e-ISSN 1303-829X
p-ISSN 0250-4685

TÜRK BİYOKİMYA DERGİSİ

Turkish Journal of Biochemistry

III. Türkiye in vitro Diyagnostik (IVD) Sempozyumu Endokrin ve Metabolik Hastalıklar Tanıdan Tedaviye Biyobelirteçler

28 Şubat - 2 Mart 2018 İzmir

III. Turkey vitro Diagnostic (IVD) Symposium Endocrine and Metabolic Diseases Biomarkers From Diagnostic To Therapy

28 February - 2 March 2018 Izmir

Türk Biyokimya Derneği'nin yayın organıdır
[*Published by the Turkish Biochemical Society*]

2018

Cilt [Volume] 43

Ek Sayı [Supplement] 1

YER ALDIĞI İNDEKSLER [INDEXED BY]
SCI Expanded, Journal Citation Reports/Science Edition, Chemical Abstracts, Index Copernicus, Embase, Scopus, Ulakbim Türk Tıp Dizini, Ulrich's Periodical Directory, EBSCO, Türkiye Atıf Dizini

2018 • VOLUME 43 • SUPPLEMENT ISSUE 1

TURKISH JOURNAL OF BIOCHEMISTRY

TÜRK BİYOKİMYA DERGİSİ

OFFICIAL JOURNAL OF THE TURKISH BIOCHEMICAL SOCIETY

DE GRUYTER

Turkish Journal of Biochemistry (TJB), official journal of Turkish Biochemical Society, is issued electronically every 2 months. Research articles, reviews, short communications, technical reports, case presentations, opinions, and letters to the editor, that have not published elsewhere, on biochemistry, clinical biochemistry, molecular biology, molecular genetics, biotechnology, bioinformatics, bioengineering, and their educational disciplines are published in the journal.

The main aim of the journal is to support the research and publishing culture by ensuring that every published manuscript has an added value and thus providing international acceptance of the "readability" of the manuscripts published in the journal.

e-ISSN 1303-829X

All information regarding notes for contributors, subscriptions, Open access, back volumes and orders is available online at www.degruyter.com/view/j/tjb.

RESPONSIBLE EDITOR Doğan Yücel PhD, Assoc Professor of Biochemistry, Department of Medical Biochemistry, Ankara Training and Research Hospital, University of Health Sciences, 06340, Ankara, Turkey, Tel: +90312 595 321, Email: doyucel@yahoo.com

JOURNAL MANAGER Alexander Görlt, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0) 30 260 05–234,
Fax: +49 (0) 30 260 05–250, Email: alexander.goerlt@degruyter.com
RESPONSIBLE FOR ADVERTISEMENTS
Claudia Neumann, De Gruyter, Genthiner Straße 13, 10785 Berlin, Germany. Tel.: +49 (0) 30 260 05–226,
Fax: +49 (0) 30 260 05–264, Email: anzeigen@degruyter.com

TYPESETTINGCompuscript Limited, Shannon, Ireland

İÇİNDEKİLER

CONTENTS

HOŞGELDİNİZ MESAJI

Değerli Meslektaşlarımız,

Türk Biyokimya Derneği (TBD) İzmir Şubesi olarak 28 Şubat- 02 Mart 2018 tarihleri arasında gerçekleştireceğimiz "Endokrin ve Metabolik Hastalıklar, Tanıdan Tedaviye Biyobelirteçler" temalı III. Türkiye in vitro Diyagnostik (IVD) Sempozyumu’na sizleri davet etmenin heyecanı ve mutluluğunu yaşıyoruz.2016 yılında Dokuz Eylül Üniversitesi Sağlık Bilimleri Enstitüsü iş birliği ile ilkini düzenlediğimiz I. Türkiye IVD Sempozyumu’nda sağlık sektörüyle ilgili tüm paydaşlarla “Tıbbi Laboratuvar Testleri, Eğitim-Öğretim, Araştırma, Üretim, Hizmet ve İnovasyon” ana başlıklarını tartıştık. Bu toplantıdan aldığımız çok olumlu geri bildirimlerle “IVD Sempozyumları”nı geleneksel olarak sürdürmeye karar verdik. Yine aynı işbirliği içinde geçtiğimiz yıl düzenlediğimiz II. Türkiye IVD Sempozyumu’nda, “Biyobelirteçler” konusunu ele aldık.Bu yıl gerçekleştireceğimiz sempozyumda son yıllarda, ülkemizde ve dünya genelinde hızla artan Endokrin ve Metobolik Hastalıkların başlıcaları ile bu hastalıkların tanı ve tedavi yöntemlerinde klinisyen ve laboratuar çalışanlarının kullandıkları biyobelirteçleri gözden geçireceğiz. Hormon tahlillerinin yapılması sürecinde “klinisyen, laboratuar, hasta” üçgeninde tarafların dikkat etmesi zorunlu noktaların tekrar irdeleneceği bilim şöleninde, genç meslektaşlarımızın bilgi ve deneyim kalitesini yükseltmeyi, geçtiğimiz yıllarda olduğu gibi en yeni bilgi ve verileri, alanında yetkin konuşmacılarla birlikte değerlendirmeyi amaçlamaktayız. Hedeflediğimiz ana noktalardan bir tanesi de; konu ile ilgili paydaşlarımız olan IVD kapsamındaki malzeme ve ekipmanın ülkemizdeki tedarikçileri ile bir arada “dışa bağımlılığı azaltacak stratejiler; araştırma-geliştirme- üretim- pazarlama-fikri mülkiyet” üzerinde tartışmak, başarı örneklerini sergilemek olacaktır.

En içten sevgi ve saygılarımızla.

Prof. Dr. Hilal KOÇDOR
TBD İzmir Şubesi YK Başkanı
Sempozyum Başkanı

Doç. Dr. Doğan YÜCEL
TBD Yönetim Kurulu Başkanı
Sempozyum Onursal Başkanı

WELCOME MESSAGE

Dear colleagues,

"Endocrine and Metabolic Diseases, Diagnostic Therapy Biomarkers" which will be realized between February 28 and March 2, 2018 as Izmir Branch of Turkish Biochemistry Association (TBD) III. Turkey vitro Diagnostic (IVD) Symposium We are excited and pleased to invite you. 2016 Dokuz Eylul University Faculty of Health Sciences at the First Turkey IVD symposium we organized the first collaboration with the Institute with all stakeholders involved in the health sector "Medical Laboratory Testing, Education, Research, Production, Service and Innovation", we discussed the main titles. With very positive feedback from this meeting, we decided to continue the "IVD Symposiums" traditionally. Again in the same collaboration II. IVD Symposium in Turkey, "Biomarkers" We have addressed the issue. In this symposium we will be attending this year, we will keep an eye on the leading endocrine and metabolic diseases that are increasing rapidly in our country and worldwide and the biomarkers used by clinicians and laboratory workers in diagnosis and treatment methods of these diseases. We aim to raise the knowledge and experience of our young colleagues in the science festival, which will be held again in the "clinician, laboratory, patient" triangle in the process of making the hormone assays. We aim to evaluate the latest information and data with competent speakers in the field. One of the main points we aimed at is; together with our country's suppliers of materials and equipment within the scope of the IVD, our relevant stakeholders, "strategies to reduce external dependency; research-development-production-marketing-intellectual property ".

With sincerest love and respect.

Prof. Dr. Hilal KOÇDOR
TBD Izmir Branch Chairman of the Board
Head of Symposium

Doç. Dr. Doğan YÜCEL
TBD Chairman of the Board
Honorary Chair of the Symposia

DESTEKLEYEN KURULUŞLAR
[SUPPORTING ORGANIZATIONS]

KURULLAR/COMMITEES

ONURSAL BAŞKAN / HONORARY CHAIR

Doç. Dr. Doğan YÜCEL

SEMPOZYUM BAŞKANI / CHAIR

Prof. Dr. Hilal KOÇDOR

DÜZENLEME KURULU
ORGANIZING COMMITEE

Doç. Dr. Doğan YÜCEL
Prof. Dr. Ferhan SAĞIN
Prof. Dr. Aysun PABUÇÇUOĞLU
Prof. Dr. Hilal KOÇDOR
Prof. Dr. Süleyman AYDIN
Doç. Dr. Ebru SEZER
Doç. Dr. Nilgün YENER
Dr. Ayşe KOÇAK SEZGİN
Dr. Erhan CANBAY
Duygu HARMANCI KARAGÜLLE
Hakan CENGİZ
Akıle TUNCAL
Elif KARADADAŞ
Melda TOMRUK
Murat TOMRUK
Serap ÇELEBİ YILMAZ
Zihni Onur UYGUN

SEMPOZYUM DANIŞMA KURULU
SYMPOSIA CONSULTATION COMMITTEE

Prof. Dr. A. Lale DOĞAN
Prof. Dr. Ali Rıza ŞİŞMAN
Prof. Dr. Ayfer ÜLGENALP
Prof. Dr. Aylin SEPİCİ DİNÇEL
Prof. Dr. Aysun PABUÇÇUOĞLU
Doç. Dr. Banu İŞBİLEN BAŞOK
Prof. Dr. Bilge KARA
Prof. Dr. Can DUMAN
Prof. Dr. Çetin PEKÇETİN
Prof. Dr. Didem KARADİBAK
Prof. Dr. Diler ASLAN
Doç. Dr. Doğan YÜCEL
Doç. Dr. Ebru SEZER
Prof. Dr. Emin KANSU
Prof. Dr. Eser YILDIRIM SÖZMEN
Prof. Dr. Ferhan SAĞIN
Prof. Dr. Fırat BAYRAKTAR
Prof. Dr. Figen ZİHNİOĞLU
Prof. Dr. Gül GÜNER AKDOĞAN
Prof. Dr. Hilal KOÇDOR
Doç. Dr. İlkay AKSU
Dr. Öğr. Üyesi Kader UĞUR
Prof. Dr. Leman TARHAN
Prof. Dr. Lütfiye Füsun SAYGILI
Prof. Dr. Mehmet Ali KOÇDOR
Doç. Dr. Mehmet ŞENEŞ
Dr. Öğr. Üyesi. Mehtap Yüksel EĞRİLMEZ
Prof. Dr. Meral KARAMAN
Prof. Dr. Muhittin SERDAR
Prof. Dr. Mutay ASLAN
Doç. Dr. Nilgün YENER
Prof. Dr. Nuh Zafer CANTÜRK
Prof. Dr. Nuray ULUSU
Prof. Dr. Nur ASLAN
Doç. Dr. Oytun PORTAKAL
Doç. Dr. Özhan ÖZDOĞAN
Dr. Öğr. Üyesi. Rüksan ÇEHRELİ
Prof. Dr. Safiye AKTAŞ
Prof. Dr. Sema SAVCI
Prof. Dr. Serkan YENER
Prof. Dr. Sevim GÜLLÜ
Prof. Dr. Süleyman AYDIN
Doç. Dr. Tufan ÇANKAYA
Prof. Dr. Yahya LALELİ
Prof. Dr. Zekiye Sultan ALTUN
Prof. Dr. Zeynep CANTÜRK

PROGRAM
28 Şubat-2 Nisan 2018

28ŞUBAT 2018

08:30 - 09:30 Kayıt
09:30 - 10:00 Açılış ve Açılış Konuşmaları
10:00 - 11:00 1. OTURUM: AÇILIŞ KONFERANSI
OTURUM BAŞKANLARI: Doğan YÜCEL, Varol PABUÇÇUOĞLU
Geleceğin Tıbbına Yeni Bir Bakış: Precision Medicine
Emin KANSU
11:00 - 11:15 Kahve Arası
11:15 - 12:45 2. OTURUM: İYİ LABORATUVAR UYGULAMALARI
OTURUM BAŞKANLARI: Gül GÜNER AKDOĞAN, Taner ONAT
11:15 – 11:45 Endokrin Testlerinde Kalite Güvencesi
Diler ASLAN
11:45 - 12:15 Endokrinopatilerde Laboratuvar ve Hormon Testleri Dinamik Testlerin Güvenilirliği
Oytun PORTAKAL
12:15 - 12:45 İmmünokimyasal Analizlerde Preanalitik Evre ve İnterferanslar
Mehmet ŞENEŞ
12:45 - 13:00 Toplu Fotoğraf Çekimi
13:00 - 14:00 Öğle Yemeği
14:00 - 15:40 3. OTURUM: TİROİD VE METABOLİZMA
OTURUM BAŞKANLARI: Fırat BAYRAKTAR, Sevim GÜLLÜ
14:00 - 14:30 Enerjinin Dengesi-Tiroid
Taylan KABALAK
14:30 - 15:40 İntrooperatif Biyobelirteçler (Cerrah ve Laboratuvar Bakışı) / Çift Kürsü Sunum
Mehmet Ali KOÇDOR, Dilek ÇIMRIN
15:40 - 16:00 Kahve Arası
16:00 - 17:30 4. OTURUM: ENDOKRİN HASTALIKLARINDA TEKNOLOJİ
OTURUM BAŞKANLARI: Oğuz KILINÇ, Çetin PEKÇETİN
16:00 - 16:30 Endokrin Hastalıklarında in vivo Görüntülemede Yeni Teknikler
Özhan ÖZDOĞAN
16:30 - 17:00 Endokrin Bozucular
Nuray ULUSU
17:00 - 17:30 KONFERANS: "Geçit Ver"
Aylin GÖZTAŞ
17:30 - 18:00 Günün Değerlendirilmesi ve Kahve Molası
SALON 1
OTURUM BAŞKANLARI: Nuray ULUSU, Safiye AKTAŞ
18.00 – 19.00
SÖZLÜ SUNUMLAR
SALON 2
OTURUM BAŞKANLARI: A.Lale DOĞAN, Oytun PORTAKAL
18.00 – 19.00
SÖZLÜ SUNUMLAR
Akşam Yemeği
(Kayıtlı Misafirlerimize)

01MART 2018

SALON 1
OTURUM BAŞKANLARI: A.Lale DOĞAN, Zekiye S. ALTUN
08.00 – 08.40
SÖZLÜ SUNUMLAR
08.40 – 09.00
SENIOR SÖZLÜ SUNUM:
“Diyabet ve Kanser”
A. Lale DOĞAN SALON 2
OTURUM BAŞKANLARI: Leman TARHAN, Süleyman AYDIN
08.00 – 08.40
SÖZLÜ SUNUMLAR
08.40 – 09.00
SENIOR SÖZLÜ SUNUM:
“Metabolik Sendromun Biyokimyası ve Deneysel Hayvan Modelleri”
Süleyman AYDIN
09:00 - 10:30 5. OTURUM: OSTEOPOROZ VE KEMİK METABOLİZMA HASTALIKLARINDA BELİRTEÇLER
OTURUM BAŞKANLARI: Ferhan SAĞIN, Süleyman AYDIN
09:00 - 09:30 Osteoporoz ve Kemik Metabolizma Hastalıklarında Biyobelirteçler
Kader UĞUR
09:30 - 10:00 Kemik Belirteçlerine Laboratuvar Bakışı
Aylin SEPİCİ DİNÇEL
10:00 - 10:30 Osteoporozda Egzersizin Laboratuvar Sonuçlarına Etkileri
Bilge KARA
10:30 - 10:50 Kahve Arası
10:50 - 12:50 6. OTURUM: DİSLİPİDEMİLER VE BELİRTEÇLERİ
OTURUM BAŞKANLARI: Füsun SAYGILI, Muhittin SERDAR
10:50 - 11:20 Hiperlipidemiye Klinisyen Yaklaşımı
Fırat BAYRAKTAR
11:20 - 11:50 Dislipidemiye Laboratuvar Yaklaşımı
Mutay ASLAN
11:50 - 12:20 Dislipidemide Egzersiz ve Biyobelirteçler
Sema SAVCI
12:20 - 12:50 Kuşaklar Farklı, Ya Motivasyon ?
Buket AKSU
12:50 - 13:45 Öğle Yemeği
13:45 - 15:45 7. OTURUM: DİYABET VE METABOLİK SENDROM
OTURUM BAŞKANLARI: Serkan YENER, Diler ASLAN
13:45 - 14:15 Diyabet Hastalarında Klinik Biyobelirteçler
Füsun SAYGILI
14:15 - 14:45 Diyabet ve Obeziteye Laboratuvar Bakışı
Ali Rıza ŞİŞMAN
14:45 - 15:15 Metabolik Sendrom İzleminde Biyobelirteçlere Klinisyen Bakışı
Zeynep CANTÜRK
15:15 - 15:45 “Moleküler Beslenmede Biyobelirteçler: Klinikte ve Araştırmalardaki Uygulamalar ve Yeni Hedefler Metabolomikler
Rüksan ÇEHRELİ
15:45 - 16:00 Kahve Arası
16:00 - 16:45 SATELLİT OTURUM: BAŞARI HİKAYELERİ
OTURUM BAŞKANLARI: İlkay AKSU, Nilgün YENER
16:00 - 16:15 JASEM: LC-MS/MS Tekniğinin Kalıtsal Metabolik Hastalıkların Tanısındaki Rolü ve JASEM Analiz Çözümleri
Gökçe GÖKSU GÜRSU
16:15 - 16:30 MEDSANTEK: Sıvı Biyopsi ve Kanserde Yeni Nesil Sekanslama Uygulamaları, MEDSANTEK Çözümleri
Burak TURAN
16:30 - 16:45 ARCHEM: Biyobelirteç Testlerinde Kalite Kontrol
Salih UCA
16:50 - 18:40 8. OTURUM: HİPOFİZ, ADRENAL, GONADAL HASTALIKLAR
OTURUM BAŞKANLARI: Fırat BAYRAKTAR, Mehmet ŞENEŞ
16:50 - 17:20 Hipofiz ve Hipofiz Hastalıklarında Biyobelirteçler
Sevim GÜLLÜ
17:20 - 17:50 Adrenal ve Gonadal Hastalıklarda Biyobelirteçler
Serkan YENER
17:50 - 18:20 Hipofiz/Adrenal ve Gonadal Hastalıklarda Laboratuvar Bakışı
Can DUMAN
18:20 - 18:40 Fikrimi Nasıl Korurum?
Av. İrem Tuncer TIRAŞ
18:40 - 19:10 Günün Değerlendirilmesi
Akşam Yemeği
(Kayıtlı Misafirlerimize)

