO 2023, Annual Meeting of the Endocrine Society, Chicago, IL
  https://www.endocrine.org/meetings-and-events/endo2023

- 23 – 26 Haziran 2023
  83rd ADA Scientific Sessions, San Diego, CA
  https://professional.diabetes.org/scientific-sessions

- 2 – 6 Ekim 2023
  59th Annual Meeting - European Association for the Study of the Diabetes, Hamburg, Germany
  https://www.easd.org/annual-meeting/easd-2023.html

ÜYELERİMİZDEN LİTERATÜR SEÇMELERİ

INVESTIGATION OF THE RELATIONSHIP BETWEEN AUTOIMMUNE AND NODULAR GOITER IN PATIENTS WITH EUTHYROID POLYCYSTIC OVARY SYNDROME AND THEIR PHENOTYPES

Seher Çetinkaya Altuntaş, Mutlu Güneş

Horm Metab Res. 2022 Jun;54(6):396-406. doi: 10.1055/a-1825-0316. Epub 2022 Apr 13. PMID: 35419775 DOI: 10.1055/a-1825-0316

Polycystic ovary syndrome (PCOS) is an endocrine disorder that frequently affects women of reproductive age. In PCOS, the incidence of thyroid diseases has increased in addition to reproductive and metabolic problems. To compare thyroid nodule, volume, autoimmunity, and thyroid function tests of euthyroid PCOS and its phenotypes. The files of 178 patients with PCOS aged 18-45 years and 92 patients with no disease who were matched for body mass index were retrospectively scanned. Women with PCOS were divided into four phenotypes, ABCD. Anti-TPO titer and prevalence, fT3, and thyroid volume were higher in the PCOS group compared with the control group in terms of anti-Tg levels, presence of nodules, and the number of nodules. There was no statistical difference between the PCOS group and the healthy controls. The number of nodules of 1 cm and above was found to be higher only in patients with PCOS compared with the control group. When the phenotypes were examined, thyroid dysfunction features were found in phenotype A, which was the most prominent. Thyroid autoimmunity, thyroid volume, and the number of nodules larger than 1 cm increased in patients with PCOS compared with controls. This situation is thought to be caused by the reproductive and metabolic properties of PCOS because thyroid dysfunction was detected more in phenotype A, which is called the full phenotype. Therefore, all patients with PCOS, especially phenotype A, should be evaluated for the presence of nodules with autoimmunity using USG, even if there are no symptoms, and thyroid functions.

FERTILITY DESIRE AND MOTIVATION AMONG INDIVIDUALS WITH GENDER DYSPHORIA: A COMPARATIVE STUDY

Emre Durcan, Senol Turan, Basak Ecem Bircan, Selver Yaylamaz, Ihsan Okur, Ahmet Numan Demir, Cem Sulu, Zehra Kara, Serdar Sahin, Sabriye Sibel Taze, Hande Mefkure Ozkaya, Pinar Kadioglu

J Sex Marital Ther. 2022 Mar 25;1-15. doi: 10.1080/0092623X.2022.2053617. Online ahead of print. PMID: 35332854 DOI: 10.1080/0092623X.2022.2053617

Despite receiving Gender-Affirming Hormone Therapy or Gender-Affirming Surgery, which may adversely impact their fertility, people with Gender Dysphoria (GD) may desire to form families. In this study, we aimed to quantitatively display fertility desire from the perspective of these individuals, despite all the legal challenges they face. The single center, cross-sectional comparative study included individuals with GD and cisgender volunteers. A Sociodemographic Data Form, the Fertility Desire Data Form, the Childbearing Motivations Scale and the Fertility Desire Scale were used. Of the 414 participants, 171 were individuals with GD (110 FtM; 61 MtF) and 243 were cisgender volunteers (142 cis-males; 101 cis-females). While 22% of the people with GD stated that they had regrets about not undergoing fertility preservation, 16% stated that they would like this process if it were legal. People with GD, particularly MtF, want to have children more than cisgenders. Moreover, people with MtF exhibited less negative motivations toward becoming parents, despite having reservations regarding the socioeconomic aspect of parenthood. Our findings indicate that fertility desire in people with GD is not less in comparison to cisgender people. Healthcare professionals should not forget to offer fertility preservation options as part of clinical practice before Gender-Affirming Therapy.

EFFECTS OF SGLT2 INHIBITORS ON PATIENTS WITH DIABETIC KIDNEY DISEASE: A PRELIMINARY STUDY ON THE BASIS OF PODOCYTURIA

Emre Durcan, Serbay Ozkan, Halil Ibrahim Saygi, Mevlut Tamer Dincer, Ozge Polat Korkmaz, Serdar Sahin, Cebrail Karaca, Cem Sulu, Alev Bakir, Hande Mefkure Ozkaya, Sinan Trabulus, Elif Guzel, Nurhan Seyahi, Mustafa Sait Gonen

J Diabetes. 2022 Apr;14(4):236-246. doi: 10.1111/1753-0407.13261. Epub 2022 Feb 28. PMID: 35229458 PMCID: PMC9060072 DOI: 10.1111/1753-0407.13261

Background: The aim of this study was to investigate the effects of sodium glucose cotransporter 2 inhibitors (SGLT2i) on the glomerulus through the evaluation of podocyturia in patients with diabetic kidney disease (DKD).