02 MART 2018

SALON 1
OTURUM BAŞKANLARI: Figen ZİHNİOĞLU, Ebru SEZER
08.00 – 08.40
SÖZLÜ SUNUMLAR
08.40 – 09.00
SENIOR SÖZLÜ SUNUM:
Bir Mit Değil, Göz Ardı Ettiğimiz Bir Hastalık; Porfiriler
Ebru SEZER SALON 2
OTURUM BAŞKANLARI: Ali Rıza ŞİŞMAN, Banu İŞBİLEN BAŞOK
08.00 – 08.40
SÖZLÜ SUNUMLAR
08.40 – 09.00
SENIOR SÖZLÜ SUNUM:
Tıbbi Laboratuvarlarda Yapay Zekâ Tabanlı Yaklaşımlar: SBÜ. TEAH Deneyimlerimiz
Banu İŞBİLEN BAŞOK
09:00 - 11:10 9. OTURUM: KALITSAL METABOLİK HASTALIKLAR
OTURUM BAŞKANLARI: Ayfer ÜLGENALP, Yahya LALELİ
09:00 - 10:00 Kalıtsal Metabolik Hastalıklara Klinisyen Yaklaşımı
Nur ARSLAN
Kalıtsal Metabolik Hastalıklara Biyokimyasal Yaklaşım / Çift Kürsü Sunum
Canan ÇOKER, Sezer UYSAL
10:10 - 10:45 Lizozomal Depo Hastalıklarında Biyobelirteçler: Klinisyen ve Laboratuvar Yaklaşımı / Çift Kürsü Sunum
Sema KALKAN UÇAR, Eser YILDIRIM SÖZMEN
10:45 - 11:10 Kalıtsal Metabolik Hastalıklarda Genetik Yaklaşımlar
Tufan ÇANKAYA
11:10 - 11:30 Kahve Arası
11:30 - 12:30 10. OTURUM : BAŞARI ÖRNEKLERİ
OTURUM BAŞKANLARI: Okan TUNA, Meral KARAMAN
"Mevcut Eğilimler, Gelecekteki Gelişmeler, Zorluklar ve Fırsatlar"
11:30 - 11:50 Üretim Kültürü
Yasin YOLCU
11:50 - 12:10 Sağlık 4.0: Sağlıkta Endüstri 4.0: DEÜ Uygulamaları
Süleyman SEVİNÇ
12:10 - 12:30 3D Yazıcıların Sağlıktaki Yeri, Önemi ve Kullanımı
Simel AYYILDIZ
12:30 - 14:00 Öğle Yemeği
14:00 - 15:30 11.OTURUM: BİYOBELİRTEÇLER ve İNOVASYON
OTURUM BAŞKANLARI: Banu Esra ASLANERTİK, Recep BEKİŞ
14:00 - 14:30 Sağlıkta Sanayileşme Nasıl Yapılır?
Züfer ARSLAN
Sağlık Bakanlığı, Yatırım Modelleri Daire Başkanı
14:30 - 15:00 Ar-Ge ve Tasarım Merkezleri
Ekrem Türker FİDAN
Bilim, Sanayi ve Teknoloji Bakanlığı, Bilim ve Teknoloji Genel Müdürlüğü
15:00 - 15:30 Örnek Sağlık Teknoparkı DEÜ- DEPARK; Hedeflerimiz
Banu Esra ASLANERTİK
Dokuz Eylül Üniversitesi Rektör Yardımcısı
15:30 - 16:00 Kahve Arası
16:00 - 18:00 12.OTURUM: IVD ve KALİTE YÖNETİM SİSTEMLERİ TARTIŞMA OTURUMU
OTURUM BAŞKANLARI: Varol PABUÇÇUOĞLU, Banu Esra ASLANERTİK
16:00 - 16:30 Multipleks Analizlerdeki Algoritma (Maliyet İnovasyonu)
Muhittin SERDAR
16:30 - 17:00 İşletmelerde Kalite Maliyet Sistemleri
Nuh Zafer CANTÜRK
17:00 - 17:30 Teknolojik Bilgi Üretmek ve Verimliliği Artırmak
Doğan YÜCEL
17:30 - 18:00 Kongre Sunumlarından Özümlemeler
Yahya LALELİ
18.00 - 18.30 Kapanış ve Ödül Töreni
Sempozyum Düzenleme Kurulu Gereğinde Bilimsel Programda Değişiklik Yapma Hakkına Sahiptir.

YAZAR İNDEKSİ
AUTHORS INDEX

DAVETLİ KONUŞMACI ÖZETLERİ
[INVITED SPEAKERS ABSTRACTS]

D-01
FUTURE OUTLOOK of CANCER THERAPY: PRECISION MEDICINE

Emin Kansu
Hacettepe University Cancer Institute, Ankara

Cancer has been one of the most important and challenging disease in medicine. Although a significant progress has been made in the genomics and molecular biology of cancer in last fifty years patients still die of their disease. Therapeutic use of tumor antigen specific monoclonal antibodies, tyrosine kinase inhibitors, adoptive immunotherapy with LAK /TIL cells, cellular immunotherapies andrecently discovered checkpoint inhibitors and CAR-T Cells can be listed as successful list of anti-cancer treatments. As we realize, the limitations of our approaches to cure cancer have been hampered due to vast array of molecular defects that define various cancers and subtypes. Since 2012, NCI and NIH have been discovering unique therapies that can treat an individual's cancer based on specific genetic abnormalities of that person's tumor type. This is a new era of oncology practice where completely mapped genetic and molecular profile about a patient's cancer can be routinely employed for his/her therapy. Precision Medicine is defined as "Translation of basic science to routine testing, screening, diagnosis and therapy in cancer". Precision medicine uses massive data (Big Data) network that aggregates and analyzes information from large patient cohorts, healthy populations, experimental organisms and reaches toward disease mechanisms and precision diagnosis and therapy for each individual. In precision medicine, sequencing cancer genomes is only the first step in understanding the disease. Then, we have to find out which genetic changes / mutations are playing a role as "drivers" in the development of cancer. Transcription Factors (TFs) serve as "master regulators" control most of the genes in the gene signatures of cancers. If one wants to put all the data/big data in perspective system biology, experimental biologist, molecular biologist, expert in bioinformatics and clinical researcher must be employed in the team to translate cancer genome findings (bench) to the patient care (bed-side). President Obama has expressed quite a strong conviction that science offers great potential for improving health and announced the Precision Medicine Initiative on January 15th, 2015 (www.whitehouse.gov/precisionmedicine) . This important initiative has two components, namely "a near-term focus on cancers" and as a second aim to "generate knowledge applicable to the whole array of health and disease". There will be many steps ahead to have a success in speeding the application process and regulatory affairs of this novel therapeutic challenge in cancer medicine for 21st century.

D-02
QUALITY ASSURANCE IN ENDOCRINE LABORATORIES

Diler Aslan
Pamukkale University, Faculty of Medicine, Department of Medical Biochemistry, Denizli

Small changes in the levels of hormones and related biomarkers are invaluable as specific and earlier indicators of endocrine disorders and diseases than appearance of physical symptoms. Clinical practice guidelines recommend heavily the early laboratory testing. Accurate and reproducible measurement is challenging because of some characteristics of these molecules such as their chemical natures, existence in too small amounts, diurnal variations and free forms as well as bound forms in the circulation, and too short half-lives. Therefore, analytical techniques have been evolving continuously in order to produce more reliable and accurate measurement procedures for high quality outcomes. The measurement procedure characteristics and the measurand nature should be known well. Endocrine tests are also influenced heavily by variations in the total testing process. In this context, quality management system which is composed of quality assurance and quality control processes should be established throughout the healthcare institution. Laboratory can be structured according to the ISO 15189:2012, the medical laboratory accreditation standard. National standardization programs are organized for harmonization of hormone measurements. Performance of hormone and related molecules measurements is under responsibilities of the manufacturers/vendors of measurement systems, laboratories, clinicians, and the regulatory authorities. In this context, the following topics are considered in this talk:
•Laboratory quality assurance process and quality control processes, and differences
•Responsibility areas of manufactures, laboratory and regulatory authority in the context of the IVD life cycle
•Characteristics of hormone measurement procedures
•Harmonization and standardization of hormone assays
•Quality assurance of endocrine laboratories according to the accreditation standard (ISO 15189:2012)
•The status in Turkey versus in the world.
In summary, quality assurance in the endocrine laboratories is explained according to the related steps of the IVD medical device life cycle (from production to the last users) with the organizational, national and global point of view by focusing on patient safety and healthcare expenditures.

D-03
LABORATORY AND HORMONE TESTS IN ENDOCRINOPATHIES AND RELIABILITY OF THE DYNAMIC TESTS

Oytun Portakal
Hacettepe University, Faculty of Medicine, Department of Medical Biochemistry, Ankara

The endocrine system is important communication system that regulates cell growth, differentiation, metabolism and reproduction. In this system, signal molecules are chemical-mediators called hormones. Hormones are produced by the gland, secreted into blood to transport to the target tissues that have specific receptors to produce specific effect. This complex structure is controlled by hypothalamus located in the middle-brain, and composes various hormonal axis between hypothalamus, trophic-gland and target-gland. Endocrinopathies are concerned with the synthesis of more or less of hormones. Today, increasing number of biochemical tests are available for endocrine investigation, which are highly sensitive and specific. However, clinical evaluation and basal laboratory tests cannot always be used to diagnose. Provocative/ dynamic tests are needed to evaluate the response of hormonal axis, and to determine exactly where the disorder is; therefore, laboratory investigations are based on dynamic tests. Dynamic tests involve stimulation or suppression of a hormonal axis by hormones/other agents or physiologically. The procedure is challenging for the patient and takes a long time, and requires strict rules. Suitable pre-test patient-preparation, optimal timing for blood/urine sampling, appropriate method selection and post-test interpretation are critical for the reliable testing. For example, false positivity may occur in patient who did not interrupt estrogen therapy before overnight-dexamethasone suppression test (DST). Suitable sampling is important for water-deprivation test containing four-plasma and eight-urine sampling at different intervals. In low dose DST, free-cortisol measurement by immunoassays give cross-reaction with synthetic-steroids that patient had taken, whereas mass-spectrometry does not. Dynamic tests are significant in clinical decision-making; therefore, specific decision-limits should be selected to improve sensitivity and specificity. Those limits change based on assay methods, method selection must be considered. Interpretation is critical, but not included in laboratory implementation. Throughout the procedure clinician and laboratory specialist should work together in order to obtain optimum test results.

D-04
PREANALYTICALPHASE AND INTERFERENCES IN IMMUNOCHEMİCAL ANALYSIS

Mehmet Şeneş
University of Health Sciences, Ankara Health Training and Research Center Department of Medical Biochemistry, Ankara

The total testing process consists of three steps in medical laboratories: preanalytical, analytical and postanalytical phases. Each of these phases makes a different contribution to the total error which is extremely important for the interpretation of laboratory test results and patient safety. In many automated methods, including immunochemistry analysers, the analytical phase is tightly controlled and the contribution of this phase to the total error is extremely low. Because the preanalytical procedures have not been standardized yet, the contribution of preanalytical errors to the total error is still important.Immunochemical assays are analytically sensitive. However they may lack sufficient specificity and accuracy. Specificity, depends not only on the antigen binding properties of the antibody used in the assay method but also on the composition of the antigen and the matrix. Specificity can also be influenced by reagent composition and assay format. Substances may potentially cause interference in the measurement and can provoke changes in the measurable concentrations of the analyte or alter the antibody binding properties. In immunochemical analysis interferences are analyte dependent or analyte independent and can lead to an increase (positive interference) or a decrease (negative interference) in measured analyte concentrations. Hemolysis, lipemia, icterus, anticoagulant effects and sample storage conditions may all cause interferences independently from analyte concentrations. Interactions between sample constituents and one or more antibodies used in the assay method cause analyte dependent interference. These include heterophilic antibodies, human anti-animal antibodies, auto analyte antibodies, romatoid factor and other proteins. Erroneous analyte concentration obtained as a result of interference may have important clinical consequences such as unnecessary further investigations, inappropriate treatments and may threaten patient safety. Therefore, during the interpretation of immunochemical test results, preanalytical error sources should be known and taken into account by laboratory professionals and procedures should be defined wherever possible to identify them.

D-05
TYROID IN ENERGY BALANCE

Taylan Kabalak
Ege University Faculty of Medicine, Department of Endocrinology and Metabolism Diseases, İzmir

Thyroid hormones are the main players in energy balance. We can clearly see the importance of thyroid hormone in energy use in advanced thyroid insufficiency, myxemia patients. Patients are almost as if they are slow-motion, they are not energized. However, although energy reserves, that is, fat and glycogen are sufficiently present, they can not be converted to ATP. With thyroid hormone treatment, everything returns to normal. Hyperthyroidism is also characterized by excessive energy use and associated clinical and laboratory findings. Despite overfeeding, they lose weight, lose energy, energy bangles become negative. There are two basic regulators of energy balance control for thyroid hormone. It is regulated at the center of the hypothalamus. It's a little slow running system. It assesses thyroid hormone regulation and energy balance by evaluating the whole body's metabolic needs. External-thyroid function relation is also directed by the hypothalamus. For example, the need to increase heat generation in extreme cold and the increase in thyroid activity in the context of this is a function controlled by the hypothalamus. In the context of thyroid energy balance, the other regulator is all peripheral cells. The thyroid hormones in the cells are weighted energy control. In this control, the energy needs of the cell and the basic approach to how it can be met. Here the cell increases or decreases the activity of thyroid hormone itself according to the energy need. Naturally, the instruments of the cell are deodorizing while this is ensured. It will increase the formation of deiodinase-1 and deiodinase-2 and T3 and 3,5 T2 when it wants to increase energy use, it will bring weight to the reverse-T3 pathway by activating the deiodinase-3 pathway if energy demand is reduced or the energy economy wants to do it.In the hypothalamus, the arcuate nucleus works like a basic control unit. Controls other hypothalamic nucleus and hypothalamic areas in energy balance and nutrition. The hypothalamus increases the arcuate nucleus, the paraventricular nucleus, the ventromedial nucleus toughness tonus, as well as the autonomic system of the adrenergic pathway. Leptin from fatty tissue, GLP-1 and PYY secreted from ileum L-cells increase satiety tone by stimulating satiety neurons (proopiomelanocortin neurons), paraventricular neurons and ventramedullary nucleus neurons, respectively, in the arcuate nucleus. The arcuate nucleus and the lateral hypothalamus function mainly in the context of nutrition and energy recovery by another approach. Ghrelin stimulates NPY neurons in the arcuate nucleus, directing the person to feed and suppresses the feeling of satiety. The effect of hypothalamic neurons on fasting and satiety is changing the thyroid secretion and activity. For example, we can see this in obese people or weight gainers. In obesity, in other words in excess of energy, leptin elevation directly increases TRH secretion in the paraventricular nucleus. TRH increase naturally increases serum TSH level and FT3 / FT4 ratio. In another approach, the hypothalamus aims to combat the pathological energy surplus by using the thyroid hammer. In rapid decelerations, for example, in bariatric surgery, the ratio of TRH secretion and thus serum TSH, FT3 and FT3 / FT4 is decreasing. Here, the hypothalamus aims to make energy economy by reducing thyroid function. On the other hand, the exchange of thyroid hormone secretion as a primer (depending on the primary disease of the thyroid gland) can also make changes in the context of energy gain or loss in hypothalamic nuclei related to energy balance. T3 elevation reaching the hypothalamus nuclei in hyperthyroids activates the mTOR signaling pathway in the nutrient neurons (NPY neurons) in the arcuate nucleus, increasing NPY and AGRP synthesis and expression and inducing side-to-side feeding through the lateral hypothalamus; while TRH expression is suppressed in the paranitic nucleus on the other hand. In contrast, high T3 suppresses the expression of α-MSH, which is a satiety hormone in the satiety neurons (in the proopiomelanocortin neurons), thereby reducing or eliminating the feeling of satiety. Overeating and eating in hyperthyroid patients is a known fact. Naturally, hypothyroidism is also the opposite of certain measures. As a result, thyroid hormones are an important means of controlling energy balance in the body. These tools are used both by the hypothalamus in energy balance control and by the peripheral cells independently.

D-06
INTRAOPERATIVE BIOMARKERS

Mehmet Ali Kocdor
Dokuz Eylul University School of Medicine, Surgery Breast and Endocrine Surgery Unit, İzmir

As a biomarker, intraoperative parathormon monitoring (IoPTH) is probably unique method to predict operative success during surgical intervention. The most common indication for parathyroid surgery is primary hiperparathyroidism (PHPT) due to adenoma, hyperplasia, cancer or rare some hereditary conditions. The only definitive cure for PHPT is parathyroidectomy of hyperfunctioning or abnormally enlarged parathyroid glands. The aims of the surgery is to achive normocalcemia as well as to avoid recurrence and persistance of PHPT. Recent developments in the field of imaging techniques and ioPTH assays resulted in remarkable paradigm shift in surgery. Traditional surgical approach (bilateral neck exploration) mostly moved to focused or minimally invasive parathyroidectomy. Three important features of parathormone (PTH) make it an ideal biomarker intraoperatively: It has a short half-life of 4-5 minutes. Gland devascularization effects hormon levels immediately. PTH is produced only by the parathyroid glands. Excessive PTH release from hyperfunctioning gland inhibit PTH secretion from the normal parathyroid glands. Thus, biochemical cure is confirmed after successful parathyroid Surgery.İoPTH monitoring provides three important adventages during parathyroid and thyroid Surgery: Inadequate decrease at blood PTH level after removing abnormal gland indicates presence of additional hyperfunctioning gland/s. Surgery is stopped after the obtainning targeted PTH value Postoperative hypocalcemia can be predicted after thyroidectomy. PTH level close to zero is the indication for parathyroid auto-implantation. It is useful for distinguishing parathyroid and non-parathyroid tissues during Surgery. Proper application of ioPTH monitoring into minimal invasive parathyroidectomy has been resulted

in highly accurate and equal outcomes in comparison with BNE. Several ioPTH monitoring protocols have been suuggested for predicting surgical outcomes. Miami criteria is the most common used one: PTH sampling is performed at 4 time points: pre-skin-incision, pre-gland-excision, 5 minutes post-gland-excision, 10 minutes post-gland-excision. When the PTH value at 10 minutes post-gland-excision decreases >50 percent from the baseline level, surgery can be stopped without further neck exploration. Unless, the surgeon can repeat the PTH level at 20 minutes or exploration is continued to other glands. Although, there is no standart protocol, ioPTH monitoring is used for herediter forms of PHPT and renal hyperparathyroidism. However, blood sampling is generally performed 30 mins after complete resection of hyperfunctioning glands.

D-07
INTRAOPERATIVE BIOMARKERS

Dilek Çımrın
Dokuz Eylül Üniversity, Central Laboratory, İzmir

POC testing devices, which provide easy and quick test results for each patient, are regularly improved in recent years. Among point of care tests, the use of tests has been considerably increased for the purpose of providing critical information quickly and thus be helpful to the patient during operations performed to the patient (intra-operative) or diagnostic procedure ran over the patient (intra-procedural). Intraoperative parathyroid hormone (IOPTH) is the most frequently used method, and accordingly such method is very useful for predicting postoperative parathyroid hormone (PTH) level and surgical outcome. The method of the IOPTH analysis is similar to the method of PTH analysis; however, its analysis period has been considerably shortened. Feedback regarding the success of the operation can be immediately received. Accordingly, this avoids repetitive operations in the future.

D-08
ENDOCRINE DISRUPTORS

Nuriye Nuray Ulusu
Koç University, School of Medicine, Department of Biochemistry, Istanbul

Endocrine disruptors are compounds that generally man-made and may interfere with the body's endocrine and other systems. Humans and other organisms are exposed daily to these compounds because they are in our everyday life. Endocrine disruptors are found in the pesticides, herbicides, fungicides, metals, additives, contaminants in food, and personal care products, cosmetics, shampoos, conditioners, hair styling gels, foundations, facial masks, skin creams, deodorants used in the manufacture of some clear plastics (e.g. baby feeding bottles), many medical materials, dialysis machine and dialysate cartridges, toys and buildings, windows, all around everywhere. However, endocrine disruptors may have harmful effects on health. Two years ago the World Health Organization (WHO) has confirmed that human exposure can occur via various ways such as the ingestion of food, dust and water, inhalation of gases and particles in the air, and skin contact. The effects of endocrine distributors of our body may be either low toxic from acute (short-term) and chronic (long-term) exposures produce developmental malformations, reproductive, neurological, immune effects, obesity, increased cancer risk and cause death in the laboratory experimental animals. The aim of our study was to assess and compare adverse effects of various endocrine disruptors in various doses on prepubertal, pubertal and adult male and female rats. We are measuring various parameters such as; body and tissue weight, histopathological changes, trace elements and minerals and various enzyme activities to understand basic effects of endocrine disruptors.

D-09
FUTURE OF MEDICINE; NEW GENERATION DOCTORS

Aylin Göztaş
Ege University, Faculty of Communication, İzmir

Nowadays it is possible to access the database at any time and anywhere. The rapid development of interaction between user and computer systems in the technology of communication, reveals the need for intelligent ecosystems. A system that links every person, every work, each service, every tool to each other with sensor networks, intelligent objects, algorithms always in every context: The objects of the Internet (Iot) are transformed into the internet of everything. Equipped with new / next generation technologies, IOT is an approach that will affect the whole business world and it can be expressed that the intelligent devices and objects are defined one by one in the internet infrastructure and these devices are connected with each other. Such a system in which any data can be retrieved from anywhere at any time, real-time, or in which different data can be collected and analyzed over time, can provide effective solutions in the field of health. Electronic health records, mobile health applications (mHealth etc), data flowing from wearable technologies constitute important inputs of the health data system. USS National Health System, MHRS Center Physician Appointment System, SSBS Sportsman Health Information System, KKDS Clinical Decision Support System, EBDS Electronic Document Management System, İKDS Drug Decision Support System, HRMS Human Resources Management System, KHYS Chronic Disease Management System, E-pulse Personal Health System, Teletip (phonemed) System, ESIS Barrier-Free Health Communication System, AHBS Family Medicine Information System, HSBS Public Health Information System are electronic health platforms used today in our country. Information technologies are utilized in many areas such as health policy production and management, hospital management, clinical research, preventive medicine approaches, drug use analysis, frauds for health records and assurance systems, community health analysis, risk management, patient relationship management, health coaching. In addition to management approaches, information-processing technologies and the internet have facilitated the evolution of medicine after the perception of "healer doctor" and with the 1900s microbiology theory of medicine, called the second stage of medicine, and the phase of better health care towards the 3rd stage: the molecular medicine in which medicine bends atoms, molecules and genes period. Biotechnology derives from genomics, tissue engineering, human body shop, stem cell, cloning, gene therapy are no longer considered as science-fiction films. How a human resource, that is, a health worker and a physician of such transformation should be, and what characteristics should be carried out? The study focuses on this issue.

D-10
DIABETES MELLITUS AND CANCER

A. Lale Doğan
Hacettepe University, Cancer Institute, Department of Basic Oncology, Ankara

Epidemiologic data suggest that T2DM (Type 2 Diabetes Mellitus) is associated with an increased incidence and mortality from many cancers. Obesity and T2DM triggers carsinogenesis via altering endocrine microenvironment. Pro-tumorigenic molecules mediating this process are listed as, insülin, insulin-like growth factor-1 (IGF-1), leptin, adiponectin and inflammatory cytokines, IL-1, IL-6 and TNF alpha. Specifically, insulin and IGF-1 bind to their respective cell surface receptors and activate the PI3K/Akt/mTOR and Ras/Raf/MAPK pathways. Insulin and IGF-1 stimulation promote tumorigenesis via mitogenic, antiapoptotic and proangiogenic effects. Leptin has proliferative and proangiogenic potential in target tissue while adiponectin is a proapoptotic and antiangiogenic molecule. Increase in leptin/adiponectin ratio is critical in neoplastic transformation. Finally,
Obesity related insulin elevation causes lowered steroid-hormone-binding globulin (SHBG) level. Decreased SHBG leads to increased free estradiol and androgens and these hormones are then available to stimulate the growth of estrogen and androgen receptor expressing breast and prostate cancers.

D-11
BIOCHEMOSTRY OF METABOLIC SYNDROME AND EXPERIMENTAL ANIMAL MODELS

Suleyman Aydın
Fırat University, School of Medicine, Deparment of Medical Biochemistry, Elazığ

Increases in metabolic syndrome incidence depending on dietary habits are observed in recent years. Role of fructose containing drinks in the increase of metabolic syndrome incidence is inevitable. For this reason fructose induced metabolic syndrome models are generated in order to reveal the underlying mechanisms of metabolic syndrome and to develop treatment models. Hence, I will try to express the metabolic syndrome models and the formation biochemistry of metabolic syndromes in the light of current knowledge in this presentation.

D-12
THE BIOMARKERS OF OSTEOPOROSIS AND METABOLIC BONE DISEASE

Kader Uğur
Department of Endocrinology and Metabolism Diseases, Fırat University School of Medicine, Elazığ

Osteoporosis is a chronic disease and increases the risk of fragility fractures which is a very important social and economic problem in many countries of the world. Early diagnosis of reduced bone mas sor osteoporosis and fracture prevention treatment is important. An ideal examination of diagnosis and follow-up method of osteoporosis should indicate both loss of bone mass and fracture risk. Biochemical markers of bone turnover are non-invasive and efficient tool to evaluate bone diseases. Osteoblastic and osteoclastic ratio of bone matrix can be detected by either measuring leading active enzymes of bone forming and resorbing cells or measuring bone matrix components which released to circulation during bone remodelling. These markers have advantages in bone cycle such as being unexpensive, non-invasive, reusable and to be able to show bone cell activity. But the disadvantages of these markers are inequality of sensitivity and specificity and lack of fully research of some markers. As a result, in this speech we plan to make an assessment about bone biomarkers which is used to measure drug efficacy only to help bone mineral density in studies, is seen in articles about bone, is measured almost only for research, doesn't exist in routine laboratory tests and is reached only by some academic personel.

D-13
LABORATORY OVERVIEW OF BONE MARKERS

Aylin Sepici Dinçel
Department of Medical Biochemistry, Faculty of Medicine, University of Gazi, Ankara

Bone remodeling is characterized by temporal and spatial coupling of bone formation and resorption that is necessary for normal bone structure maintenance and skeletal growth. A wide range of biochemical markers provide information on bone cells known as bone turnover markers (BTM) which can be divided as markers of bone resorption and formation. The measurement of BTM can reflect either enzymatic activities characteristic of the bone-forming (alkaline phosphatase), or resorbing cells or bone matrix components released into circulation during resorption (collagen type I telopeptides). Although different assays for many markers have been adapted to automated biochemical analyzers making them rapid and cost-effective in clinical laboratories, none of the currently available bone markers have shown to be advantageous over others with regard to their clinical utility. The recent report of Joint Working Group of International Foundation of Osteoporosis (IOF) and International Federation of Clinical Chemistry on Standardization of Bone Turnover Markers recommend; one bone formation marker (serum PINP) and one bone resorption marker (serum CTx) to be measured by standardized assays for the prediction of fracture risk and monitoring of osteoporosis treatment in adults. To addresses the limitations of variability IOF and National Bone Health Alliance have implemented different complimentary activities around the harmonization and the use of all BTMs. However all those traditional BTMs have been used for years to decide the fracture risk prediction and largely for treatment monitoring that show earlier changes following the beginning of treatment allowing useful measurements to be observed about 1 to 3 months. Nowadays there has been a new approach which bases on our understanding of bone metabolism. Related with that periostin, cathepsin-K, sclerostin, dickkopf-1, RANKL, FGF-23/klotho/osteocalcin, sfingozine-1-phosphate and microRNAs are considered as new biomarkers. Also the clinical use of those biochemical markers has not been fully established, their relationship with fracture risk has still have question marks and their use as treatment monitoring tools needs to be studied. Why we are working on them, as all those new mentioned markers can tell us about the osteocyte activities and distinguish the bone compartments that they might be helpful for exploring the physiological and pathological links between the bone and other organs, and to monitor systemic diseases.

D-14
EFFECT OF EXERCISE ON LABORATORY RESULTS IN OSTEOPOROSIS

Bilge Kara
Dokuz Eylul University, School of Physical Therapy and Rehabilitation, İzmir

Osteoporosis is an osteometabolic disease which increases the risk of fracture and impairs bone quality and microarchitecture of the bone tissue is characterized by the loss of bone mass. Although osteoporosis has different classifications based on the age of a person, localization of the disorder, bone tissue involved, etiology and histological appearance, it is increasingly becoming widespread in both females and males. Although sex hormones are often reported to be effective in the development of osteoporosis, menopause and lack of physical activity are also important risk factors. Physical activity affects the bone structure by mechanical forces directly, and by hormonal factors indirectly. Mechanical forces lead to the preservation of bone mass during a physical activity by activating ground reaction forces with the contractile activity of the muscles. It is important to maintain bone health through appropriate exercise approaches, in which the type, density, frequency, and length of the activity are adjusted. Exercise activates osteocytes which lead to the release of growth factors and cytokines, resulting in increased osteoblastic activity. The measurement of bone biomarkers is important in identifying the responses of bone cells to exercise. Serum bone alkaline phosphatase (B-ALP) and serum osteocalcin indicate new syntheses in bone. After appropriate exercise, biochemical markers increase significantly. Long-term moderate intensity exercise affects the production of osteoclastogenic and antiosteoclastogenic cytokines by promoting the formation of peripheral blood mononuclear cells. Exercise exerts its effect by changing the balance between osteoclastogenic cytokines and antiosteoclastogenic cytokines. With the formation of hematopoietic cells around the bone, similar changes occur at the micro level. These affect osteoclasts which promote bone resorption, osteoblasts which are responsible for bone formation and autogenesis by producing bone-loader signals. Bone biomarkers indicate that exercise plays an important role in bone health.

D-15
HYPERLIPIDEMIA

Fırat Bayraktar
Dokuz Eylul University Faculty of Medicine, Department of Internal Medicine, Department of Endocrinology and Metabolic Diseases, Izmir

Hyperlipidemia is a primary, major risk factor for ASCVD and may even be a prerequisite for ASCVD. Epidemiologic data also suggests that hypercholesterolemia and perhaps coronary atherosclerosis are risk factors for ischemic cerebrovascular accident (CVA). (TG) and

low-density lipoprotein cholesterol (LDL-C) and a decreased concentration of high-density lipoprotein cholesterol (HDL-C)- as an important risk factor for peripheral vascular disease, CVA, and ASCVD. A comprehensive strategy to control lipid levels and address associated metabolic abnormalities and modifiable risk factors is recommended primarily for lifestyle changes (Physical Activity, Medical Nutrition Therapy and Smoking Cessation) and patient education with pharmacotherapy as needed to achieve evidence-based targets. Statin therapy is recommended as the primary pharmacologic agent to achieve target LDL-C goals on the basis of morbidity and mortality outcome trials. In individuals within high-risk and very high-risk categories, further lowering of LDL-C beyond established targets with statistical results in additional ASCVD event reduction and may be considered. Combination therapy of lipid-lowering agents should be considered when the LDL-C / non-HDL-C level is markedly increased and monotherapy (usually with a statin) does not achieve the therapeutic goal. Ezetimibe and proprotein convertase subtilisin / kexin type 9 (PCSK9) inhibitors (alirocumab, evolocumab) can be used in combination with statins to reduce LDL-C and ASCVD risk. In statin-intolerant patients Ezetimibe or PCSK9 inhibitors can be used as monotherapy. Fibrates should be used to treat severe hypertriglyceridemia (TG> 500 mg/dL). Fibrates may improve ASCVD outcomes only in primary and secondary prevention when TG concentrations are ≥200 mg/dL and HDL-C concentrations <40 mg/dL. Microsomal Transfer Triglyceride Protein (MTP) inhibitor (lomitapide) and anti-sense Apolipoprotein B oligonucleotide (mipomersen-subQ injection) are other treatment options for homozygous familial hypercholesterolemia.

D-16
LABORATORY APPROACH TO DYSLIPIDEMIA

Mutay Aslan
Akdeniz University Faculty of Medicine, Department of Medical Biochemistry, Antalya

Standard lipid analysis includes measurement of fasting plasma or serum total cholesterol (TC), triglyceride (TG), low density lipoprotein cholesterol (LDL- C) and high density lipoprotein cholesterol (HDL-C). Non–HDL-C (TC-HDL-C) reflects the amount of total atherogenic particles in plasma. The 2017 Turkish Endocrinology and Metabolism Association guidelines for diagnosis and treatment of metabolic lipid disorders indicate that non–HDL-C is a better predictor than LDL-C when determining cardiovascular risk in high TG patients with Diabetes, Metabolic Syndrome and Chronic Kidney Disease. Measurement of nonfasting non–HDL-C is useful. When nonfasting non–HDL-C concentrations are greater than 220 mg/dL or triglyceride levels are higher than 500 mg/dL a possible underlying genetic disorder needs to be inquired. Measurement of small dense LDL-C (sdLDL-C), lipoprotein a [Lp(a)], lipoprotein-associated phospholipase A2 (Lp-PLA2), LDL/HDL particle number and concentration can add significant information to the standard lipid profile regarding cardiovascular disease (CVD) risk. Lp(a) increase, combined hyperlipidemia, and dyslipidemia can be seen in familial lipid disorders associated with premature CVD. Plasma fatty acid analysis is beneficial to assess adequacy of omega-3 fatty acid intake and gain information on excess levels of circulating saturated and trans fatty acids. Plasma sterol measurements can be helpful for the diagnosis of diseases associated with very low density lipoprotein cholesterol (VLDL-C) levels over 50 mg/dL and/or LDL-C levels above 160 mg/dL. Elevated levels of lathosterol, β-sitosterol and cholestanol can be observed in Familial Combined Hyperlipidemia, Phytosterolemia and Cerebrotendinous Xanthomatosis, respectively. Assessment of apolipoprotein (apo) A-I in HDL particles by gel electrophoresis is important to determine CVD risk, HDL functionality, marked HDL deficiency (HDL-C <20 mg/dL) due to apoA-I deficiency and Tangier disease. Measurement of apoB is valuable for the diagnosis of abetalipoproteinemia and hypobetalipoproteinemia. Lecithin cholesteryl acyltransferase (LCAT), hepatic lipase and cholesteryl ester transfer protein (CETP) deficiency can be verified by evaluating associated protein levels and activity. Definitive diagnosis of dyslipidemias caused by genetic disorders and causes of markedly elevated triglycerides (> 1,000 mg/dL) requires next generation DNA sequencing of the appropriate and relevant genes. This can provide a molecular diagnosis to formulate optimal therapy strategies.

D-17
EXERCISE AND BIOMARKERS IN DYPLIPIDEMIA

Sema Savcı
Dokuz Eylul University, School of Medicine, Department Physical Therapy and Rehabilitation, Izmir

Cardiovascular diseases are the leading cause of mortality continues to be all over the world. Dyslipidemia is found in some diseases such as obesity, type 2 diabetes melllitus and coronary artery diseases. Dyslipidemia is an important cardiovascular risk factor and modifable with life style management. Both primary prevention and secondary prevention with exercise training has been shown to decrease the development of cardiovascular events. The risk scoring of patients is one of the most important points in the treatment of dyslipidemia. Individuals must be seperated according to risk scores for cardiovascular diseases and dyslipidemia approach should be planned accordinly this risk scoring. Many research demonstrated that aerobic exercise combined with weight loss significantly reduces blood cholesterol, low density lipoprotein cholesterol(LDL-C), very low density lipoprotein cholesterol (VLD-C), and triglycerides(TG) while improving high density lipoprotein cholesterol(HDL-C). Aerobic and resistance exercise training shown to decrease in non HDL-C independent of changes in body weight. The benefit effects of single session of aerobic exercise are observed for postprandial lipemia. Acute and chronic exercise trainings have been pointed as important management to counteracts both dyslipidemia symtoms and systemic inflamation. Physical activity has been recomended inthe prevention /and treatment of the chronic inflamatuar diseases such as dyslipidemia. American Association of Clinical Endocironologist recommended that exercise programs should include at least 30 minutes of moderates intensity physical activity 4to 6 times weekly, with an expenditure of at least 200kcal/day. Exercise training is cost effective tool and can cause fewer side effects than isolated medicine in dyslipidemia.

D-18
GENERATIONS ARE DIFFERENT, WHAT ABOUT MOTIVATION?

Buket Aksu
Altınbaş University, School of Pharmacy, Pharmaceutical Technology Department

Motivation is a phenomenon that can only be understood by interpreting the behavior of people and motivation factors can be common in generations. Groups that share birth date and important moments at critical developmental stages are called "generations". Generations which categorised differently in the literature today mostly classified as Silent, Baby Boomer and Millennials including X and Y generations. The most important things that motivate loyal and consistent Silent generation who desire for stability and foreseeing career steps are assurance and status. The motivating things for baby boomer workers, born into post-war social turmoil and problematic with authority are money, senior position and individual development. X Generation tries to achieve more business / private life balance in career management. In their motivations, training and conferences will help them build business relationships; group work rather than individual work, the opportunities offered in addition to salaries are influential. The Millennium Generations includes young people who are fond of freedom, can easily adapt, give up quickly, be well educated, challenge the authority, and adore technology. This generation is in the expectation of flexibility in working conditions as well as in job descriptions; and getting feedback and guidence from their supperiors. Encouraging them to produce innovative ideas, appreciating their contributions and taking individual differences into consideration also affects their motivation positively. Money is not one of the means of motivating this generation; but the lack leads to a loss of motivation. Employers need to continue to motivate the millennium generations and find ways to protect them. Because new entrants seen in the bussines life will unearth unique challenges along with the innovations

they bring. All this shows that innovations created by the millennium generations will dramatically change not only the way we communicate, but how we manage and restructure healthier societies.

D-19
LABORATORY VIEW OF OBESITY AND DIABETES

Ali Rıza Şişman
Dokuz Eylul University Faculty of Medicine, Department of Medical Biochemistry, İzmir

Obesity is an imbalance between energy intake or lipogenesis / lipolysis in a narrow sense. The World Health Organization (WHO) reports that obesity has doubled in the past 30 years and is the most important health problem of the 21st century. The budget allocated to obesity constitutes 1-3% of health expenditures worldwide. WHO categorizes obesity based on Body Mass Index (BMI). According to this; overweight (BMI = 25.0-29.9kg/m2) and obesity (BMI ≥ 30kg/m2). As of 2008, the prevalence of overweight in the world is 35% and the prevalence of obesity is around 11%. Obesity is an epidemic disease that increases the incidence of type 2 diabetes, cardiovascular disease, stroke and cancer. Type 2 Diabetes is parallel to obesity in both sex and all ethnic groups and is closely related to the grade and duration of obesity. Increased visceral, subcutaneous and liver adiposity associated with obesity cause insulin resistance. Insulin resistance locally indicates a decrease in the insulin metabolic response of the target cell and a decrease in the effect of endogenous or exogenous insulin in order to reduce the circulating blood glucose level. Insulin resistance and hyperinsulinemia are accepted as the key event that obesity increases the risk of type 2 diabetes, hypertension, dyslipidemia and cardiovascular events. In the evaluation of obesity and diabetes; anamnesis, physical examination and laboratory are important places. Laboratory tests can be grouped into routine tests, gulucose-insulin homeostasis, fat tissue markers, inflammation markers, and omics-based markers: Routine tests: Fasting plasma glucose, postprandial blood glucose, OGTT, HbA1C, lipid profile, uric acid, BUN and creatinine, Liver Function Tests (ALT, AST, GGT, ALP), and microalbumin in urine. Gucose-insulin homeostasis tests: Insulin, insulin-like growth factor and C-peptide. Fat tissue markers: Adiponectin, omentin, apelin, leptin, resistin and fatty acid binding protein-4. Inflammatory markers: C-reactive protein, interleukin-6, tumor necrosis factor-□. Omics-based markers: Metabolites and microRNAs. The number of biomarkers that can be used in diagnosis and treatment of obesity and diabetes is increasing day by day, bringing innovations in risk prediction, screening, diagnosis and prognosis. However, biological variability and methodological variability are constraints on their use. When biological markers are used; reliability, validity, sensitivity, specificity and interpretation of data are important. Sample collection, storage and use should be standardized and their biological variability should be determined so that these markers can be appropriately verified and made available in the clinical setting. Nowadays, in the "personalized medicine" era, interest in New biomarkers specific to obesity and cardiometabolic diseases is increasing. Promising biomarkers are emerging, including adipokines, cytokines, metabolites and microRNAs.