Methods: The study population was composed of 40 male patients with type 2 diabetes mellitus; 22 of them received SGLT2i (SGLT2i group), and the others who did not were the control. The DKD-related parameters of patients were monitored before SGLT2i initiation, and then in the third and sixth month of the follow-up period. Patients' demographic, clinical, laboratory, and follow-up data were obtained from medical charts. Microalbuminuria was measured in 24-h urine. The number of podocytes in the urine was determined by immunocytochemical staining of two different markers, namely podocalyxin (podx) and synaptopodin (synpo). Concentrations of urine stromal cell-derived factor 1a and vascular endothelial growth factor cytokines were quantified with an enzyme-linked immunosorbent assay kit.

Results: At the end of the follow-up period, decreases in glycosylated hemoglobin, glucose, systolic and diastolic blood pressure, uric acid level, and microalbuminuria, and improvement in body mass index level and weight loss were significant for the SGLT2i group. On the other hand, there was no significant difference in terms of these parameters in the control group. The excretion of synaptopodin-positive (synpo+) and podocalyxin-positive (podx+) cells was significantly reduced at the end of the follow-up period for the SGLT2i group, while there was no significant change for the control.

Conclusions: At the end of the follow-up period, male patients

receiving SGLT2i had better DKD-related parameters and podocyturia levels compared to baseline and the control group. Our data support the notion that SGLT2i might have structural benefits for glomerular health.

ENDOCRINOLOGICAL FOLLOW-UP CHARACTERISTICS OF PEOPLE DIAGNOSED WITH GENDER DYSPHORIA IN TURKEY

Emre Durcan, Cem Sulu, Serdar Şahin, Ali Gioventikli, Selin Ece Dedeoğlu, İrem Azamet, Sabriye Sibel Taze, Hande Mefkure Özkaya, Şenol Turan, and Pınar Kadıoğlu

Transgender Health.Jun 2022.250-260. Published Online:13 Jun 2022 https://doi.org/10.1089/trgh.2021.0045

Purpose: Various problems related to the gender-affirming therapy (GAT) can adversely affect both the physical and mental health of people diagnosed with gender dysphoria (GD). In this study, we aimed to highlight the reasons for loss to follow-up during the gender-affirming hormone therapy (GAHT), which is an important component of GAT.

Methods: People diagnosed with GD who were followed for GAHT between January 2014 and June 2019 (female-to-male: 349; male-to-female: 89) were enrolled. The prepared questionnaire was administered to participants at routine follow-up visits. We arranged tele-interviews for those who did not attend the follow-up visits.

Results: During GAHT process, the health problems most frequently reported by pe ople diagnosed with GD were related to mental health. The most important factors in regular follow-up were the completion of legal procedures in Turkey required for GAT and citizenship alteration, financial barriers, lack of time for clinical visits, and dissatisfaction with health care setting. In addition, we found that the frequency of desire for supervised GAHT and family support were higher in regularly followed people diagnosed with GD. On the contrary, self-initiation of GAHT and mental disorders were more common in people diagnosed with GD lost to follow-up.

Conclusion: The present study provides important information regarding the reasons for loss to follow-up during GAT in Turkey. Elucidation of reasons for loss to follow-up can aid in identifying the gaps in medical care, improve compliance, and outcomes of people diagnosed with GD.

CANCER PREVALENCE AND CANCER SCREENING IN PATIENTS WITH ACROMEGALY: A SINGLE CENTER EXPERIENCE

Elif Tutku Durmuş, Ayşegül Atmaca, Ramis Çolak, Buğra Durmuş

Endocrine. 2022 Aug;77(2):363-371. doi: 10.1007/s12020-022-03082-z. Epub 2022 May 24.PMID: 35608772 DOI: 10.1007/s12020-022-03082-z

Purpose: To investigate the prevalence of cancer in patients with acromegaly and the variables associated with malignant and premalignant lesions detected by cancer screening.

Methods: The data of 214 patients diagnosed with acromegaly in our institution were evaluated retrospectively. Prevalence of cancer was compared with national rates to estimate standardized incidence ratios (SIRs). The relationships of malignant and premalignant lesions detected by cancer screening with demographic, clinical, and radiological variables were also analyzed.

Results: Cancer was detected in 24 (13.4%) of 179 patients enrolled in the study. Compared to the general population, the incidence of all malignancies was increased in both women and men with acromegaly (SIR: 4.78, 95% CI: 2.43-8.53, p = 0.002 and SIR: 8.97, 95% CI: 5.51-14.7, p < 0.001, respectively). The most common cancers were thyroid, colorectal, breast, kidney, gastric, and testicular cancer, respectively. Duration of disease was the only independent risk factor for the development of cancer (OR: 1.007, 95% CI: 1.002-1.011, p = 0.002). Malignant/premalignant lesions were detected in 21.5% of the patients with a colonoscopy scanning procedure and in 20.8% with an esophagogastroduodenoscopy procedure, and current age was found to be higher among the patients with malignant/premalignant lesions (p = 0.023 and p = 0.003, respectively). Breast cancer was detected in 3.7% of screening tests performed with mammography.

Conclusion: In this study, it was shown that the prevalence of cancer increases with acromegaly and this increase is associated with disease duration. Considering the increase in the number of premalignant lesions, the scope of cancer screening recommendations in the guidelines should be expanded to ensure early diagnosis.

AGE, GH/IGF-1 LEVELS, TUMOR VOLUME, T2 HYPOINTENSITY, AND TUMOR SUBTYPE RATHER THAN PROLIFERATION AND INVASION ARE ALL RELIABLE PREDICTORS OF BIOCHEMICAL RESPONSE TO SOMATOSTATIN ANALOGUE THERAPY IN PATIENTS WITH ACROMEGALY: A CLINICOPATHOLOGICAL STUDY

Elif Tutku Durmuş, Ayşegül Atmaca, Mehmet Kefeli, Sultan Çalışkan, Ozgur Mete, Kerim Aslan, Murat Fidan, Ramis Çolak, Buğra Durmuş

Growth Horm IGF Res. 2022 Sep 9;67:101502. doi: 10.1016/j.ghir.2022.101502. PMID: 36115256

Purpose: To determine whether biochemical responses to long-acting forms of first-generation somatostatin analogue (SSA) therapy in patients with acromegaly could be predicted from baseline and postoperative hormone concentrations, and tumor radiological and histopathological characteristics.

Methods: A total of 68 patients with acromegaly for whom postoperative SSA therapy was started were categorized according to their responses to treatment (SSA-responders vs. non-responders). The patients were compared based on their demographic characteristics, hormone levels, magnetic resonance imaging (MRI), and histopathological findings. Receiver-operating-characteristic (ROC) curves were constructed using the predictive factors that were significant in the univariate analysis to determinate the optimal cut-off values.

Results: The SSA-responders were significantly older (p = 0.041). Lower GH at diagnosis (p = 0.036), the postoperative 1st-week GH level (p = 0.027), baseline GH, insulin-like growth factor-1 (IGF-1) and IGF-1% upper limit of normal (ULN) (p = 0.001, p = 0.006, p = 0.023, respectively) were associated with biochemical response. T2-hypointensity and lower tumor volume

were more common in the SSA-responders (p = 0.018, p = 0.03, respectively). Compared to sparsely granulated somatotroph tumors, densely granulated somatotroph tumors and other PitNETs causing GH excess including mammosomatotroph and mixed somatotroph and lactotroph tumors were more likely to respond to SSA therapy (p = 0.026, p = 0.03, respectively). The cut-off values generated by ROC curve analysis were GH at diagnosis of ≤8.8 ng/mL, GH at baseline of ≤2.69 ng/mL, IGF-1 at baseline ≤461.5 ng/mL, IGF-1% ULN at baseline ≤180.4%, and tumor volume of ≤1.11 cm3 (all p < 0.05). There were no differences between the groups in terms of tumor invasiveness, proliferative activity (mitotic count per 2 mm2 and Ki-67 labeling index) and quantitative analyses of T2-weighted MRI.

Conclusion: This study underscores that advanced age, low baseline GH and IGF-1 at diagnosis, low tumor volume, densely granulated tumor subtype, and T2 hypointensity may help predict biochemical response to SSA therapy in cases of acromegaly. These variables should be assessed with utmost attention for all patients prior to SSA treatment. In cases of possible resistance to SSA therapy, therapeutic activity should be monitored more closely and other therapies should be administered immediately in the event of poor response.

EFFECTS OF COMBINED AEROBIC-STRENGTH TRAINING AND YOGA ON QUALITY OF LIFE AND RELATED PARAMETERS IN WOMEN WITH PITUITARY ADENOMA AFTER SURGERY: A RANDOMIZED CROSSOVER STUDY

Esra Dülger, Melike Mut, Tomris Erbas, Levent Sahiner, Naciye Vardar Yağlı, Sevil Bilgin

Eur J Endocrinol. 2022 May 2;186(6):667-675. doi: 10.1530/EJE-22-0031. PMID: 35380988 DOI: 10.1530/EJE-22-0031

Objective: The pituitary gland is responsible for hormonal balance in the body, and disruption of hormonal balance in patients with pituitary adenoma (PA) indirectly affects the quality of life. This study aimed to examine the effects of yoga and combined aerobic and strength training (A+ST) on quality of life and related parameters such as sleep, fatigue, emotional state, sexual function, and cognitive status in women with PA.

Design: Ten women with PA were included in this randomized crossover study. Group 1 (n = 5, mean age: 52 ± 13.5 years) received A+ST for the first 6 weeks, a 2-week washout period, and yoga for the second 6 weeks. Group 2 (n = 5, mean age: 41.8 ± 14 years) received the yoga program first, followed by the A+ST program.

Methods: Participants were assessed using the following tools before and after each exercise intervention: Functional Assessment of Cancer Therapy-Brain (FACT-Br) (quality of life), Pittsburg Sleep Quality Index, Fatigue Severity Scale (FSS), Female Sexual Function Index (FSFI), Hospital Anxiety and Depression Scale (HADS), and Montreal Cognitive Assessment Scale (MOCA).

Results: FACT-Br scores were higher after the yoga program, HADS anxiety score was lower after the A+ST program, and MOCA scores increased after both exercise programs (P < 0.05). FSS score decreased after both exercise programs, but not significantly. In addition, nonsignificant decreases in HADS anxiety and depression scores and increased FSFI scores were observed after the yoga program.

Conclusion: A+ST and yoga have positive effects on the quality of life in PA. We recommend yoga and A+ST as a supportive therapy for this population that may face comorbidities after surgical and medical treatment. Our results indicate these patients may benefit from physiotherapist-guided exercise programs.