D-20
CLINICAL OBSERVATION OF BIODIVELUTE IN METABOLIC SYNDROME MONITORING

Zeynep Cantürk
Kocaeli University Faculty of Medicine, Department of Endocrinology and Metabolism, Kocaeli

Metabolic syndrome; abdominal obesity, insulin resistance, dyslipidemia, hypertension, hypofibrinolysis, inflammation and endothelial dysfunction, resulting in Type 2 diabetes and coronary heart disease. In the development of the metabolic syndrome; high fat and carbohydrate diet, physical inactivity, aging, genetic factors and perinatal malnutrition. Studies have shown that diabetes and insulin resistance and cardiovascular diseases follow each other, suggesting that these diseases may originate from the same root, and this common cause may be inflammation and oxidative stress. Metabolic syndrome is thought to be the most important factor that triggers inflammation and oxidative stress on the basis of genetic and metabolic susceptibility of overnutrition and obesity. A number of adipocytokines are normally secreted from adipocytes. When adipose tissue reaches a certain threshold level as it is obesity, adipocytes cause dysregulation of adipocytokine release. Accordingly, leptin, leptin / adiponectin ratio (LAO), PAI-1, uric acid, IL-6, TNF-alpha, oxLDL are increased while adiponectin, ghrelin, IL10 and PON1 are decreasing. Some ratios, such as high molecular weight adiponectin / adiponectin and leptin/adiponectin ratios, are more important than their individual values. A biomarker is a measurable variable that can be used as an indicator of a biological condition. Biomarkers can be used in diagnosis and treatment if there are no clear clinical signs and anatomical abnormalities in many pathologic conditions or if they are not definite. Biomarkers can also identify individuals susceptible to disease in the community; they can also determine the level of this predisposition. It is suggested that certain cytokines, which may increase their levels in metabolic syndrome, may be used as biomarkers in diagnosis or treatment. These levels of cytokines correlate with both cardiovascular disease and metabolic syndrome components.

D-21
BIOMARKERS IN MOLECULAR NUTRITION: CLINICAL AND RESEARCH APPLICATIONS AND NEW TARGETS METABOLOMICS

Rüksan Çehreli
Dokuz Eylul University, Health Services Vocational School, Institute of Oncology, Department of Preventive Oncology, Izmir

The rapid developments in molecular nutrition science in recent years show the importance of investigating the relationship between diseases and nutritional status of people. For this reason, epidemiology, nutrigenetics, nutrigenomics and related issues between nutrition and diseases are being investigated. The data obtained indicate that biomarkers need to be evaluated in areas such as nutriepigenomics and metabolomics. Nutrients may affect directly or indirectly the expression of the gene at cellular level. They act directly as ligands for transcription factor receptors. It is metabolized by metabolic pathways that cause changes in the concentrations of substrates and intermediate mediators in cell signaling and gene regulation. And also nutrients changes the signaling pathways and signaling. Active nutrition compounds in diet may change gene expressions related with the immune system. There is an engaging link between cell intrinsic and extrinsic metabolites and gene expression, with frequently observed experimental evidence of molecular mechanisms resulting in immune cells. The definition of "chrono-nutrition and chrono-immunology" enabled a new understanding about the effect of metabolism on immunity and the role of Warburg effect on immune cell functioning in recent years. The emerging field of metabolomics in human nutrition, as well as the development of valid FFQ and the continued expansion of food metabolome databases will permit the identification of specific dietary components in food, produce more valid biomarkers of exposure to certain foods and possibly advance nutritional science research which aims to evaluate diet and disease relationships. Biomarkers of dietary exposure should be valid, reproducible, able to detect changes in intake over time and be suitable for the general population. Yet many of the dietary biomarkers reviewed appeared inadequate at meeting all of the mentioned criteria. There are multiple factors that warrant investigation before many of these biomarkers can be more widely utilized in nutrition and health research. Genetics, age, type of specimen, time of year, and confounding dietary sources play a pivotal role in the feasibility and validity of dietary biomarkers. Future research should be directed at refining existing biomarkers by accounting for confounding factors, establishing new indicators of specific food intake and developing techniques that are cost-effective, noninvasive, rapid and accurate measures of nutritional status.

D-22
PITUITARY BIOMARKERS IN HEALTH AND IN PITUITARY DISEASES

Sevim Gullu
Ankara University, Faculty of Medicine, Department of Endocrinology and Metabolic Disorders, Ankara

The pituitary gland produces and secretes hormones those play fundamental roles in regulating endocrine function. The pituitary gland has two lobes; an anterior and a posterior lobe. Adrenocorticotropin (ACTH), growth hormone (GH), thyroid-stimulating hormone (TSH), luteinizing hormone (LH), follicular-stimulating hormone (FSH) and prolactin (PRL) are secreted from the anterior lobe. Posterior pituitary releases antidiuretic hormone (ADH)/vasopressin and oxytocin, which are synthesized by the neurosecretory cells in the hypothalamus and stored in the posterior pituitary. ACTH stimulates synthesis and secretion of glucocorticoids, mineralocorticoids and androgens from the adrenal cortex. The most important secretagogue of ACTH is corticotrophin releasing hormone (CRH). Physical, emotional and chemical stresses stimulate ACTH secretion. ACTH has a pulsatile secretion pattern along with the CRH. It has a diurnal rhythm. Hypersecretion of ACTH results in Cushing Disorder and hyposecretion results in secondary adrenocortical insufficiency. GH synthesized and secreted by the somatotroph cells within the anterior lobe. Growth hormone releasing hormone (GHRH), ghrelin and somatostatin influence the secretion of GH. Primary function of GH is the promotion of linear growth. Growth-promoting effects are mediated mostly by insulin-like growth factor 1 (IGF-1), but it has direct effects too. GH deficiency results in dwarfism in children. In the adults GH deficiency results in several metabolic disturbances and osteoporosis. On the other hand gigantism or acromegaly develops with GH excess. The hypothalamic control of PRL secretion is mainly inhibitory. Dopamine is the major inhibitory factor. The major function of PRL is stimulating lactation in the postpartum period. Hyperprolactinemia in adults results in hypogonadism. Absence of the lactation is the major consequence of hypoprolactinemia. TSH secretions is controlled by TRH (stimulates) and somatostatin (inhibits). Thyroid hormones control secretion by negative feedback. TSH deficiency causes central hypothyroidism and with TSH excess inappropriate TSH secretion results in thyrotoxicosis. LH and FSH regulates sex steroid secretion and gametogenesis. Deficiency of gonadotropins results in hypogonadism in both sexes. Excess gonadotropin secretion causes hypogonadism, ovarian hyperstimulation or testicular enlargement. Pituitary hormones should be evaluated along with the target gland hormones. Pulsatile secretion and short plasma half lives deserve attention while interpreting the results. For the evaluation of pituitary disorders dynamic tests are needed along with the basal hormone levels.

D-23
LABORATORY POINT OF VIEW IN PITUITARY / ADRENAL AND GONADAL DISEASES

Can Duman
İzmir Demokrasi University, Faculty of Medicine Department of Medical Biochemistry, Izmir

Hormones are organic compounds secreted into the bloodstream by specific glands, which modulate the functions of the tissues and specific organs that they reach via blood and act in very low quantities. It is derived from the Latin word 'hormaein', to stimulate, to act. Thetissues in which they function are called target tissue. Some hormones may not be released from a specific gland or may have local effects instead of secretion into blood. Endocrinology is the study of medicine that relates to the endocrine system. The production and release of hormones into the blood are regulated by hierarchical control mechanisms. The majority of the hormones are released into the bloodstream by the effect of control mechanisms moving from top to bottom. The top step of these control mechanisms is the hypothalamus located at the base of the brain. With different neural stimuli reaching the cholestatic region, this region leads to the release of very small amounts of specific hormones, which we call releasing-releasing (sometimes slowing-inhibiting) factors. These hormones reach the anterior lobe of the 'hypophysis', a small endocrine gland located in the bone space called Sella Turcica that placed in the middle region of the brain via nerve fibers. Each secretory factor secreted by the hypothalamus leads to the release of a specific hormone from the anterior pituitary gland. The hormones released from the pituitary gland reach to the target tissues and glands via bloodstream and perform their specific functions. These functions are often as to stimulate the target gland for the production and release of its own hormones. Some hormones are not subject to this hierarchical system or are very little dependent. There are different stimulating and inhibiting mechanisms that regulate the synthesis and release of these hormones such as insulin, epinephrine, and glucagon.

D-24
NOT A MYTH, BUT A DISEASE WE IGNORE; PORPHYRIAS

Ebru Sezer
Ege University Faculty of Medicine, Department of Medical Biochemistry, İzmir

Porphyrias are a group of rare metabolic disorders characterized by the lack of enzymes involved in the synthesis of 'haem' and the excessive accumulation of haem precursors before the defective step. Diagnosis is usually delayed or it is likely that porphyria is often not considered at all as a cause of the patient's symptoms and relevant patients may thus never be tested for these disorders. The presence of different clinical types, and the emergence and variation of symptoms relevant to many different medical specialties complicate the accurate diagnosis. The fact that the number of patients diagnosed with porphyria in our country is very low compared to Europe is probably due to the limited awareness of the physicians about the disorder and the lack of sufficient specialized laboratories to diagnose porphyria.Currently, prevention of acute attacks is possible with preventive measures and treatments if the patient is accurately diagnosed, but unfortunately patient's quality of life is very low because of the lack of accurate diagnosis in most cases. It is of great importance that the patients are diagnosed so that the screening of relatives and genetic counseling can be carried out especially in consanguineous marriages. European Porphyria Initiative (EPI), founded in 2001 to improve the quality of diagnosis and treatment of porphyria patients in Europe, has been active as Europen Porphyria Network (EPNET) since 2007. The organization, which has succeeded in creating an effective network of specialized porphyria centers within the European Union, includes porphyria centers of 21 countries working to develop a current consensus-based approach for management for the disease, patients and their families. Many European countries with much smaller population than Turkey, have reported EPNET a much higher number of patients diagnosed with porpyhrias than Turkey which points out how our health system ignores the disorder.If a "selective screening" including patients with suspected symptoms, which is the recommended method for detection of rare diseases is carried out, data on the prevalence of the disorder in Turkey can be obtained and porphyria patients may receive the accurate diagnosis/treatment without wasting time and proper living conditions, taking necessary precautions may be assured.

D-25
ARTIFICIAL INTELLIGENCE BASED APPROACHES IN MEDICAL LABORATORIES: UNIVERSITY OF HEALTH SCIENCES TEPECIK TRAINING & RESEARCH HOSPITAL EXPERIENCES

Banu Isbilen Basok
University of Health Sciences, Tepecik Training and Research Hospital, Medical Biochemistry Department, Izmir

Artificial Intelligence (AI) is defined as software systems that improve the current processes with more efficient use of information and reduced costs by supporting more accurate decisions, or taking these decisions directly. By using AI technology, systems can be created that can perform certain human behaviors (such as device use) and mimic the process of thinking on an area of expertise (such as medical diagnosis). Despite known since 1960's, significant increase in AI use

has been made possible by the more economical and powerful computer systems. It is expected that one of the main areas where AI technology is widely used is medicine. The processes that AIs are often be used in medicine are: optimization of laboratory and radiological analyzes, medical diagnosis, personalized treatment, treatment monitoring, robotic surgery, digital consultation, drug design, medical data management. It is possible to increase the quality in the medical laboratories with the improvements in phlebotomy unit, which is one of the important component of the preanalytical process, and which plays a significant role in laboratory errors. The contributions of AI to the medical laboratory organization will be assessed using AI technology in the phlebotomy unit visited by an average of 1000 patients per day. Our web-based test database that inform any knowledge regarding the test requested fast and effortlessly to clinicians, laboratory staff, health personnel and patients upon online and / or mobile environments will also presented. Finally, "Predictive Quality", a new approach to internal quality control evaluation developed by faculty members from 9 Eylül University, Department of Computer Engineering and Medicine Faculty Department of Medical Biochemistry and tested in our laboratory will be discussed. In summary, it is planned to increase awareness of AI in medicine by sharing our experience on the AI that is expected to improve quality and productivity in health.

D-26
CLINICAL APPROACH TO INBORN ERRORS OF METABOLISM

Nur Arslan
Dokuz Eylül University, İzmir Biomedical and Genomic Center and Health Sciences Institute Molecular Medicine, Izmir

Disorders of inborn errors of metabolism are a group of rare diseases caused by defects of coding genes of enzymes, transport proteins or structural proteins of the body. Because of the high rate of consanguinity and the high rate of the reproductivity, metabolic disorders are more common in Turkey than the rest of the world. According to their pathogenesis, metabolic disorders can be divided into three diagnostic groups: intoxication type diseases, disorders related with energy metabolism and disorders related with complex molecules. Generally, these diseases can be occured in four different clinical presentations: 1) Early symptoms in the antenatal and neonatal period (hydrops fetalis, sepsis etc), 2) Later onset acute/ recurrent attacks of symptoms (coma, ataxia, vomiting, acidosis, cardiac, renal, liver or other organ failure), 3) Chronic and progressive neurological symptoms (developmental delay, mental retardation, seizures, psychiatric symptoms), 4) Specific and permanent organ/system presentations (such as cerebral, ocular, renal, cardiac, hepatic signs). After the diagnosis of metabolic disease, disease-specific treatment is used to the patients.

D-27
BIOCHEMICAL APPROACH TO INHERITED METABOLIC DISEASE- LABORATORY DIAGNOSIS

Canan Çoker
Dokuz Eylül University, Faculty of Medicine, Department of Medical Biochemistry, Izmir

There is a great spectrum of inherited metabolic diseases due to defects in enzymes/proteins related to about all biochemical pathways. The diagnosis of these disorders is performed at three stages, measurement of the metabolites, measurement of the activity of the responsible enzyme and the analysis of the specific mutation. Measurement of the metabolites and enzyme activities is also used for screening and monitoring of these diseases. Tandem Mass Spectrometry (MS/MS) is being widely used for newborn screening of inherited metabolic diseases. Mass spectrometry is an analytical technique in which molecules or fragments are defined and measured quantitatively according to mass-charge ratio. It is possible to screen for many metabolic diseases including primary aminoacidemias, urea cyle disorders, organic acidemias and fatty acid oxidation disorders by analysis of dried blood spots by MS/MS. The reference method for quantitative analysis of amino acids consists of ion exchange liquid chromatographic separation followed by photometric measurement of ninhydrin reaction and is performed by amino acid analyzers. Recently, Liquid Chromatography Tandem Mass Spectrometry (LC-MS/MS) is being more widely preferred for amino acid analysis due to its speed. Urinary organic acids are analysed by Gas Chromatography Mass Spectrometry (GC-MS). In addition to these basic analysis; many other metabolites are analysed using mass spectrometric techniques eg. fatty acids by GC-MS; purins and pyrimidines, bile acids and steroids by LC-MS/MS. In metabolism laboratories, high performance liquid chromatography is used for the analysis of oxalate and sitrate, glycosilated proteins, electrophoresis is used for separation of mucopolysaccharides and thin layer chromatography is used for separation of oligosaccharides. In some storage disease, the abnormal metabolites cannot be detected, thus direct measurement of the enzyme activity is performed in leucocyte or fibroblast homogenates or in serum or plasma. In recent years LC-MS/MS is being applied for measurement of lysosomal enzymes in dried blood spots. In metabolism laboratories; spectrophotometric and spectrofluorimetric methods are also still valid for measurement of enzyme activity eg. Biotinidase and for measurement of some metabolites eg. sialic acid, mukopolysaccharides. The diagnosis of inherited metabolic disease requires the use of numerous different techniques for the analysis of molecules representing different biochemical pathways.

D-28
BIOCHEMICAL APPROACH TO INBORN ERRORS OF METABOLISM

Sezer Uysal
Dokuz Eylul University, Faculty of Medicine, Department of Biochemistry, İzmir

Inherited metabolic disorders are a growing number of disorders with increasing diagnostic methods usually seen in newborns or early childhood. These disorders can lead to permanent physical and mental retardation, coma and death if not treated. Early diagnosis is important in terms of success in treatment and prevention of permanent sequelae. Some of the diseases can be diagnose with newborn screening tests, while others occur with clinical symptoms. These diseases can cause life-threatening conditions in the acute phase. Emergency tests are of great importance for an undiagnosed patient, while patients with known anomalies are sometimes presenting with acute episodes. In such cases, patients must be evaluate urgently. The most common clinical presentation of inherited metabolic diseases are nonspecific conditions such as catabolic state due to acute decompensation, energy deficiency, and acidosis. Emergency tests such as whole blood count, electrolytes, blood sugar, calcium, blood gases, uric acid, PT, liver function tests, ammonia, lactic acid, pyruvic acid, creatine kinase, pH are used for evaluation and treatment of this condition. In addition, many analyzes such as odor, reductant substance, ketoacids, sulfite test and phenylpyruvic acid test are also used. In addition to these tests useful in the acute phase, many metabolites such as amino acids, fatty acids and organic acids can also be measured using advanced technological chromatographic techniques to guide the diagnosis and treatment of the disease. As a result, early diagnosis and emergency laboratory evaluation is the most important step for success of treatment. A missed diagnosis can lead to lifelong sequels and even death.

D-29
BIOMARKERS IN LYSOSOMAL STORAGE DISEASE: LABORATORY APPROACH

Eser Yıldırım Sözmen
Ege University Faculty of Medicine, Department of Medical Biochemistry, İzmir

Lysosomal storage diseases which are related to deficiency of specific lysosomal hydrolases resulted to clinical aspects due to accumulation of substrates in different tissues. Since Dried Blood Spot (DBS) is non-invasive, low-cost, easy transportable, acceptable enzyme stability

compared to leucocyte and/or fibroblast culture, it's recommended as a first screening test.
As enzyme replacement therapies are available currently, early diagnosis of these diseases is crucial nowadays. The gold standard for diagnosis is determination of enzyme activity in DBS and/or plasma and/or leukocyte samples. Disease diagnosis is verified by determination of genetic mutation in gene of enzyme protein which is specific for LSD. However, a variety of problems such as low accuracy of enzyme activity methods, unknown genetic mutations, high ratio of false positive diagnosis due to methods, complicate the correct diagnosis of these patients. Therefore, clinicians need new biomarkers other than enzyme activity to diagnose and monitor of enzyme replacement therapy of the patients.
Recently two types biomarker have been suggested for LSD. 1) Primer biomarkers which are metabolites accumulated in tissue due to enzyme deficiency, found in plasma and/or urine, e.g. glycosaminoglycan in urine of patients with mucopolysaccharidosis, tetrasaccharide in urine of patients with Pompe disease. 2) Secondary biomarkers which are non-specific, increase in serum/urine resulted from damaging of other tissues due to disease. e.g. biomarkers of liver damage and renal damage. Some biomarkers in this group are partially specific to disease. e.g. chitotriosidase which is a macrophage activation marker, increases in blood of patients with Gaucher disease, Niemann Pick disease. Currently, LAMP-1 LAMP-2, some interleukins, saposins and cathepsins as further biomarkers are focus of investigations.