SUBACUTE THYROIDITIS PARANCHIME HETEROGENEITY MAY MASK THYROID NODULES AND HIGHER EU-TIRADS SCORES

Sema Hepsen, Hayri Bostan, Pinar Akhanli, Muhammed Erkam Sencar, Muhammed Kizilgul, Bekir Ucan, Ozgur Ozcelik, Erman Cakal

Endocrine. 2022 Aug;77(2):291-296. doi: 10.1007/s12020-022-03069-w. Epub 2022 May 12. PMID: 35553358 DOI: 10.1007/s12020-022-03069-w

Purpose: Nonhomogenous and ill-defined hypoechoic areas are typical ultrasonographic features of subacute thyroiditis (SAT). Evaluating a thyroid nodule accurately in this heterogeneous paranchime may be troublesome. This study aims to compare thyroid nodules, their characteristics, and European Thyroid Imaging and Reporting Data System (EU-TIRADS) categories at the time of the diagnosis and in the remission of SAT.

Methods: Ultrasonographic features of SAT and characteristics and EU-TIRADS categories of thyroid nodules in the initial and control ultrasonography (US) of 350 patients with SAT have been evaluated in this retrospective observational study. Fine needle aspiration biopsy (FNAB) results and postsurgical data, if performed, have been estimated.

Results: A hundred patients (28.6%) with SAT had thyroid nodules at the time of the diagnosis, while 152 (43.4%) patients had a nodule in remission US (p < 0.001). The number of thyroid nodules was found to be higher in the control US as against the initial US (p = 0.001). EU-TIRADS scores of the nodules in the remission US were significantly higher than the scores at the time of the diagnosis (p < 0.001). FNAB was performed in 23% of nodules observed in the remission US, and the rate of thyroid carcinoma within them was 3.3%.

Conclusion: Thyroid nodules, malignancy suspected features, and EU-TIRADS categories of them may not be appropriately evaluated due to heterogenous paranchime of SAT. Performing a control US examination after resolution of hypoechoic areas may be beneficial to avoid missing clinically significant nodules with high EU-TIRADS scores.

THE RELATIONSHIP BETWEEN COVID-19 AND HYPOTHALAMIC-PITUITARY-ADRENAL AXIS: A LARGE SPECTRUM FROM GLUCOCORTICOID INSUFFICIENCY TO EXCESS-THE CAPISCO INTERNATIONAL EXPERT PANEL

Mojca Jensterle, Rok Herman, Andrej Janež, Wael Al Mahmeed, Khalid Al-Rasadi, Kamila Al-Alawi, Maciej Banach, Yajnavalka Banerjee, Antonio Ceriello, Mustafa Cesur, Francesco Cosentino, Massimo Galia, Su-Yen Goh, Sanjay Kalra, Peter Kempler, Nader Lessan, Paulo Lotufo, Nikolaos Papanas, Ali A Rizvi, Raul D Santos, Anca P Stoian, Peter P Toth, Vijay Viswanathan, Manfredi Rizzo

Int J Mol Sci. 2022 Jun 30;23(13):7326. doi: 10.3390/ijms23137326. PMID: 35806331 PMCID: PMC9266848 DOI: 10.3390/ijms23137326

Coronavirus disease 2019 (COVID-19) is a highly heterogeneous disease regarding severity, vulnerability to infection due to comorbidities, and treatment approaches. The hypothalamic-pituitary-adrenal (HPA) axis has been identified as one of the most critical endocrine targets of severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) that might significantly impact outcomes after infection. Herein we review the rationale for glucocorticoid use in the setting of COVID-19 and emphasize the need to have a low index of suspicion for glucocorticoid-induced adrenal insufficiency, adjusting for the glucocorticoid formulation used, dose, treatment duration, and underlying health problems. We also address several additional mechanisms that may cause HPA axis dysfunction, including critical illness-related corticosteroid insufficiency, the direct cytopathic impacts of SARS-CoV-2 infection on the adrenals, pituitary, and hypothalamus, immune-mediated inflammations, small vessel vasculitis, microthrombotic events, the resistance of cortisol receptors, and impaired post-receptor signaling, as well as the dissociation of ACTH and cortisol regulation. We also discuss the increased risk of infection and more severe illness in COVID-19 patients with pre-existing disorders of the HPA axis, from insufficiency to excess. These insights into the complex regulation of the HPA axis reveal how well the body performs in its adaptive survival mechanism during a severe infection, such as SARS-CoV-2, and how many parameters might disbalance the outcomes of this adaptation.

THE EVALUATION OF PANCREAS B-CELL AUTOANTIBODIES IN NON-DIABETIC COVID-19 PATIENTS

Sanem Kayhan, Sema Hepsen, Hatice Kozan Kalkisim, Ibrahim Nahit Sendur, Fatma Aybala Altay, Ali Yalcindag

Arch Endocrinol Metab. 2022;66(4):459-465. doi: 10.20945/2359-3997000000498. Epub 2022 Jun 2. PMID: 35657130 DOI: 10.20945/2359-3997000000498

Objective: This study aims to evaluate potential pancreas endocrine damage due to SARS-CoV-2 by measuring β-cell autoantibodies in COVID-19 patients.

Subjects and methods: Between June and July 2020, 95 inpatients with a positive COVID-19 test result after polymerase-chain-reaction (PCR) and who met the inclusion criteria were enrolled in our study. Laboratory parameters that belong to glucose metabolism and β-cell autoantibodies, including anti-islet, anti-glutamic acid decarboxylase, and anti-insulin autoantibodies, were measured. β-cell autoantibodies levels of the patients were measured during COVID-19 diagnosis. Positive results were reevaluated in the 3rd month of control.