D-30
BIOMARKERS FOR LYSOSOMAL STORAGE DISORDERS: CLINICAL AND LABORATORY APPROACH

Sema Kalkan Uçar
Ege University Faculty of Medicine Children Metabolism Laboratory
İzmir

Lysosomal storage disorders (LSD) are group of diseases with metabolic defects associated primarily with a disruption in the catabolism and/or transport of by-products of cellular turnover, coupled with the secondary consequences of the accumulation of incompletely metabolized substrates within particular cell types. Initially, the individual disorders were grouped according to the chemical composition of the storage material, e.g. sphingolipidoses (Gaucher, Fabry, Niemann-Pick A/B/C, Metachromatic leukodystrophy, Krabbe disese, Tay-Sachs/Sandhoff disease, GM1-gangliosidosis), mucopolysaccharidoses (Hurler/Scheie, Hunter, Sanfilippo, Morquio, Maroteaux-Lamy, Sly, Natowitcz) oligosaccharidoses (Mannosidosis, Sialidosis, Fucosidosis, Aspartilglucosaminuria) etc. More recently, these disorders have been clustered according to their biochemical or molecular basis. To date, the LSDs encompass at least 250 different clinical entities. LSD are pernicious, multi-systemic and under diagnosed disorders, frequently with a (sub) clinical onset at pediatric age. Their phenotype is heterogeneous in age of onset, rate of progression and involved organs. Several clinical manifestations, such as hepatosplenomegaly, coarse facial features and skeletal dysplasia, can serve as an important clue for LSD. On presentation, especially in a young child, the diagnosis can be missed, particularly when the family history is uninformative. Therefore, identification of the biomarkers that can serve as a surrogate for or indicator of disease severity, in terms of either overall disease burden or involvement of a particular organ or system is very important. Diagnostic confirmation necessitates biochemical and/or molecular genetic testing. Ideally biomarkers should be easily and cheaply measurable in readily obtained samples (urine/blood) and moreover, their concentration or activity should be found to be greatly elevated in disease states, without overlap in values between affected and healthy subjects, and should change rapidly in response to specific treatment outcomes that are clinically meaningful. The main known markers for LSD are chitotriosidase-CCL18-PARC-ACE-TRAP(Gaucher),
globotriaosylceramide (lysoGb3)-uromodulin (Fabry) and urinary Glc4-plasma Hex4 (Pompe).

D-31
GENETIC APPROACHES FOR INHERITED METABOLIC DISEASES

Tufan Çankaya
Dokuz Eylül University Faculty of Medicine, Department of Internal Medicine, Department of Medical Genetics, Izmir

Genomic or mitochondrial abnormalities cause congenital disorders and one of the major group of these disorders is inherited metabolic diseases. Metabolic pathways are important for continuity for an organism and particular abnormalities on the pathway affect function of spesific proteins and/or enzymes. Inherited metabolic disorders are monogenic disorders which are mainly autosomal recessive manner. Autosomal dominant and X linked patterns affect metabolic pathways less frequently. Small DNA changes can affect inborn errors of metabolism by anomalies of nucleotides which are important for their funcionality. For research and/or routine clinical diagnosis, mainly molecular techniques such as Sanger and next generation sequencing are used recently. Molecular genetic analyses and their techniques are highly important issue for diagnosis because it is necessary for genetic counselling and evaluating appropriate treatment opportunities.

D-32
CULTURE OF PRODUCTION

Yasin Yolcu
Rel Assay Diagnostics

Our company founded in 1993 based on all branch of medical sector, but we started the transition for laboratory service because this field was süit for our educate. As we manufacturer company, our thinking based on provide our national culture of production, high technology, sustainable development and inheritance by future generations. We observed that there were gap of scientific and industry and there were not any meeting platform. We observed the Prof. Dr. Özcan EREL's works on diagnostics field and negotiated the work for industry. Prof. EREL decided that agreed with us for benefit of our national. This was initial model and New step for our country because there were not national precedent on international so many of our decisions and behaviors were first for our country. Our platform of inventors expanded with Doç. Dr. Şahabettin SELEK in time. We observed many unknown before the production so we solved step by step. We attanted international fuar and congress as Turkish company. We decided that take the quality certificates such as KFDA however scientists used the our product so we have many international articles by the way the value of our trade mark increased as rapidly. This event supportted the our national high technology image for international area. Value of the trade mark is important for promote the products. The branding period is too long and very expensive issue but unfortunately there is not enough importance in our country so level of consciousness is necessary for branding. Quality products and standard are basic issue for branding. I hope that our story will be helpfull. Production is a culture...Best Wishes.

D-33
EFFECTS OF INDUSTRY 4.0 IN HEALTH SERVICES: HEALTH 4.0 RESEARCH AT DOKUZ EYLUL UNIVERSITY

Süleyman Sevinç
Dokuz Eylül University, Department of Computer Engineering, Izmir

First industrial revolution was defined by steam power. The second industrial revolution was defined by mass production and use of electricity, while the third industrial revolution was defined by use of electronics and computers in manufacturing. The fourth and the last industrial revolution, known as Industry 4.0, is defined by use of cyber-physical systems in manufacturing. Cyber-physical systems are engineering systems based on seamless integration of computational

algorithms with physical systems. Artificial intelligence, cloud computing, machine learning, internet of things, intelligent robots, 3-d printers and big data have enabled development of sophisticated cyber-physical systems. Health 4.0 encompasses effects of Industry 4.0 in Health services. Successes registered in the past few years in image processing based on use of deep learning techniques have been transferred to areas such as radiology, opthalmology and cardiology. Wearable Technologies and point of care testing devices have enabled collection of real-time health data in large quantities. Online Access to big data and computational methods that can learn differences and similarities between patient health records paved the way to development of new approaches in diagnosis and treatment of diseases. In one study at Dokuz Eylul University (DEU) "Computational Medicine (CM)" research group, it is aimed to derive pediatric-reference intervals from electronic health records using computer algorithms. Conventional approach to determining reference intervas would have required forming of healthy pediatric population which is costly and difficult to manage. In another study, it is aimed to design algorithms to determine effects and side-effects of treatment applied to a patient. Health 4.0 has also been resulting in process perfection in blood sample collection centers. In this work, entire blood sample collection center is run by a planning algorithm resulting in patient convenience, resource optimization and reduced pre-analytical error rate. A machine learning algorithm predicts patient waiting times and recommends the number of phlebotomists for best performance under a given patient load. Work is also going on in "Computational Laboratory Medicine". A deep learning based machine learning algorithm has been tested for verification of clinical laboratory test results. The performance of this system is comparable to performance of an human expert. Another work which has already progressed to its publication phase uses machine learning algorithms to predict exact timing of "out-of-control" events in internal quality control in a clinical laboratory setting. Laboratorians, therefore, can know the exact time when an analytical system has gone, or will go, out of control. This ensures only accurate laboratory test results are reported to clinicians which should result in better medical decisions. "Computational Medicine" and Industry 4.0 concepts have triggered a new revolution in health services which is commonly called Health 4.0. Computational power, big data and computational algorithms show the way to new horizons in diagnosis and treatment of diseases. DEU CM group continues doing work in the area to help new developments in health services.

D-34
THE PLACE, IMPORTANCE AND USE OF 3D PRINTERS IN HEALTH

Simel Ayyıldız
Gülhane Medical Design and Manufacturing Center, University of Health Sciences, Department of Prosthodontics, Gülhane Faculty of Dentistry, University of Health Sciences, Ankara

It is accepted that the 4th Industrial Revolution started with the concept of "Industry 4.0" in 2013. In addition to being the age of information, this revolution in the industry has brought people in many different areas in the virtual environment and has accelerated the development in the World. From such an alteration, the health field has also been affected and has shown great changes that will bring many benefits to humanity. Thereby, a rapid and permanent change has begun in health by the meeting of engineering and technology. In this sense, especially 3D printers have made a rapid entry into the healthcare sector and have enabled the production of useful products over time. 3D printers are especially evolving in many areas such as elimination of hard tissue defects and also, production of tissue, organs, etc. Moreover, today, it is also possible to produce education models in desired dimension and quality. Gülhane Medical Design and Manufacturing Center, that takes place in University of Health Sciences, is a public corporation that keeping pace with these developments since 2011. 3D hard modelling, 3D modelling of patients with 3D plastic printers before surgery, also, in complex indications, 3D plastic modeling to show the diseased tissues and adjacent anatomical formations with different color codes to the physician, elimination of hard tissue defects with 3D metal printers and production of educational models are some of the capabilities of the Center. We have been serving to the healthcare sector with more than 100 cases and continue to do so. Custom designed and produced 3D models enable ergonomic surgery application, preoperative inspection of the patient and also, operate the surgery beforehand. In this presentation, I will try to inform the physicians and health employee, with sample case studies in our Center about the place, importance and the use of 3D printers and also the developments in this area.

D-35
R & D CENTERS AND DESIGN CENTERS

Ekrem Türker Fidan
Ministry of Science, Industry and Technology, Ankara

The purpose of the supports for the Research & Development and Design Centers, under the responsibility of the Department of R&D and Design Centers, is to encourage the firms to make R & D and design. Private sector R&D centers and Design Centers are the entities of narrow tax payer companies that are able to:

a) Employ at least 15 full-time equivalent R&D personnel, employ at least 10 full-time equivalent R&D personnel,
b) Implement R&D and design activities in Turkey,
c) Have R&D and design management capability and capacity regarding to technological assets, R&D and design human resources, intellectual property, project and information resources,
d) Have facilities which physically control the working time of R&D and design and support staff in R&D Center and Design Center,
e) Have R&D and Design Center and innovation programs and projects with the issue, time, budget and personnel needs being defined.

Private Sector R&D Centers and Design Centers are supported under the Law No:5746, published in the Official Gazette dated 12 March 2008, entered into force on April 1st 2008.Purpose of Law about the Support of Research and Development Activities with no. 5746.

To support and encourage;

1. Production of technological knowledge
2. Innovation in product and production process
3. Increase in product quality and standards
4. Commercialization of technological knowledge
5. Development of precompetitive collaboration
6. Entrepreneurship and investment
7. Acceleration of direct foreign investment for R & D, innovation and design
8. Increase in employment of R&D and design personnel and skilled labor.

D-36
QUALITY COST SYSTEMS IN HEALTH ENTERPRISES

N. Zafer Cantürk
Kocaeli University Hospital / Innovation Society for Quality in Health (SAKİD), Kocaeli

Recently, a competition environment has been tried to provide better quality health care services in the health care sector. Hence, patients have a chance to choose one of the many hospital operations to get health care, while hospital operators are in the race to make more patients prefer themselves. Hospital operations are also struggling to provide better quality and less costly health care services. The inability to determine the fees for the services offered in hospitals has led hospital administrators to control costs. It is important to control the

costs in hospital enterprises. In addition to high costs due to the nature of health care services, the failure of the related institutions to collect the services provided, the medications used, the medical supplies and some of the examinations due to the incomplete arrangement of the ill-conceived bills or the erroneous results in the loss of revenue in the hospital enterprises. Managers must plan income and expenditure by creating work programs and budgets based on all the quality and cost-related aspects of their businesses for the foreseeable future. Hospital administrators with the control of the costs of health services provided in hospital enterprises; reducing costs, increasing the quality of service offered, using the inputs and outputs effectively and efficiently, and determining the performance of employees. In a theoretical world where the quality is perfect and the defective product is not available, the existence of the costs of improperness will not be mentioned. However, it requires the existence of a quality costing system because these actual costs must be calculated, analyzed and interpreted. Factors that increase costs and decrease productivity in hospital enterprises in researches:

• Having the work to be done outside in the hospital with less cost,
• Unnecessary surgical interventions,
•The lack of use of some advanced facilities and labor-intensive technological commitment,
• Determination of hospital sizes, regardless of regional demand,
• Physicians tend to have more laboratory tests.

Costs can be reduced while upgrading quality. It is considered important to take the following activities or measures in order to achieve this.

•Managers should describe their attitudes towards quality improvement to employees, raise awareness of employees, take their ideas and reward high performance ideas.
• Workplace peace should be established,
• Effective and effective human resource management,
• Establishment of a savings culture at the institution / organization,
• To privatize the services evaluated in the support services such as meals, security and cleaning, if necessary, from the outside through procurement,
• Cost analysis,
• Effective cost of investment calculation (far from populist approach, real and proactive planning),
• To plan and supply drugs, medical and non-medical supplies and fixtures that increase service costs, especially in the healthcare sector, according to the patient portfolio served, and not to make more stock than necessary to maintain uninterrupted flow,
• Preventing waste (time - material management),
• Sufficient automation system.

Each hospital should establish, monitor and implement a system that will follow quality costs in line with its own work standards. The classification, accounting, reporting and analysis of quality cost data to be performed by the quality management unit and the accounting unit will be helpful in the strategic decisions of the top management of the enterprise.

D-37
ON SCIENTIFIC AND TECHNOLOGICAL DEVELOPMENT

Doğan Yücel
S. B. Ankara Training and Research Hospital, Department of Medical Biochemistry, Ankara

Everything is connected in nature and in society. In general, financial (economic) relations and infrastructure determine the superstructure institutions such as science, culture, law, education, politics. Scientific and technological development and technological knowledge production should also be evaluated in this framework. Turkey's industrial revolution could not have been the most important factors determining the current level of development. Turkey is located in the 20 largest economies in the world today. The number of scientific publications in Turkey are also compatible with this sort: 1996-2016 in terms of number of publications between Turkey, reference is made post # 20 453 565. However, when the number of citations per publication (9.1) and the index H (339) are compared, Another important problem is the high number of citations made to the self: 23.5% of the total citations are self-attributions. Turning specifically to the basis of the number of publications in the field of medicine that can be cited Turkey it has declined in the last 7-10 years. When examining the 2017 data for innovation, only one of the production areas (kitchen products) such as aviation and defense, automotive, biotechnology, cosmetics, food and beverages and tobacco, household goods, information technology, medical devices, oil and gas, pharmaceuticals, semiconductors, telecommunication, it seems that a company has entered the top 10 companies. According to OECD data, the resources allocated to R & D in Turkey's gross domestic product as 0.882's% (0.32% in 1990, 0.64% in 2000), while the number of researchers per 1000 employees 3.57. This data is also far below the average for OECD countries, Turkey ranks 33 of 38 OECD countries. Turkey, along with the establishment of the Republic in the 1930s and has given importance to scientific and technological developments in after 1960 were passed to the planned development; TÜBİTAK in 1963, TÜSSİDE in 1971, TÜBİTAK-MAM in 1972 was established. The extent of R & D has given the importance of state power, though it is not the place it deserves in Turkey. What should be done? A holistic view is necessary. R & D should be further developed, basic science should be encouraged, female scientists should be promoted in R & D. R & D activities should be encouraged.

SÖZLÜ SUNUM ÖZETLERİ
[ORAL PRESENTATION ABSTRACTS]

OP-01
ASSOCIATION OF SERUM MIDKINE LEVELS WITH INSULIN RESISTANCE AND OBESITY IN POLYCYSTIC OVARIAN SYNDROME PATIENTS

Fatma Beyazit
Onsekiz Mart University, Obstetrics and Gynecology, Canakkale

Objectives: Recent studies suggest a possible role of midkine in inflammatory response by increasing leukocyte migration. Therefore, a possible involvement of midkine in polycystic ovary syndrome (PCOS) can be speculated due to connection between PCOS and inflammation. The aim of the present study is to analyze serum levels of midkine in PCOS patients and determine a possible connection between midkine and insulin resistance.
Materials-Methods: This cross-sectional study includes 54 PCOS patients and 36 age and body-mass index (BMI) matched controls. Routine biochemical tests and hormonal analysis were applied to all study participants. Serum midkine levels were determined with ELISA method. Insulin resistance were evaluated with HOMA-IR.
Results: Mean serum midkine levels were 14.2±14.3 and 17.0±17.8 pg⁄ml in PCOS patients and controls respectively (p=0.412) (Table 1). According to BMI subgroups (BMI › 25 vs › 25), midkine levels were found to be elevated in PCOS patients with BMI › 25 kg⁄m2 (p=0.044). According to HOMA-IR values PCOS patients were divided into two groups. Although an increasing trend was observed in respect to serum midkine levels in HOMA-IR › 2.5 subgroup this elevation was not statistically significant (p=0.301) (Table 2).
Conclusions: Unaltered midkine levels in PCOS patients compared with controls suggests that midkine has no role on PCOS pathophysiology. However, the positive effect of obesity on midkine levels suggests that midkine is probably released from adipocytes. Insulin resistance probably has a significant effect on this mechanism and there is a strong need for further studies that will unreveal the association between obesity, insulin resistance and midkine in PCOS patients.
Keywords: PCOS, midkine, insülin resistance, obesity

OP-02
CASE; ISOLATED HYPERPHOSPHATASEMIA IN CHILDHOOD

Fatma Demet Arslan[1], Banu İşbilen Başok[1], Berna Eroğlu Filibeli[2], Gönül Çatlı[3]
[1]Tepecik Education and Research Hospital, Medical Biochemistry İzmir
[2]Tepecik Education and Research Hospital, Department of Child Health and Diseases, İzmir
[3]Tepecik Education and Research Hospital, Department of Child Health and Diseases, İzmir

Objectives: Benign transient hyperphosphatasemia, occurs in early childhood, is not associated with liver or bone disease, and usually improves within months. It was aimed to evaluate the macroenzyme presence in a 2.5 years old male patient who was under follow-up due to idiopathic isolated serum alkaline phosphatase (ALP) elevation since newborn period and to emphasize the importance of family investigation for differential diagnosis.
Materials-Methods: Biochemical parameters were evaluated in the patient and family members. The patient was examined radiologically for bone growth. The precipitation test with polyethylene glycol was performed to exclude macroenzyme presence. A heat-inactivation test was performed to find the dominant isoenzyme. The pedigree was generated for ALP levels according to age and sex-matched reference range.
Results: The physical examination, anthropometric measurements, and developmental stages of the patient were consistent with age. ALP levels of the patient, father and sister were elevated according to age and sex(975, 152 and 579 IU⁄L, respectively), although their calcium, phosphorus and parathormone levels were normal. The bone isoenzyme was the dominant one without any trace of illness radiologically.
Conclusions: The child was diagnosed as benign familial hyperphosphatasemia, rarely seen and transferred autosomal dominant, because of the isolated ALP elevation together with other family members without any disease or symptom. Benign familial hyperphosphatasemia is a asymptomatic disease which has a genetic variant of ALP. However, to distinguish from other causes of ALP elevation is important in order to not to cause stress in patient and family and not to confuse diagnosis and treatment.
Keywords: Hyperphosphatemia, alkaline phosphatase, childhood