Results: In the initial evaluation, 4 (4.2%) patients were positive for anti-islet autoantibody. Only one (1.1%) patient was positive for anti-glutamic acid decarboxylase autoantibody. No patient had positive results for anti-insulin autoantibody. FPG, HbA1c, and C-peptide levels were similar in patients who were split into groups regarding the initial positive or negative status of anti-islet and anti-GAD autoantibodies ($p>0.05$). In the 3rd month after the initial measurements, anti-islet autoantibody positivity of 2 (50%) of 4 patients and anti-glutamic acid decarboxylase positivity of 1 (100%) patient were persistent. Finally, 3 (3.1%) patients in the whole group were positive for anti-islet autoantibody in the 3rd month of control. No difference was determined between the initial and the 3rd month of parameters of glucose metabolism.

Conclusion: Following an ongoing autoantibody positivity in the present study brings the mind that SARS-CoV-2 may be responsible for the diabetogenic effect. Clinicians should be aware of autoantibody-positive DM as a potential autoimmune complication in patients with SARS-CoV-2.

CHARACTERISTICS AND TREATMENT PATTERNS OF PATIENTS WITH TYPE 2 DIABETES MELLITUS IN THE MIDDLE EAST AND AFRICA COHORT OF THE DISCOVER STUDY PROGRAM: A PROSPECTIVE STUDY

Khalid Al-Rubeaan, Mohamed Alsayed, Abdullah Ben-Nakhi, Fahri Bayram, Akram Echtay, Ahmed Hadaoui, Khadija Hafidh, Kevin Kennedy, Adri Kok, Rachid Malek, Viraj Rajadhyaksha, Suzanne V Arnold

Diabetes Ther. 2022 Jul;13(7):1339-1352. doi: 10.1007/s13300-022-01272-6. Epub 2022 Jun 11. PMID: 35689732 PMCID: PMC9240182 DOI: 10.1007/s13300-022-01272-6

Introduction: Despite the high prevalence of type 2 diabetes (T2D) and suboptimal glycemic control in the Middle East and Africa, comprehensive data on the management of T2D remain scarce. The main aim of this study is to describe the characteristics and treatment of patients with T2D initiating second-line glucose-lowering therapy in these regions.

Methods: DISCOVER is a global, 3-year, prospective observational study of patients with T2D enrolled at initiation of second-line glucose-lowering therapy. Baseline characteristics and treatments are presented for patients from 12 countries divided into three regions: Mediterranean, Gulf Cooperation Council, and South Africa.

Results: Among 3525 patients (52.5% male, mean age 54.3 years), mean time since T2D diagnosis was 6.2 years [across-region range (ARR) 5.8-7.5 years] and mean glycated hemoglobin levels were 8.7% (72.0 mmol/mol) [ARR 8.6-9.0% (68-75 mmol/mol)]. At first line, metformin was prescribed for 88.1% (ARR 85.4-90.3%) of patients and a sulfonylurea for 34.4% (ARR 12.7-45.4%). Sulfonylureas and dipeptidyl peptidase-4 inhibitors were prescribed at second line for 55.5% (ARR 48.6-82.5%) and 49.0% (ARR 3.7-73.8%) of patients, respectively. Main reasons for choice of second-line therapy were efficacy (73.2%; ARR 60.1-77.7%) and tolerability (26.8%; ARR 3.7-31.2%).

Conclusions: We demonstrate considerable inter-region variations in the management of T2D, likely affected by

multiple factors (health system, physician behavior, and patient compliance), all of which should be addressed to optimize outcomes.

ACROMEGALY IS ASSOCIATED WITH A DISTINCT ORAL AND GUT MICROBIOTA

Serdar Sahin, Aycan Gundogdu, Ufuk Nalbantoglu, Pinar Kadioglu, Zuleyha Karaca, Aysa Hacioglu, Muhammed Emre Urhan, Kursad Unluhizarci, Ahmet Numan Demir, Mehmet Hora, Emre Durcan, Gülsah Elbüken, Hatice Sebile Dokmetas, Sayid Shafi Zuhur, Fahrettin Kelestimur

Pituitary. 2022 Jun;25(3):520-530. doi: 10.1007/s11102-022-01223-1. Epub 2022 Apr 25. PMID: 35467272 DOI: 10.1007/s11102-022-01223-1

Purpose: Our aim was to investigate the changes in the composition of oral and gut microbiota in patients with newly diagnosed acromegaly and their relationship with IGF-1 levels.

Methods: Oral and fecal samples were collected from patients with newly diagnosed acromegaly without comorbidities and from healthy controls. The composition of the microbiota was analyzed. The general characteristics, oral and stool samples of the patients and healthy control subjects were compared. The changes in microbiota composition in both habitats, their correlations and associations with IGF-1 were statistically observed using machine learning models.

Results: Fifteen patients with newly diagnosed acromegaly without comorbidities and 15 healthy controls were included in the study. There was good agreement between fecal and oral microbiota in patients with acromegaly ($p = 0.03$). Oral microbiota diversity was significantly increased in patients with acromegaly ($p < 0.01$). In the fecal microbiota, the Firmicutes/Bacteroidetes ratio was lower in patients with acromegaly than in healthy controls ($p = 0.011$). Application of the transfer learned model to the pattern of microbiota allowed us to identify the patients with acromegaly with perfect accuracy.

Conclusions: Patients with acromegaly have their own oral and gut microbiota even if they do not have acromegaly-related complications. Moreover, the excess IGF-1 levels could be correctly predicted based on the pattern of the microbiome.

DISCRIMINATION BETWEEN NON-FUNCTIONING PITUITARY ADENOMAS AND HYPOPHYSITIS USING MACHINE LEARNING METHODS BASED ON MAGNETIC RESONANCE IMAGINGDERIVED TEXTURE FEATURES

Serdar Sahin, Gokcen Yildiz, Seda Hanife Oguz, Orkun Civan, Ebru Cicek, Emre Durcan, Nil Comunoglu, Hande Mefkure Ozkaya, Aysim Buge Oz, Figen Soylemezoglu, Kader Karli Oguz, Selçuk Dagdelen, Tomris Erbas, Osman Kizilkilic, Pinar Kadioglu

Pituitary. 2022 Jun;25(3):474-479. doi: 10.1007/s11102-022-01213-3. Epub 2022 Mar 25. PMID: 35334029 DOI: 10.1007/s11102-022-01213-3

Purpose: Hypophysitis is a heterogeneous condition that includes inflammation of the pituitary gland and infundibulum, and it can cause symptoms related to mass effects and hormonal deficiencies. We aimed to evaluate the potential role of machine learning methods in differentiating hypophysitis from non-functioning pituitary adenomas.

Methods: The radiomic parameters obtained from T1A-C images were used. Among the radiomic parameters, parameters capable of distinguishing between hypophysitis and non-functioning pituitary adenomas were selected. In order to avoid the effects of confounding factors and to improve the performance of the classifiers, parameters with high correlation with each other were eliminated. Machine learning algorithms were performed with the combination of gray-level run-length matrix-low gray level run emphasis, gray-level co-occurrence matrix-correlation, and gray-level co-occurrence entropy.

Results: A total of 34 patients were included, 17 of whom had hypophysitis and 17 had non-functioning pituitary adenomas. Among the 38 radiomics parameters obtained from post-contrast T1-weighted images, 10 tissue features that could differentiate the lesions were selected. Machine learning algorithms were performed using three selected parameters; gray level run length matrix-low gray level run emphasis, gray-level co-occurrence matrix-correlation, and gray level co-occurrence entropy. Error matrices were calculated by using the machine learning algorithm and it was seen that support vector machines showed the best performance in distinguishing the two lesion types.

Conclusions: Our analysis reported that support vector machines showed the best performance in distinguishing hypophysitis from non-functioning pituitary adenomas, emphasizing the importance of machine learning in differentiating the two lesions.

MACHINE LEARNING AS A CLINICAL DECISION SUPPORT TOOL FOR PATIENTS WITH ACROMEGALY

Cem Sulu, Ayyüce Begüm Bektaş, Serdar Şahin, Emre Durcan, Zehra Kara, Ahmet Numan Demir, Hande Mefkure Özkaya, Necmettin Tanrıöver, Nil Çomunoğlu, Osman Kızılkılıç, Nurperi Gazioğlu, Mehmet Gönen, Pınar Kadıoğlu

Pituitary. 2022 Jun;25(3):486-495. doi: 10.1007/s11102-022-01216-0. Epub 2022 Apr 18. PMID: 35435565 DOI: 10.1007/s11102-022-01216-0

Objective: To develop machine learning (ML) models that predict postoperative remission, remission at last visit, and resistance to somatostatin receptor ligands (SRL) in patients with acromegaly and to determine the clinical features associated with the prognosis.

Methods: We studied outcomes using the area under the receiver operating characteristics (AUROC) values, which were reported as the performance metric. To determine the importance of each feature and easy interpretation, Shapley Additive explanations (SHAP) values, which help explain the outputs of ML models, are used.

Results: One-hundred fifty-two patients with acromegaly were included in the final analysis. The mean AUROC values resulting from 100 independent replications were 0.728 for postoperative 3 months remission status classification, 0.879 for remission at last visit classification, and 0.753 for SRL resistance status classification. Extreme gradient boosting model demonstrated that preoperative growth hormone (GH) level, age at operation, and preoperative tumor size were the most important predictors for early remission; resistance to SRL and preoperative tumor size represented the most important predictors of remission at last visit, and postoperative 3-month insulin-like growth factor 1 (IGF1) and GH levels (random and nadir) together with the sparsely granulated somatotroph adenoma subtype served as the most important predictors of SRL resistance.

Conclusions: ML models may serve as valuable tools in the prediction of remission and SRL resistance.

ASSOCIATION OF HUMAN LEUKOCYTE ANTIGEN GENOTYPES WITH SEVERE ACUTE RESPIRATORY SYNDROME CORONAVIRUS 2 VACCINE-INDUCED SUBACUTE THYROIDITIS

Süleyman Nahit Şendur, Füsun Özmen, Seda Hanife Oğuz, Burçin Gönül İremli, Ümit Yavuz Malkan, Alper Gürlek, Tomris Erbas, Uğur Ünlütürk

Thyroid. 2022 Jun;32(6):640-647. doi: 10.1089/thy.2022.0010. Epub 2022 May 9. PMID: 35387473 DOI: 10.1089/thy.2022.0010

Background: Despite mass vaccination, severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) vaccine-induced subacute thyroiditis (SAT) is rarely seen as a complication. The reason why some individuals are susceptible to developing vaccine-induced SAT is not known. SAT develops in genetically predisposed individuals who carry specific human leukocyte antigen (HLA) haplotypes. It is unknown whether specific HLA alleles are associated with SARS-CoV-2 vaccine-induced SAT.

Objective: This study compared the HLA profiles of patients with SARS-CoV-2 vaccine-induced SAT to controls, to assess whether there is an association between specific HLA genotypes and development of SAT. The relationship between HLA genotypes and the clinical course of SARS-CoV-2 vaccine-induced SAT was also evaluated.