OP-03
EFFECT OF STEM CELL AND NICHE ON THE WOUND HEALING IN CULTURE FOR THE EFFECT OF DIABETES AND MENOPAUSE MIMICED BY BONE-LIKE TISSUES FORMATION WITH STEM CELL DIFFERENTIATED OSTEOBLASTS

Fulya Gülbağça[1], Pınar Kılıçaslan Sönmez[2], Mahmud Özkut[2], Fatma Şimşek[1], Meltem Kuruş [1], Mehmet İbrahim Tuğlu[2]
[1]İzmir Kâtip Çelebi University, Department of Histology and Embryology, İzmir
[2]Manisa Celal Bayar University, Department of Histology and Embryology, İzmir

Objective: In menopause-associated with diabetes, problems of healing of bone fractures and age-related emboli are an important problem in medicine. It is a known method to imitate culture environment due to ethic and harmful effects. We investigated the effects of diabetes and menopause on the formation of bone-like tissue in the culture and the treatment potential of stem cells and niches.
Materials and Method: A fracture was imitated with a scracth in this environment. Addition of high glucose and estrogen to the medium were used to mimic the effect of osteoporosis. Osteoblast differetiation of adipose-derived stem cell was achieved by supplementation of ascorbic acid, beta-glycerophosphate and dexamethasone. Characterization of osteoblast was performed using osteonectin and osteocalcin. The presence of bone-like tissue was demonstrated by Alizerin red and Von kossa histochemistry. Bone fracture was imitated by creating a scratch on the bone-like tissue by a pipette. During healing, high glucose and lack of estrogen was shown to be associated with diabetes and menopause. The treatment effect of the stem cell and niche to the wound closure has been examined.
Discussion: Differentiated osteoblasts and mineralized bony-like tissue formation was detected succesfuly in culture. In wound healing, the delay in diabetic and estrogen-free environment was significantly accelerated by stem cells and nishe with faster and better bony-like tissue was formation.
Conclusion: It has been determined that stem cell and niche treatment may be beneficial for bone fractures in diabetic menopausal patients. Thus it was thought that it could be possible to reduce the cost and increase the patient's life quality.
Keywords: Osteoporosis, Stem Cell, Osteoblast, Cell Culture, Wound Healing

OP-04
HIGH-THROUGHPUT ANALYSIS OF HIGH-CHOLESTEROL DIET INDUCED ATHEROSCLEROSIS AND THE EFFECT OF ENDOPLASMIC RETICULUM STRESS

Perinur Bozaykut
Istanbul Medipol University, Biochemistry Department, İstanbul

Objective: Hypercholesterolemia is the major risk factor for the development of atherosclerosis although the mechanism of action still remains unclear. In the present study, our aim was to investigate cellular defenses activated by oxidative and endoplasmic reticulum stress (ER) on cholesterol diet induced atherosclerosis, and to determine the effects of vitamin E on the related mechanisms, in vivo.
Material and Method: Twenty-four male albino rabbits were assigned randomly to four groups fed: 1) vitamin E deficient diet, 2) vitamin E deficient diet with daily intramuscular injections of vitamin E (50 mg⁄kg), 3) vitamin E deficient diet containing 2% cholesterol and 4)

vitamin E deficient diet containing 2% cholesterol with daily intramuscular injections of vitamin E (50 mg⁄kg). The consequences of hypercholestrolemic diet and vitamin E effect were examined determining ER stress markers and antioxidant protein levels by immunoblotting and the proteasomal activity by fluorometric detection method in aortic tissues. High-throughput analysis is performed by whole-genome sequencing method.
Results and Discussion: Cholesterol fed rabbits exhibited atherosclerotic lesions and endothelial damage compared to control rabbits wheras lipid accumulation and foam cell formation was detectable in animals fed cholesterol and treated with vitamin E. The expressions of ER stress markers were increased by the cholesterol-rich diet. Whereas, vitamin E resulted in elevated antioxidant levels and notably, the proteasomal activity which was impaired in cholesterol fed group was increased by vitamin E as well.
Conclusion: Our result demonstrated that cholesterol-rich diet accounts for the development of atherosclerosis via oxidative and ER stress related factors and vitamin E treatment affords protection via these factors.

OP-05
A NEW IMMUNOHISTOCHEMICAL BIOMARKER FOR MEDULLARY THYROID CARCINOMA: INSULINOMA-ASSOCIATED PROTEIN 1

Hasan Güçer
Recep Tayyip Erdoğan University, Department of Pathology, Rize

Objectives: Insulinoma-associated protein 1 (INSM1) is a zinc-finger transcription factor that regulates neuroendocrine differentiation. It has been shown to be expressed in pituitary adenomas, pheochromocytoma, various neuroendocrine tumors, and carcinomas as well as fetal neuroendocrine tissues. INSM1 is also reported to be positive in medullary thyroid carcinoma (MTC), but the expression in other thyroid lesions has not been investigated sufficiently. In this study, INSM1 expression was investigated in MTC and in various thyroid and parathyroid lesions which may cause difficulties in differential diagnosis of MTC.
Materials-Methods: Thirty eight MTCs, 22 normal thyroid tissues, 23 follicular nodular diseases, 20 follicular adenomas, 20 follicular variant papillary carcinomas, 20 classical variant papillary carcinomas, 3 follicular carcinomas, 5 poorly differentiated thyroid carcinomas, 5 anaplastic carcinomas, 5 solid cell nests, 10 normal parathyroid tissues, 5 parathyroid hyperplasia, 10 parathyroid adenomas and 1 parathyroid carcinoma were included in the study. Positivity of the tumor cell population was graded as 0 (when positive cell comprised 0%), 1+(‹ 5%), 2+(5– 50%) or 3+(› 50%) in the tumor area.
Results: INSM1 expression was observed in normal and hyperplastic C-cells and MTCs only. INSM1 was expressed in 38 out of 38 MTCs (100%). The distinct nuclear expression of INSM1 enabled to distinguish MTCs from other neoplastic and non-neoplastic tissues clearly.
Conclusions: The findings obtained in this study suggest that INSM1 is a useful immunohistochemical biomarker for diagnosing of MTC. Since it is expressed only in C-cells and showed minimal or no artefactual reactions, the INSM1 antibody is also useful for the determining number and distribution of C-cells.
Keywords: Medullary thyroid carcinoma, INSM1, immunohistochemical biomarker

OP-06
EXAMINATION OF DISTAL LATANCE AS FALL RISK BIOMARKER IN PATIENT WITH DIABETIC PERIPHERAL NEUROPATHY

Duygu Aktar Reyhanioğlu[1], Bilge Kara[1], Gaye Yıldırım[2]
[1]Dokuz Eylül University, Physical Medication and Rehabilitation, İzmir
[2]Dokuz Eylül University, Neurology, İzmir

Objective: It was intended to determine of lower extremity motor nerve electromyography results with fall risks of patiens in subjects with diabetic peripheral neuropathy.
Materials-Methods: The study included 9 patients with type 2 diabetes who were diagnosed as peripheral neuropathy by electromyography (EMG). Demographic features and tibial and peroneal ankle latance were recorded with EMG. Risk of falls are assessed by Biodex Balance balance system
Results: Mean age of subjects were 65.33 ±6.5 and body mass index were 30.76±5.7. There was a strong positive correlation between the increased latency of the tibial nerve and the risk of falling (r: 0.736). There was no correlation between peroneal nerve and falling risk.
Conclusions: The longer the response of the tibial nerve to the stimulus is, the greater the risk of falling has been observed. It can be predicted that the risk of falling can be reduced by increasing the excitability of the tibial nerve in patients with diabetic peripheral neuropathy. Mobilization of tibial nerve and strengthening the muscles which are innervated by the tibial nerve may be considered as an alternative for reducing fall risks. Extending the scope of the study by increasing the number of cases will ensure that the results are more reliable.
Keywords: Diabetes, tibial nerve, fall risk

OP-07
FREQUENCY OF CONGENITAL HYPOTHYROIDISM IN NEWBORNS WHO ADMITTED TO HOSPITAL

Selda Telo
Fırat University Faculty of Medicine, Department of Medical Biochemistry, Elazığ

Objectives: We aimed to evaluate the frequency of congenital hypothyroidism (CH), and thyroid function test (TFT) results according to diagnosis in newborn infants followed in our hospital.
Materials and Methods: Infants, who admitted to Firat University Hospital of newborn clinic or polyclinic between 2014-2017 years and had TFT results were included. Results were retrospectively scanned from the hospital's digital archive system files. TSH levels were divided as; ‹ 15 IU⁄mL (group1), 15-50 IU⁄mL (group 2) and › 50 IU⁄mL (group 3). TFT results were evaluated according to diagnoses.
Results: A total of 983 infants were included, 437 (44.5%) were female. No statistically significant difference was found in TSH levels between sex. According to TSH levels, 871 (88.6%) infants was grouped as group1, 83 (8.4%) was group 2, 29 (3%) was group 3. 2.8% of infants diagnosed with CH; of the remaining neonatals diagnosis was; 19.4% prolonged jaundice, 31.7% low birth weight, 13.2% low birth weight with prolonged jaundice, 31.7% other diagnoses. Mean sT4 values were 1.45 ± 0.53 ng⁄dL in group1, 1.41 ± 0.54 ng⁄dL in group 2, 0.63 ± 0.56 ng⁄dL in group 3. sT4 was significantly lower in group 3 compared to other two groups (P ‹ 0.0001).
Conclusion: Frequency of CH was 3% in newborn infants. This high ratio emphasizes the need for close monitoring of TFT results in newborn infants.
Keywords: Congenital hypothyroidism, newborn, TSH

OP-08
DETERMINATION OF VITAMIN D RECEPTOR EXPRESSION IN SCLERODERMA SUBTYPES

Ayşe Koçak[1], Duygu Harmancı[1], Merih Birlik[2], Gül Güner Akdoğan[3]
[1]Dokuz Eylül University, Department of Molecular Medicine, İzmir
[2]Dokuz Eylül University, Romatology Department, İzmir
[3]Ekonomi University, Department of Medical Biochemistry, İzmir

Objectives: The aim of this study was to compare the expression of Vitamin D receptor (VDR) in scleroderma subtypes. VDR is a member of the nuclear localized hormone receptor family. 1,25- (OH) 2D, a form of metabolically active Vitamin D3, is the ligand of VDR. When VDR and 1,25-(OH) 2D are linked, many genes initiate molecular interaction reactions that will modulate the transcription. VDR has been shown to be a negative regulator of the TGF-β ⁄ Smad signaling pathway, which is important in the pathogenesis of scleroderma. Thus, reduced expression of VDR and decreased ligand levels may

contribute to hyperactivity of the TGF-beta pathway in SSC and abnormal fibroblast activation.
Materials-Methods: 19 SSC patients and 6 healthy controls were included in the study and they were classified according to the 2013 ACR / EULAR criteria. They were applied to Dokuz Eylul University, Faculty of Medicine, Department of Rheumatology-Immunology, between 2015-2017. Rodnan scores were calculated of all scleroderma patients. 11 were of the limited type and 8 were of the diffuse type of scleroderma. Informed consent was obtained from all participants. 1 ml of total blood was collected.
VDR gene expression was determined by quantitative PCR in isolated RNAs from the blood. Changes in mRNA levels were analyzed according to the ΔΔCT method and beta-actin was used as the housekeeping gene. Student-t-test was used as a statistic. In addition, Pearson correlation test was used to determine the relationship between Rodnan score and VDR gene expression.
Results: VDR gene expression in diffuse type scleroderma patients was statistically significantly decreased compared to the control ($p < 0.01$). It was found that VDR gene expression in limited type scleroderma patients did not show any significant difference when compared to control (p: 0.16).
Conclusions: VDR gene expression decreased in patients with diffuse type scleroderma and showed negative correlation with Rodnan score. Further studies are planned to increase the number of samples to obtain more information.
Keywords: Scleroderma, vitamin D receptor, limited type scleroderma, diffuse type scleroderma

OP-09
INVESTIGATION OF THE PERFORMANCE OF CLASSIFICATION METHODS IN HEPATITIS DECISION SUPPORT SYSTEMS

Sema Güzel, Ahmet Alkan
Kahramanmaras Sutcu Imam University, Electrical and Electronics Engineering, Kahramanmaraş

Objective: Thanks to data mining, which has an important place in engineering applications in today, it has become possible to make inferences by evaluating systems with mathematical and statistical methods and to make estimates of unknowns with these inferences. In medical practice, the increasing amount of data makes it difficult to accurately evaluate the information in these data, while using data mining in decision support systems; in the decision-making process, such as diagnosis and treatment according to patient data, it is easy for experts to obtain valuable information from large-scale data, to reveal relationships between data, and to make prospective predictions.
Materials and Methods: In this study; the success of classification models, which are predictive models data mining used in medical decision support systems, has been investigated in determining whether hepatitis disease is fatal in terms of certain determinants. For this purpose, the data set from UCI database of hepatitis disease was analyzed and C4.5 decision tree, k nearest neighbors, Naive Bayes and multilayer artificial neural network classification methods have been applied to data set through WEKA program.
Results: When the success rates of hepatitis diagnosis are compared; C4.5 decision tree 89.03% success, k nearest neighbor algorithm 87.74% success, Naive Bayes 86.45% success and multi-layer artificial neural network 84.51% success showed. All the methods performed acceptable success but C4.5 decision tree classification method have been most successful method for diagnosing hepatitis.
Conclusion: The results of this study demonstrated that the C4.5 decision tree algorithm could be used effectively as medical decision support system for diagnosing hepatitis disease.
Keywords: Data Mining, Classification Algoritms, Decision Support Systems, Hepatitis

OP-10
IS APELIN LEVEL IMPORTANT IN PAPILLARY THYROID CARCINOMA?

Hamza Çınar[1], Havva Erdem[2]
[1]Ordu University, Department of General Surgery, Ordu
[2]Ordu University, Department of Pathology, Ordu

Objectives: Thyroid cancer is the most common endocrine malignancy and the incidence is increasing all over the world (1). About 80% of all thyroid cancer cases constitute papillary thyroid carcinoma (PTC) (2). There are many mutations in the PTC formation mechanism. Apelin is an endogenous ligand for G-protein coupled APJ receptor and its effects are linked to APJ (3). Apelin is involved in cell proliferation and in the initiation of cancer angiogenesis (4). The aim of this study is to investigate the relationship between Apelin expression and PTC.
Materials and Methods: In this study which was planned as a preliminary study, 10 cases with PTC and 10 cases with nodular collaidal goitre (NCG) diognosed in patients who underwent thyroidectomy between 2014-2017 in Ordu University Medical Faculty Educational Research Hospital were randomly selected and included in the study. The paraffin embedded blocks of the samples were selected as appropriate and sections of 3 microns were taken. Sections were stained with apelin (leica bond automatic device) and evaluated under light microscope. Evaluation was rated as 0 (no staining), 1 (light staining), 2 (moderate and severe staining). Fisher's exact test was used for statistics. The sample size is taken as n (%). P < 0.05 was considered statistically significant.
Results: The cases were divided into PTC and NCG groups consist of 10 patients. The PTC group is all female and the average age is 53.3 (42-73) years. NCG group is 9 in female and 1 in male and average age is 44 (27-60) years. Apelin staining rates in PTC cases were 5 (50%) patients grade 1 and 5 (50%) patients grade 2. There were no cases of PTC cases that were not stained with apelin (grade 0). In NCG cases; 6 (60%) patients did not have apelin staining and 4 (40%) patients had grade 1 staining. No grade 2 staining was observed in any of the cases. Apelin staining was more prominent in cases with PTC than in NCG cases (p:0.002).
Conclusion: Apelin expression level is increased in PTC cases. Agents targeting the apelin receptor may be developed for diagnostic and therapeutic purposes. But in order to get clearer results, the study should be repeated in larger series.
Keywords: Apelin, Papillary thyroid carcinoma, Nodular colloidal goitre

OP-11
INVESTIGATION OF URINARY N-TELOPEPTIDES (NTX) LEVELS IN PREGNANT WITH PREECLAMPSIA-ECLAMPSIA

Elif Demir
Harran University Faculty of Medicine, Department of Medical Biochemistry, Şanlıurfa

Objectives: Pregnancy is a factor that causes changes in mother's whole body. Preeclampsia is a systemic disease due to pregnancy, which is reduced in vasospasm and secondary organ perfusion and associated with multiple organ involvement and dysfunction. In this study we measured urine NTx levels, a bone resorption marker, to assess the effect of eclampsia-preeclampsia severity on bone resorption.
Materials-Methods: A total of 102 patients were included in the study among the patients who applied to Atatürk University Medical Faculty Research Hospital Obstetrics and Gynecology Department. Twenty-five healthy non-pregnant women, 27 healthy pregnant women, 19 mild preeclamsia, 21 severe preeclampsia and 10 eclampsia patients were included.
For the urine Ntx analysis "Osteomark Ntx test" was used. NTx levels were measured by ELISA. "SPSS" package program was used for statistical evaluations.
Results: NTx values in the group of eclampsia and severe preeclampsia were significantly higher than those of the mild preeclampsia group ($p < 0,05$) and control groups ($p < 0.001$). There was no significant difference between groups with eclampsia in terms of NTx values with severe preeclampsia. The NTx values in the mild preeclampsia group were significantly higher than the control groups ($p < 0.001$). In healthy pregnant group NTx values were significantly higher than healthy non-pregnant group ($p < 0.001$).

Conclusions: Increased urinary NTx levels in the eclamptic and preeclamptic pregnancies compared to normal pregnancies indicate increased osteoclastic activity.
Keywords: Preeclampsia-Eclampsia, NTx, Bone Resorption.

OP-12
EVALUATION OF MEASUREMENT UNCERTANITY FOR HbA1C

Saadet Çelik[1], Müjgan Ercan[2]
[1]Bilecik Public Health Laboratory, Department of Medical Biochemistry, Bilecik
[2]Bozok University, Department of Medical Biochemistry, Yozgat

Objective: HbA1c is a test recommended for diagnosis and follow-up of DM. It is measured at regular intervals for the follow-up of blood glucose regulation in diabetic patients A standardization is required for this. With the recent standardization of measurement methods and the use of certified reference materials, measurement variability between laboratories is steadily declining nowadays. We aimed to calculate the uncertainty of HbA1C measurement by taking advantage of internal and external quality control data of HbA1C.
Materials and Methods: The internal quality results and external quality (EQAS) control results of the HbA1C test that are obtained between November 1 and 1 January 2017 were used in our study. In the calculation of measurement uncertainty, six step "uncertainty calculation model", that is defined in Nordest guide was followed.
Results: For the HbA1C test, the extended measurement uncertainty was calculated to be ± 0.56% in the 95% confidence interval.
Conclusion: From the last three months' data, the measurement uncertainty of HbA1C was calculated to be 0.56%. Adding measurement uncertainty to the categorized HbA1C results helps us obtain more accurate and reliable results. As a result, when laboratories make measurement uncertainty calculations at regular intervals; this improves the confidence of laboratory results by preventing improper treatment by increasing the power of clinical interpretation.
Keywords: External quality control, Internal quality control, Uncertanity of measurement, $HbA1_C$

OP-13
IS THERE A RELATIONSHIP BETWEEN TWO UPPER EXTREMITY FUNCTIONAL ASSESSMENT SCALES USED IN STROKE?

Mehmet Özkeskin[1], Fadime Küçük[2], Bilge Kara[3]
[1]Okan University, Department of Physiotherapy and Rehabilitation, İstanbul
[2]Okan University, Department of Physiotherapy and Rehabilitation, İstanbul
[3]Dokuz Eylül University, Department of Neurological Physiotherapy-Rehabilitation, İzmir

Objectives: Our study aimed to recognise if there were any relationships between Fugl Meyer Assessment(FMA) and Jebsen Hand Function Test (JHFT) scales which are used for upper extremity assessment.
Materials-Methods: Ten stroke patients with mean age 63.80± 9.54 years were included to the study. Brunnstrom exercises were performed to the patients 45minutes, 5days, totally 2weeks.Affected upper extremity functions were assessed with FMA and hand ability timing were assessed with JHFT.All the assessments were done before the treatment, after 1 months and 3 months
Results: Mean stroke timing of the patients were 25.95±24.66 months. All the patients were right hand dominant. There weren't any relationships between total FMA score of the hemiparetic upper extremity and JHFT total score before the treatment (r=0.292; p=0.413). There were'nt any relationships between total FMA score of the hemiparetic upper extremity and JHFT total scores after 1months treatment (r=0.427; p=0.219). Also there were'nt any relationships between total FMA score of the hemiparetic upper extremity and JHFT total scores after 3 months treatment (r=0.612; p=0.080).
Conclusions:According to our study there were'nt any relationships between total FMA score of the hemiparetic upper extremity and JHFT total scores of the patients.So the recovery of the functions of the affected upper extremity doesn't ensure the affected hand to do a function in a short time.In the future studies, different assessment methods should be used with more patient number and also it should be considered stroke time, activity spesific physical therapy, dominance of the hemiparetic side, the relationship between functions of the upper extremity recovery and activity ability.
Keywords: Stroke, Brunnstrom exercises, Fugl Meyer Assessment, Jebsen Hand Function Test

OP-14
VITAMIN D LEVEL IS CORRELATE WITH QUALITY OF LIFE IN MULTIPLE SCLEROSIS INDEPENDENTLY DISEASE SEVERITY

Turhan Kahraman[1], Görkem Kösehasanoğulları[2], Bilge Piri Çinar[3], Pınar Özçelik[4], Hatice Başer[4], Serkan Özakbaş[4]
[1]İzmir Katip Çelebi University, School of Physical Therapy, Department of Physiotherapy, İzmir
[2]Uşak State Hospital, Neurology, Uşak
[3]Bülent Ecevit University, Department of Neurology, Zonguldak
[4]Dokuz Eylül University, Department of Neurology, İzmir

Objectives: The some studies have supported the relationship between vitamin D and sensitivity to autoimmune diseases. The prevalence of high vitamin D was low in multiple sclerosis (MS). Our aim is to investigate the relationship between vitamin D level and quality of life and disease severity in MS.
Materials-Methods: Two hundred-fifteen MS patients were enrolled into the study (160/55, F/M). 25 hydroxy D vitamin were measured from the venous blood samples of the patients. Participants were divided into two groups according to serum vitamine D levels; low D vitamin level (< 14 ng/mL) and high D vitamine level (> 15 ng/dL). Disease severity was assessed by Expanded Disability Status Scale (EDSS) and classified as mild (EDSS: 0-4.0) and severe (EDSS 4,5 and above). The health-related quality of life was assessed with Multiple Sclerosis International Quality of Life (MUSIQoL). EDSS and vitamin D levels were compared. The relationship between EDSS, MUSIQoL and D vitamine level was investigated.
Results: Average D vitamine level was 9.23 ± 4.78 ng/ml (normal range: 14-60 ng/ml). 104 patients presented with low levels of vitamin D (48,4%). In the patients with low D vitamin levels tended to be more disabled than patients with normal vitamin D levels, but the difference was not statistically significant (p=0,051). There was a significant correlation between vitamin D levels and MUSIQoL (r=0,568, p=0,001). A moderate negative correlation was also found between EDSS and MUSIQoL (r=0,446, p=0,002).
Conclusions: In conclusion, the inverse relationship between disease severity measured by EDSS and D vitamin levels suggests that vitamin D levels may have an effect on the quality of life and a regulatory role in clinical disease activity.
Keywords: Multiple sclerosis, vitamin D, quality of life, severity of disease.

OP-15
USE OF ARTIFICIAL INTELLIGENCE IN PHLEBOTOMY UNIT

Dilek Orbatu[1], Oktay Yıldırım[2]
[1]Health Sciences University, Tepecik Training and Research Hospital, Child Health and Diseases, İzmir
[2]Dokuz Eylül University, Computer Engineering, İzmir

Objectives: Venous blood collection (Phlebotomy) is the most commonly used invasive method for laboratory tests for diagnostic and therapeutic purposes in outpatient services. In the process of phlebotomy, hungry patients wait for more than one queue for a long time, and faults can occur which can affect the patient's test results and employee safety. Using artificial intelligence, we have developed a system to plan and manage all the processes and resources to minimize the errors that can occur during the phlebotomy phase and to allow the patients to comfortably wait for the shortest time.
Materials-Methods: By using the developed artificial intelligence, while the patients who have been registered by kiosk or smart phone can sit

comfortably in the waiting room, artificial intelligence simultaneously identifies the next patient according to the priority status and enables the tube labelling robot or the staff to prepare the tubes, calls the patient to the blood collection unit at the most appropriate time via voice and video information screens. The artificial intelligence also performs the identity and sample validation of the patient when it arrives at the phlebotomy unit.
Results: With artificial intelligence, a New blood collection unit was created, in which patient names were audibly and visually announcing according to patient priority criteria, which patients were not expected to stand in more than one queue for a long time, and patients did not have to carry containers. Incomplete and erroneous phlebotomy risks removed completely with identity and sample verification capabilities. Both the patient and employee satisfaction increased in the results of the survey conducted after this study.
Conclusions: The transformation that artificial intelligence brings to many areas has become a common sight in the health field. This developed artificial intelligence-based application is a clear example of how conventional health processes can be made more intelligent, functional, and error-resistant by using intelligent algorithms. With artificial intelligence, patient and employee satisfaction and security have been moved to a higher level than the human can.
Keywords: Phlebotomy, Artificial Intelligence, Health 4.0

OP-16
HER2 EXPRESSION IN LUNG SQUAMOUS CELL CARCINOMA

Ali Aslan[1], Havva Erdem[2]
[1] Ordu University, Physiology, Ordu
[2] Ordu University, Department of Pathology, Ordu

Objectives: The relationship between HER2 expression levels in lung squamous cell carcinoma and the age of the patients and, differentiation grade of the tumor was studied.
Materials-Methods: HER2 expression was examined retrospectively in immunocytochemical methods in 18 patients diagnosed with squamous cell lung cancer at Ordu University Educational Research Hospital in 2015-2017. The research findings were evaluated statistically and accepted as $P < 0.05$ level.
Results: HER2 expression was detected by immunohistochemical method in 88.89% of 18 male patients with squamous cell lung carcinoma ($p < 0,01$). The mean age of the patients which are the cases with expression of HER2 (71,38) was earlier than non-expression (82,00) but these findings are not statistically significant (p=0,11). However, there was a significant difference between the ages of the patients according to HER2 expression intensity (p=0.005). The mean age of the patients with intense of the HER2 expression was 62.8 and the non-expression was 82.0. There was no significant correlation between HER2 expression and tumor differentiation grade (p=0.651). However, intense of the HER2 expression is seen at relatively earlier ages. HER2 expression intensity doesn't depend on the differentiation degree (p=0,529). However, according to the degree of differentiation grade-3 is 1.6 times higher than grade-2 and, it was determined that all of the cases had HER2 expression in Grade-3 differentiation.
Conclusions: When the research findings are examined, the possibility of HER2 expression in patients under the age of 75 years who are diagnosed with squamous cell carcinoma of the lungs should not be neglected, considering that HER2 targeted therapies for lung cancer have begun to be developed.
Keywords: HER-2, lung cancer, expression

OP-17
EFFECT OF MOTOR IMAGERY ON CERVICAL MUSCLE FUNCTION WITH CHRONIC NECK PAIN

Özlem Özcan[1], Hayriye Kul Karaali[1], Duygu Ilgın[1], Özgül Soysal Gündüz[3], Bilge Kara[2]
[1]Manisa Celal Bayar University, Department of Physiotherapy and Rehabilitation, Manisa
[2]Dokuz Eylül University, School of Physical Therapy and Rehabilitation, İzmir
[3]Manisa State Hospital, Rheumatology Policlinic, Manisa

Objectives: Motor imagery (MI) is defined as the mental presentation of movement without any body movement. It was seen that MI has developed muscular function in many clinical settings. Our aim is to investigate the effect of MI on cervical muscle function with chronic neck pain.
Materials And Methods: Our study was performed with 40 people with chronic neck pain. The people were randomly divided into two groups as MI and exercise group, exercise group. The endurance of deep neck extensor muscles was assessed by neck extansor muscle endurance test. Assessment was repeated 2 times (beginning and end of the fourth week). The patients in each group were included in the exercise program of strengthening cervical muscles for 45 minutes and 5 days for 4 weeks. For the MI and exercise group, MI program was applied for 15 minutes in additional.
Results: Regarding pre-to post interaction for both groups, neck extansor muscle endurance test was found statistical significant ($p < 0.001$). There were statistical difference between groups for post interaction in favor of MI and exercise group ($p = 0.012$).
Conclusıons: It was seen that MI effected on cervical muscle function in chronic neck pain. In chronic neck pain, cervical muscle fiber shifting type I to type II fibers cause neck muscles fatigue. So MI can increase muscle endurance in a short time. However, the number of studies was very limited. Thus, we suggest that much more clinical studies should be done to support evidence based clinical data.
Keywords: Neck Pain, Motor Imagery, Exercise

OP-18
THE ROLE OF FASUDIL TREATMENT ON AMYLOID BETA INDUCED INFLAMMATION MODEL IN ASTROCYTES

Burçin Nilay Yener
Gaziantep University, Department of Medical Biochemistry, Gaziantep

Objectives: With more than 35 million affected people worldwide, Alzheimer's disease is the most common form of the demantia and a rising threat for public health. It is a primary neurodegenerative disorder characterized by three major pathological hallmarks: neuronal loss, neurofibrillary tangles and plaques comprised of amyloid beta. Cytokines play a key role in the interaction between nervous and immune system, including cell growth and differentiation, inflammatory processes, the immune and acute phase response. Fasudil is a rho kinase inhibitor, that has neuroprotective effects. The aim of this study was to investigate whether a pharmacological approach to Alzheimer's disease of amyloid beta-induced inflammation in astrocyte cell line application of fasudil is possible.
Materials-Methods: Cells were incubated with 5 µM amyloid beta for 24 hours. Another group of rho kinase inhibitors for treatment was added to 2,5 µM fasudil. cDNA synthesis was performed from RNA samples isolated from the cells. Gene expression analysis was performed by real-time PCR method.
Results: According the results obtained, amyloid beta IL-6, IL-10 and IL-12 mRNA expression levels were 2 to 9 higher than control group. Fasudil therapy significantly reduced the increase in amyloid beta-stimulated inflammation and some apoptotic genes. ($p < 0.001$). Microscopic examinations also showed of fasudil cell protective effect.
Conclusions: As a result, the inhibition of rho kinase by fasudil may be an agent that can be used in therapy with a protective effect on the suppression of amyloid beta mediated inflammation. However, further work is needed to arrive at a definite conclusion.
Keywords: Alzheimer's disease, Amyloid beta, Fasudil, IL-6, IL-10, IL-12

OP-19
EVALUATION OF PRENATAL SCREENING TEST AND SOFTWARE CONFORMITY WITHIN THE SCOPE OF ISO 13485:2016

Ercan Saruhan[1], Muhittin Abdulkadir Serdar[2]
[1]Mugla Sıtkı Koçman University, Department of Medical Biochemistry, Muğla
[2]Acibadem University, Department of Medical Biochemistry, İstanbul

Objectives: It became mandatory for kit manufacturers to obtain CE certificates by In Vitro Medical Diagnostic Devices Regulation. Manufacturers are obliged to carry out the declaration of conformity with the EC Full Quality Assurance System for reagents, calibrators, control materials related to reagents and softwares specially designed to evaluate the Trisomy 21 risk listed in Annex-2B of this regulation. The producers are obliged to complete the procedures specified in TS EN ISO 13485: 2016, which are necessary for conformity under the supervision of the notified body, by 2019. We investigated prenatal screening tests in this study, total beta hCG, free beta hCG, AFP, PAPP-A, estriol kits and risk calculation softwares in consultation with manufacturers operating in Turkey that they receive appropriate CE certificate or not. Our aim in this work is to increase the awareness of the manufacturers and clinical biochemists on this issue.
Conclusions: As a result of the data we received from the quality unit of Beckman Coulter, Siemens and Roche firms operating in Turkey, Roche company received the declaration of conformity for free beta hCG and PAPP-A kits. But Beckman Coulter and Siemens continue to work for the new version of ISO: 13485. Firms declare that they will complete the quality application process by the year 2019.
Keywords: Trisomy 21, In vitro diagnostics, CE certificate

OP-20
EVALUATION OF SUSPECT OR BORDERLINE ANTI-HEPATITIS C VIRUS ANTIBODY RESULTS WITH RAPID MOLECULAR DIAGNOSTIC TEST (GENEXPERT)

Sadık Akgün
Adıyaman University, Medical Microbiology, Adıyaman

Objectives: The purpose of this study was to evaluate the results of suspicious or borderline Anti-Hepatitis C Virus (Anti-HCV) antibodies obtained with the rapid molecular diagnostic test (GeneXpert), in the event of invasive interventions in hospitals, the Enzyme Linked Immunosorbent Assay (ELISA) is used to screen personnel who are injured by piercing and cutting instruments or splattered into mucous membranes of personnel with blood or other blood products of the patients, or who have received anti-HCV as screening test.
Materials-Methods: To study, 179 women and 155 men who were diagnosed with suspicious or borderline (low positive) results of Anti-Hepatitis C Virus (Anti-HCV) antibody working in the Microbiology laboratory by ELISA between January 01, 2016 and January 18, for a total of 334 patients and job applications, or as a screening test for marriage (mean age: 42.1, lowest: 1, highest: 91 years) were included. Blood samples were studied using the appropriate kit and device (Anti-HCV, Architect i2000 SR, Abbott, USA) by ELISA method in the direction of the manufacturer's recommendation. According to this; (X-pert HCV Viral Load, GeneXpert, Cepheid, USA) in the direction of the manufacturer's recommendation using a rapid molecular method with low-value positive samples (Cut-off: ≥1) identified as suspicious or borderline. load assignment. Then, using low-value positive samples (Cut-off: ≥1) determined by ELISA as suspicious or borderline, using the appropriate kit and the device of rapid molecular test (X pert HCV Viral Load, GeneXpert, Cepheid, USA) , the viral load was determined within 90 minutes.
Results: When the low-value positive samples detected as suspect or borderline by ELISA method are evaluated by fast molecular method; 291 (87%) samples were negative, and 43 (13%) samples were positive with different copies. In females, 159 (89%) were negative and 20 (11%) were positive, in males, 132 (85%) and 23 (15%) respectively.
Conclusions: Since the majority of 334 cases (87%) studied by rapid molecular method were found to be HCV-negative in reality, the anxiety of patients and workers was quickly and largely eliminated, while the remaining few (13%) were positive HCV.
Keywords: Anti-HCV Antibody; Borderline values; Rapid Molecular test

OP-21
THE EFFECT OF BARIATRIC SURGERY ON SERUM GALECTIN-3 LEVELS

Meryem Ayrancı[1], Esra Paydaş Hataysal[2], Hakan Vatansev[3], Beyza Saraçlıgil[4], Hüsamettin Vatansev[2]
[1]Necmettin Erbakan University, Department of Nutrition and Dietetics, Konya
[2]Selcuk University, Department of Medical Biochemistry, Konya
[3]Necmettin Erbakan University, Food Processing Department, Konya
[4]KTO Karatay University, Department of Medical Biochemistry, Konya
Objectıves: The prevalence of obesity has increased worldwide. Obesity increases the development risk of various diseases, including insulin resistance and cardiovascular diseases. Serum galectin-3 levels have been shown to be associated with cardiovascular diseases in adults. Bariatric surgery is an effective treatment method which provides losing weight and reduction of comorbidity for morbid obese patients. However, the effect and mechanism of bariatric surgery on galectin-3 levels is still unclear. Our aim was to find out the effect of obesity surgery on serum galectin-3 levels.
Materıal-Methods: In our study, there were 23 morbid obese patients (19 women and 4 men) with the initial BMI of 49.27 ± 7.46 kg/m². Patients were operated with Laparoscopic Sleeve Gastrectomy (n=16) or Roux-en-Y Gastric Bypass (n=7). Preoperative and postoperative 1st,3rd,6th months blood samples were collected from patients. Serum galectin-3 levels were analyzed by Abbott Architect i2000 autoanalyzer. Paired Samples T-Test was used to evaluate the differences and $p < 0.05$ was taken to be statistically significant.
Results: There were statistically significant differences between the period of preoperative and postoperative 1st,3rd,6th months in serum galectin-3 levels ($p < 0.001$, $p < 0.001$, $p < 0.001$, respectively). There was no statistically relationship between amount of weight loss and level of changes in galectin-3 levels.
Conclusıons: Recently, galectin-3 has been implicated in the development of type 2 diabetes and obesity. In our study, there was no significant difference between amount of weight loss and level of changes in galectin-3 levels.
Keywords: Obesity, bariatric surgery, serum galectin-3

OP-22
COMPARISON OF DIFFERENT STEM CELLS AND L-929 FIBROBLAST CELLS FOR HEALING WITH IN THE WOUND MODEL CREATED IN CULTURE

Pınar Kılıçaslan Sönmez[1], Fulya Gulbağça[2], Mahmud Mustafa Özkut[1], Fatma Simsek[2], Meltem Kuruş[2], Mehmet İbrahim Tuğlu[1]
[1]Manisa Celal Bayar University, Department of Histology and Embryology, İzmir
[2]İzmir Katip Çelebi University, Department of Histology and Embryology, İzmir

Objective: Wound healing is a difficult and costly problem in chronic diseases such as diabetes. New products are needed to effectively increase treatment. However, it is possible that these new products are not harmed and at least the test of the body is not imitated in the culture medium.
Material and Method: In this context, line-wise wound formation in the root cell-derived culture medium rather than the frequently used L-929 fibroblast cell line suggests that it is more similar in vivo. In this study, different types of root cells were investigated in the wound model to be formed with scratches under the influence of wound healing of stem cell niches.
Results: Bone marrow and adipose-derived mesenchymal Stem Cell (MSC) confluent L-929 cells and wound in a scar with plus. After one day of incubation in the MSC culture medium, the factors that they secreted to the medium, were collected and added to the media for wound healing. High glucose was added to the culture medium to make wound healing difficult. The wound environment and healing process were examined with eNOS for oxidative stress and TUNEL staining for apoptosis.
Conclusion: It was found that the recovery period of L-929 cells was similar to the types of MSC used. It has been seen that niche practice has made a meaningful contribution to the difficult healing. Oxidative stress and apoptosis decreased with niche and proliferation increased. The similarity of the wound healing model with MKH to L-929 was more significant in terms of in vivo imitation. It was thought that the use

of niches in wound healing could be a product that should be used in hard wounds and that phase studies should be done by verifying with animal experiments.
Keywords: Cell Culture, Mesenchymal Stem Cell, Wound Healing, Oxidative Stress, Apoptosis