Methods: A case-control study was conducted in a Turkish tertiary care center. Fourteen patients with SARS-CoV-2 vaccine-induced SAT and 100 healthy controls were included. HLA-A, HLA-B, HLA-C, HLA-DQB1, and HLA-DRB1 frequencies were analyzed by next-generation sequencing.

Results: The frequencies of HLA-B*35 and HLA-C*04 alleles were significantly higher in SARS-CoV-2 vaccine-induced SAT cohort when compared with controls (HLA-B*35: 13 [93%] vs. 40 [40%], $p < 0.001$; HLA-C*04: 13 [93%] vs. 43 [43%], $p < 0.001$, respectively). More severe thyrotoxicosis was seen in patients having HLA-B*35 and HLA-C*04 homozygous alleles (free thyroxine: 4.47 ng/dL [3.77-5.18] vs. 1.41 ng/dL [1.22-2.63], $p = 0.048$). Inflammation tended to be more severe in homozygous patients (C-reactive protein: 28.2 mg/dL [13.6-42.9] vs. 4.8 [1.2-10.5], $p = 0.07$).

Conclusions: The frequencies of HLA-B*35 and HLA-C*04 alleles were higher in SARS-CoV-2 vaccine-induced SAT compared with controls. Homozygosity for HLA-B*35 and HLA-C*04 was associated with thyrotoxicosis and a greater inflammatory reaction. Our findings should be confirmed in studies of other populations.

WORLDWIDE EXPERIENCE OF HOMOZYGOUS FAMILIAL HYPERCHOLESTEROLAEMIA: RETROSPECTIVE COHORT STUDY

Tycho R Tromp, Merel L Hartgers, G Kees Hovingh, Antonio J Vallejo-Vaz, Kausik K Ray, Handrean Soran, Tomas Freiberger, Stefano Bertolini, Mariko Harada-Shiba, Dirk J Blom, Frederick J Raal, Marina Cuchel, Homozygous Familial Hypercholesterolaemia International Clinical Collaborators

Lancet. 2022 Feb 19;399(10326):719-728. doi: 10.1016/S0140-6736(21)02001-8. Epub 2022 Jan 28.

PMID: 35101175 DOI: 10.1016/S0140-6736(21)02001-8

Background: Homozygous familial hypercholesterolaemia (HoFH) is a rare inherited disorder resulting in extremely elevated low-density lipoprotein cholesterol levels and premature atherosclerotic cardiovascular disease (ASCVD). Current guidance about its management and prognosis stems from small studies, mostly from high-income countries. The objective of this study was to assess the clinical and genetic characteristics, as well as the impact, of current practice on health outcomes of HoFH patients globally.

Methods: The HoFH International Clinical Collaborators registry collected data on patients with a clinical, or genetic, or both, diagnosis of HoFH using a retrospective cohort study design. This trial is registered with ClinicalTrials.gov, NCT04815005.

Findings: Overall, 751 patients from 38 countries were included, with 565 (75%) reporting biallelic pathogenic variants. The median age of diagnosis was 12·0 years (IQR 5·5-27·0) years. Of the 751 patients, 389 (52%) were female and 362 (48%) were male. Race was reported for 527 patients; 338 (64%) patients were White, 121 (23%) were Asian, and 68 (13%) were Black or mixed race. The major manifestations of ASCVD or aortic stenosis were already present in 65 (9%) of patients at diagnosis of HoFH. Globally, pretreatment LDL cholesterol levels were 14·7 mmol/L (IQR 11·6-18·4). Among patients with detailed therapeutic information, 491 (92%) of 534 received statins, 342 (64%) of 534 received ezetimibe, and 243 (39%) of 621 received lipoprotein apheresis. On-treatment LDL cholesterol levels were lower in high-income countries (3·93 mmol/L, IQR 2·6-5·8) versus non-high-income countries (9·3 mmol/L, 6·7-12·7), with greater use of three or more lipid-lowering therapies (LLT; high-income 66% vs non-high-income 24%) and consequently more patients attaining guideline-recommended LDL cholesterol goals (high-income 21% vs non-high-income 3%). A first major adverse cardiovascular event occurred a decade earlier in non-high-income countries, at a median age of 24·5 years (IQR 17·0-34·5) versus 37·0 years (29·0-49·0) in high-income countries (adjusted hazard ratio 1·64, 95% CI 1·13-2·38).

Interpretation: Worldwide, patients with HoFH are diagnosed too late, undertreated, and at high premature ASCVD risk. Greater use of multi-LLT regimens is associated with lower LDL cholesterol levels and better outcomes. Significant global disparities exist in treatment regimens, control of LDL cholesterol levels, and cardiovascular event-free survival, which demands a critical re-evaluation of global health policy to reduce inequalities and improve outcomes for all patients with HoFH.

Funding: Amsterdam University Medical Centers, Location Academic Medical Center; Perelman School of Medicine at the University of Pennsylvania; and European Atherosclerosis Society.

DUYURULAR

Değerli Üyemiz,

TEMD Yönetim Kurulu'nun 03.08.2022 tarihli toplantısında ***"TEMD Bilimsel Çalışma Grubu Yönergesi'*** nde güncelleme yapılmış ve çalışma gruplarına üye olma hakkı artırılmıştır. Yönergenin güncellenen maddeleri aşağıda bilgilerinize sunulmaktadır.

2. BİLİMSEL ÇALIŞMA GRUPLARI

2.1 Bilimsel Çalışma Gruplarının Kuruluşu

2.1.1. Bilimsel çalışma grupları toplam 9 adettir ve çalışma grubu (ÇG) isimleri daha önce kurulanlar ve daha sonra kurulanlar olmak üzere aşağıdaki gibidir:

Daha Önce Kurulanlar

Adrenal ve Gonadal Hastalıklar ÇG
Diyabet ÇG
Hipofiz ÇG
Obezite, Dislipidemi, Hipertansiyon ÇG
Osteoporoz ve Diğer Metabolik Kemik Hastalıkları ÇG
Tiroid ÇG

Daha Sonra Kurulanlar

Nöroendokrin Tümörler ÇG
Nadir Görülen Metabolizma Hastalıkları ÇG
Tıbbi Beslenme ve Egzersiz Metabolizması ÇG

2.2. Bilimsel Çalışma Grubunun Yapısı

2.2.1 Bilimsel çalışma grubu (BÇG) konu ile ilgilenen gönüllü TEMD üyelerinden oluşur.

2.2.2 TEMD üyeleri aynı anda en fazla 4 ÇG'na üye olabilirler. Ancak bunun tamamı daha önce kurulan çalışma gruplarından olamaz. Daha önce kurulan veya daha sonra kurulan ÇG üyeliği en fazla 3 ile sınırlıdır. Sonuç olarak 3+1, 2+2 veya 1+3 ÇG üyeliği mümkün olabilir. Her üye ÇG'ndan kendi isteğiyle ayrılabilir.

2.2.3 Bilimsel çalışma gruplarına giriş için dernek sekreterliğine dilekçe veya elektronik posta ile başvurulur. YK kararı ile gruba kaydedilir veya yer değiştirilebilir. BÇG üye değişimi, BÇG başkanlık seçimlerinden en az 6 ay önce yapılabilir.

Grup üyelerinin listesi derneğin web sayfasında yayınlanır ve 6 ayda bir güncellenir.

Yönergenin tamamına ulaşmak için lütfen tıklayınız…
Saygılarımızla

YENİ ÜYELER

BİRSEN ÖZTÜRK GÖKÇE	*Eskişehir Osmangazi Üniversitesi Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, Eskişehir*
BEYZA OLCAY ÖZTÜRK	*Tekirdag Namik Kemal Uygulama Arastirma Hastanesi, Endokrinoloji ve Metabolizma Hastalıkları Kliniği, Tekirdağ*
İRFAN NUHOĞLU	*Karadeniz Teknik Üniversitesi Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, Trabzon*
FİDAN NASRULLAYEVA *(Onursal Üye)*	*Azerbaycan*
İRADE ORUJLU *(Onursal Üye)*	*Azerbaycan*
GULAR NIFTALIYEVA *(Onursal Üye)*	*Azerbaycan*
GÜNAY ALİYEVA *(Onursal Üye)*	*Azerbaycan*
SERPİL YANIK ÇOLAK	*Trakya Ünversitesi Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, Edirne*
MERVE KORKMAZ YILMAZ	*Başakşehir Çam ve Sakura Şehir Hastanesi, Endokrinoloji ve Metabolizma Hastalıkları Kliniği, İstanbul*
BETÜL YİĞİT YALÇIN	*İstanbul Üniversitesi İstanbul Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, İstanbul*
GAMZE BİLİK OYMAN	*İstanbul Üniversitesi İstanbul Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, İstanbul*
MÜGE YAŞAR	*Uludağ Üniversitesi Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, Bursa*
EKİN YİĞİT KÖROĞLU	*Ankara Şehir Hastanesi Endokrinoloji ve Metabolizma Hastalıkları Kliniği, Ankara*
ONOUR CHASAN *(Onursal Üye)*	*İstanbul Üniversitesi İstanbul Tıp Fakültesi, Endokrinoloji ve Metabolizma Hastalıkları Bilim Dalı, İstanbul*

Türkiye Endokrinoloji ve Metabolizma Derneği Bülteni

Türkiye Endokrinoloji ve Metabolizma Derneği'nce
Üç ayda bir online yayınlanır
Yayın Türü: Yaygın süreli

TEMD Adına Sahibi Prof. Dr. Ayşegül Atmaca

Sorumlu Yazı İşleri Müdürü Prof. Dr. Mustafa Kulaksızoğlu

Yayın Danışma Kurulu Prof. Dr. Fazıl Mustafa Cesur, Prof. Dr. Sibel Güldiken, Prof. Dr. Dilek Gogas Yavuz, Prof. Dr. İbrahim Şahin, Prof. Dr. Melek Eda Ertörer

Türkiye Endokrinoloji ve Metabolizma Derneği'nce 3 ayda bir yayınlanır.

TEMD bülteninde yayınlanacak derneğimiz ile ilgili haberlerin bekletilmeksizin ve en geç her ayın 1'ine kadar TEMD merkezine ulaşmış olması gerekmektedir.

Yönetim Yeri: Meşrutiyet Cad. Ali Bey. Apt. 29/12, Kızılay 06420 Ankara
Tel: (0312) 425 20 72 Faks: (0312) 425 20 97
E-posta: president@temd.org.tr

Grafik Tasarım: BAYT Bilimsel Araştırmalar Basın Yayın ve Tanıtım Ltd. Şti.
Tel: (0312) 431 30 62 • **Faks** (0312) 431 36 02 • **E-posta:** info@bayt.com.tr