OP-23
DIABETIC MODEL IN CULTURE MEDIUM DAMAGES WITH SPERM STEM CELLS IN RAT EFFECT OF NICHE

Mahmud Mustafa Özkut[1], Fulya Gülbağça[2], Pınar Kilicaslan Sönmez[1], Fatma Simsek[2], Meltem Kuruş[2], Mehmet İbrahim Tuğlu[1]
[1]Manisa Celal Bayar University, Department of Histology and Embryology, Manisa
[2]İzmir Katip Çelebi University, Department of Histology and Embryology, İzmir

Objective: Male infertility due to diabetes and smoking is an important question in vitro fertilization units. New products are needed in this regard. The niche known as the niche that the root cell secretes into the culture medium is thought to prevent sperm morphology. It was aimed to investigate the niche effect of sperm obtained by testicular sperm extraction on the morphological disorders that they will be affected by high glucose in culture medium.
Material and Method: Sperm obtained by testicular sperm extraction were washed and then taken to culture medium. It was waited until it lost its activity and vitality in the high glucose medium. It was evaluated on a time-dependent basis according to the criteria of crime. A high-glucose medium was administered as a daily nutrient of the Oil-Derived Mesenchymal Stem Cell. The morphological structure at the level of fine structure was examined histologically with Modifiye Giemsa and by Scanning Electron Microscopy.
With the niche effect, it was seen that the sperm that underwent morphological changes in a large way had been returned.
It was thought that in vitro fertilization units of stem cell niches would bring important contributions to the sperm maturation in male infertility problems.
Keywords: Cell Culture, In Vitro Fertilization, Diabetes, Morphology, Infertility

OP-24
ARMS-PCR+HRM: A NOVEL DIAGNOSTIC METHOD FOR MT-TL1 MUTATIONS CAUSING MITOCHONDRIAL CYTOPATHIES

Bengisu Kevser Bulduk[1], Can Ebru Bekircan Kurt[2], Sevim Erdem Ozdamar[2], Cetin Kocaefe[1]
[1]Hacettepe University, Department of Medical Biology, Ankara
[2]Hacettepe University, Department of Neurology, Ankara

Objectives: Point mutations on mitochondrial tRNA and rRNA genes cause oxidative phosphorylation defects by impairing protein synthesis. The majority of "mitochondrial cytopathies" are caused by point mutations on the tRNA Leu (MT-TL1) gene. The A3243G mutation is identified in 80% of MELAS patients. However, MT-TL1 may harbor T3271C, C3256T, T3291C, A3260G, C3303T mutations which are associated with mitochondrial cytopathies. Two basic approaches are pursued towards direct analysis of known point mutations. While restriction endonuclease digestion allows low cost opportunities, much costly sequencing analysis is required in the absence of any sequence compatibility. A valuable alternative is Amplification Refractory Mutation System (ARMS). We developed a novel ARMS-PCR assay to identify 6 point mutations on MT-TL1 gene.
Materials-Methods: ARMS-PCR is based on two sets of primers to amplify variant alleles. Wild type and mutant alleles result in variant product size amplicons providing an affordable approach for mutation screening. The novel ARMS-PCR assay sensitivity was improved by using "High Resolution Melt curve analaysis". Detection limits and precision of the assay is verified using synthetic controls with variant heteroplasmy ratios that simulate human mtDNA.
Results: The assay was implemented to screen 500 patient samples from the pediatric and adult neurology clinics of Hacettepe University with a pre-diagnosis of mitochondrial cytopathy. Newly identified mutations were confirmed by Sanger sequencing.
Conclusions: This novel method offers an affordable, reliable and rapid alternative for screening of MT-TL1 point mutations. The study results provide the "proof of concepts" for the implementation of this application for future screening of other rare mtDNA variations in clinical samples.
Keywords: Mitochondrial cytopathies, ARMS-PCR-HRM, Mutation, Genetic testing, IVD

OP-25
CALCULATION OF MEASUREMENT UNCERTAINTY IN HBA1C

Mehmet Kalaycı
Elazığ Training and Research Hospital, Biochemistry Laboratory, Elazığ

Objectives: HbA1c, reflection blood glucose levels within prior 2-to-3 months, play an important role in the diagnosis and follow-up patients with diabetes mellitus. Measurement uncertainty defines range of values which may be encountered in relationship with level measured. In this study, it was aimed to calculate measurement uncertainty and to explicate physicians the importance of measurement uncertainty in diagnosis and monitoring treatment in an effective manner.
Materials-Methods: A six-step estimation model of measurement uncertainty based on European Accreditation Guideline defined in Nordest guideline, European Technical Report and OS⁄DTS 21748 guideline was used to identify measurement uncertainty for HbA1c.
Results: Uncertainty value was detected as 5.9% in HbA1c test. For instance, HbA1c value is between 6.12 and 6.8 (6.5±5.9%) when HbA1c level was measured as 6.5 in laboratory. HbA1c measurement uncertainty results detected in our laboratory is within acceptable limits (RILIBAK ‹ 18).
Conclusions: Results of laboratory test should be provided to physicians and patients as accurate as possible. Thus, provision of uncertainty of measurement together with value measured will provide measurement range and improve quality. Furthermore, reporting measurement uncertainty along with test results will acknowledge physicians of measurement quality and provide them with awareness regarding this issue.

OP-26
A NEW PROCALCITONIN ASSAY AS ABBOTT; COMPARISON OF TWO COMMERCIAL SYSTEMS

Özlem Aydemir[1], Engin Karakeçe[1], Mehmet Köroğlu[2], Ünal Erkorkmaz[3], Mustafa Altındiş[2]

[1]Sakarya University, Training and Research Hospital, Microbiology Laboratory, Sakarya
[2]Sakarya University, Faculty of Medicine, Training and Research Hospital, Department of Medical Microbiology, Sakarya
[3]Sakarya University, Faculty of Medicine, Department of Biostatistics, Sakarya

Objective: Procalcitonin (PCT) is a 116-amino-acid peptide belonging to the calcitonin (CT) superfamily of peptides. PCT levels increase rapidly within 3-6 hour of systemic bacterial or fungal infection or inflammation, and persist for as long as the inflammatory process continues. Using randomized patient sera, this study evaluated the the correlation, linearity and accuracy of the new automated Abbott BRAHMS PCT assay and automated Vidas BRAHMS PCT system.
Materials-Methods: 109 clinical serum samples collected between July and December 2017 were analyzed using both the VIDAS and Abbott PCT assays, according to the manufacturers' recommendations. Samples were analyzed simultaneously using VIDAS B·R·A·H·M·S PCT kit and Architect B·R·A·H·M·S PCT kit with the VIDAS PC (bioMérieux, Marcy l'Etoile, France) and Architect I2000 (Abbott, USA) systems, respectively. The kappa coefficient was calculated.
Results: The majority of serum samples belonged to Emergency Service (30.3%) patients. The mean PCT for all samples were 19.00±37.04 with Vidas and 12.24±22.40 with Abbott. The two tests

yielded inconsistent results; Vidas < 0.5ng⁄mL and Abbott ≥0.5ng⁄mL in 1 patient, Vidas≥0.5ng⁄mL and Abbott < 0.5ng⁄mL in 2 patients. This study showed a high level of agreement (κ=0.930, p < 0.001) between Abbott PCT and Vidas PCT system.
Conclusion: Abbott PCT assay and VIDAS PCT results were very close to each other. An advantage of the Abbott PCT assay is that it can detect levels below 0.05 ng⁄mL. However, it is impossible to directly measure the value of 100 ng⁄mL. Therefore, a second procedure should be repeated by diluting with serum. This, however, may increase costs.
Keywords: Procalcitonin, Comparison, VIDAS PCT, ABBOTT PCT

OP-27
MEASUREMENT UNCERTAINTY OF THE URINE AMPHETAMINE TEST

Saliha Aksun
Katip Çelebi University, Department of Medical Biochemistry, İzmir

Objective: Measurement uncertainty is a parameter that must be given together with the analysis result in the patient report. Uncertainty of measurement in drug (narcotic) analyzes that are evaluated as positive over the threshold determined by the guidelines will affect the criminal decision. For this purpose, measurement uncertainty of the urine Amphetamine test requested by the supervised release was calculated by the method that we used in our laboratory. In drug analysis, immunological methods have the potential to cross-react with other substances in urine. Verification analysis by chromatographic method that is more expensive and difficult to apply is required for incompatible results with the declaration of the patient.
Method: The measurement uncertainty of the Amphetamine test studied on automatic analyzer (DimensionRxL, Siemens) by immun method (Siemens EmitII plus) at İzmir Katip Çelebi University Atatürk Training and Research Hospital was determined and when the reported test results were recalculated with the uncertainty ratio, it was discussed how the clinical decision could be changed according to the legal threshold of 500 ng⁄mL (Samsha). CV% of internal quality control material (amphetamine EMIT Liquicheck urine toxicology control USA) were calculated. The bias was calculated from external quality control (LGC).
Results: 1. Calibrator, Calibration Uncertainty: U (calibrator bias) = 5.59 (without unit)
2. Internal Quality Control Uncertainty Outcome
URw = Rw / 2 = 15.57 (without unit)
3.External Quality Control Uncertainty Result:
RMS bias2 =(% bias12+% bias2 2+…% bias n2)/n
Ubias = 26.96 (Without Unit)
4. Combined Standard Uncertainty Result: Uc = 31,63 (Without Unit)
5. Calculation of Extended Uncertainty
UX=2×Uc
UX=63,26 (Without unit)=%63.26=0.63
6. Reporting Uncertainty
Measurement Uncertainty Added Analysis Result (with unit)=
Found Result (with unit) ± (Ux) x Found Result (with unit)
In this case, in the Amphetamine test that has a threshold value of 500 ng/ml for punishment in the legal process, the actual value of a patient result at the threshold level should be considered as 500±315 ng/ml.
Conclusion: Measurement errors in drug analysis can lead to irreversible penalties to be taken. The presentation of clinical laboratory tests together with measurement uncertainty results will allow determination of samples to be selected for verification analysis by chromatographic method.

OP-28
DEGUELIN AND CURCUMIN HAVE POTENTIAL TO REVERSE TUMOR AGGRESSIVENESS IN ANAPLASTIC THYROID CANCER

Mehmet Ali Koçdor[1,2], Hakan Cengiz[1], Halil Ates[3], Hilal Koçdor[1,4]
[1]Dokuz Eylul University, Institute of Health Science, Department of Molecular Medicine, Izmir
[2]Dokuz Eylul University, School of Medicine, Department of General Surgery, Izmir
[3] Dokuz Eylul University, Institute of Oncology, Izmir
[4]Dokuz Eylul University, Institute of Oncology, Department of Basic Oncology, Izmir

Objective: Anaplastic Thyroid Cancer (ATC) is one the most lethal and aggressive human malignancy. Compared to other types of cancer, ATC is characterized by extensive simultaneous genetic and epigenetic alterations. Seminal studies have been shown that cancer-stem-cell (CSC) phenotype is mainly responsible for ATC aggressiveness and metastatic potential. Cytostatics mostly ineffective due to multidrug resistance mechanisms driven by CSC phenotype. Recently, the use of plant-derived, less toxic compounds which have multiple anti-cancer efficacies including CSC inhibition has become attractive. The aim of the study was to evaluate anti-cancer activity of two natural compounds (Curcumina, Deguelin) on ATC cells and metastatic CSC phenotype.
Material and Method: Seven groups were formed. ATC cells (CAL-62) were treated with two compounds, Docetaxel and combinations with previously determined IC50 doses. CSC phenotype, metastatic potential and tumoral aggressiveness were evaluated morphologically using by sphere formation, vasculogenic mimicry (VM) and angiogenesis assays in matrigel and cellular motility. Experiments were then triplicated. Anova followed by Holm-Sidak test were used for statistical analyses and $p<0.05$ accepted as significant. Results were compared with Docetaxel.
Results: In the aspects of cell cycle arrest and apoptosis induction, Deguelin and particularly Curcumin were found to be effective as much as docetaxel at IC50 concentrations ($p<0,05$). Both natural compounds significantly supressed spheroid formation (Total spheroidal area, spheroid numbers and mean spheroidal area) in matrigel as well as significantly reduced tumor aggressiveness parameters (reduced cell kinetics and VM around spheroids, $p<0.05$).
Conclusion: Curcumin and Deguelin are capable of altering metastatic potential and aggressive behavior of ATC cells. These results are most likely associated with the inhibition of CSC sub-population among ATC cells after the exposure of two natural compounds. However, further studies will help to clarify molecular mechanisms underlying these efficacies.
Keywords: Anaplastic Thyroid Cancer, Deguelin, Curcumin, Vasculogenic Mimicry, Angiogenesis, Apoptosis

POSTER SUNUM ÖZETLERİ
[POSTER PRESENTATION ABSTRACTS]

PP-01
THE EFFECT OF SLEEVE GASTRECHTOMY SURGICAL METHOD ON B12 VITAMIN AND FOLIC ACID LEVELS IN MORBID OBESE PATIENTS

Hatice Banu Keskinkaya[1], Hakan Vatansev[2], Meryem Ayrancı[3]
[1]Selcuk University, Department of Medical Biochemistry, Konya
[2]Necmettin Erbakan University, Food Processing Department, Konya
[3]Necmettin Erbakan University, Department of Nutrition and Dietetics, Konya

Objectives: B12 and folic acid is absorbed from the last part of the small intestine by binding to the intrinsic factor secreted from stomach. In the operation of the sleeve gastrectomy (SG), approximately 75% of the stomach is removed, the absorption of vitamin B12 and folic acid is decreasing because of not sufficient amount of intrinsic factor. In our study, compared the values of vitamin B12 and folic acid preop and postop 1;3;6.month of 23 morbid obese patients were opered by SG methot.
Materials-Methods: Preop and postop 1;3;6.month serum samples were collected total of 23 morbid obese patients (5 male, 18 female) SG was applied, the mean age was 43.3±12.83, the mean body mass index (BMI) was 49.27±7.46. Vitamin B12 and folic acid levels were analyzed by direct chemiluminescence method in autoanalyzer Cobas 6000 (Roche Diagnostics, USA). Dependent sample t test was used to examine the differences between the periods. A $p < 0.05$ was considered statistically significant.
Results: When the results between preop and postop 1; 3;6.month evaulated the levels of vitamin B12 and folic acid found to be decreased ($p = 0.003$; $p = 0.008$; $p = 0.001$) ($p = 0.082$; $p = 0.001$; $p = 0.001$), respectively.
Conclusions: After obesity surgery, some vitamins and minerals deficiencies are encountered in patients. SG is not only restrictive, it also causes hormonal changes leading to weight loss and vitamin B12 and folic acid deficiency are the most frequent nutritional deficiencies in patients. The laboratory results we obtain supports that SG surgery reduces the absorption of vitamins in patients.
Keywords: Morbid obesity, sleeve gastrectomy, vitamin B12, folic acid.

PP-02
USING "BIG DATA" TO ESTIMATE INDIRECT REFERENCE İNTERVALS AND EVALUATE CLINICAL UTILITY OF HORMONES AND RELATED BIOMARKERS: THE IMPORTANCE OF MEDICAL LABORATORY DATA

Diler Aslan
Pamukkale University, Department of Medical Biochemistry, Denizli

Objectives: Laboratory should determine reference intervals (RefInt) (Scentific and ISO 15189 requirement). RefInts have been estimated from laboratory data (indirect method). Laboratories are healthcare data centers. In this context, clinical utilities of test results can be evaluated. Aims of this research are to determine the RefInts of PTH, testosterone, TSH, FT4 and 25OHVitD, and to evaluate their levels according to the diagnoses (ICD Codes).
Materials: Convenient Laboratory Information System (LIS); Statistical Packages. MS Excel. Method: Six-month data for PTH, testosterone, TSH, FT4, and 25OHVitD was obtained (Roche Cobas 8000 e601 ve 602). The data for inpatients, and patients who have disorders/diseases related to the analyte were excluded. According to the differences between the 10 year-groups, populations were divided into specific age and/or gender groups. Horn's algorithm and transformations to the normality were used for outlier exclusions. RefInts were estimated by nonparametric or parametric methods. Bhattacharya method was assessed for the limits.
Findings: Differences were observed from manufacturers' expected levels. If the patients who have values near lower and upper limits are examined closely, the utility of RefInts and their impacts on medical decisions can be evaluated for specific disorders/diseases, and the outcomes can provide useful information.
Conclusion: LBS is a large data repository that provides information on the assessment of healthcare services. Particularly for endocrine tests, evaluation of the patient test results according to the RefInts and medical decision limits periodically, and publication of the outcomes will provide useful information for clinical decisions and national healthcare policies.
Keywords: Hormone measurement, big data, indirect reference interval, clinical utility, standardization

PP-03
EFFECTS OF MEGALOBLASTIC ANEMIA DUE TO VITAMIN B12 OR FOLATE DEFICIENCY ON LEVELS OF TUMOR MARKERS

İnanç Karakoyun, Can Duman, Fatma Demet Arslan, Anıl Baysoy, Banu İşbilen Başok
Tepecik Training and Research Hospital, Medical Biochemistry Clinic İzmir

Objectives: Carbohydrate antigen (CA) 15-3 test detects soluble forms of mucin glycoprotein 1 (MUC-1) and MUC-1 is overexpressed in over 90% of breast tumors. On the other hand, megaloblastic anemia results from a defect in DNA synthesis. Folic acid and vitamin B12 deficiency are the main causes of megaloblastic anemia. The aim of the study is to investigate the effect of megaloblastic anemia due to vitamin B12 or folate deficiency on five different tumor marker levels.
Materials and Methods: Patients who admitted to the Tepecik Training and Research Hospital between January 2011 and July 2016 were investigated retrospectively. Cut-off points were established according to the literature for definition of anemia, macrocytosis, vitamin B12 and folic acid deficiencies. The differences between the groups with and without megaloblastic anemia in terms of age, gender and tumor markers were statistically analyzed. $p < 0.05$ were considered as statistically significant.
Results: Megaloblastic anemia due to deficiency of vitamin B12 or folate increased the levels of CA 15-3 ($p=0.001$ and 0.005, respectively). Megaloblastic anemia due to vitamin B12 deficiency did not cause statistical changes in CA 125, CA 19-9, carcinoembryonic antigen and alpha-fetal protein levels ($p=0.777$, 0.327, 0.577 and 0.197, respectively).
Conclusions: Megaloblastic anemia is associated with erythroid hyperplasia, which results in ineffective erythropoiesis. It has been hypothesized that MUC-1 is released from megaloblastic erythroblasts undergoing apoptosis in patients with anemia. Analysis of vitamin B12 and folate levels may also be required when a CA 15-3 test result is encountered discordant with the clinic.
Keywords: CA 15-3, folate deficiency, vitamin B12 deficiency

PP-04
THE EFFECTS OF MAGNESIUM AND ZINC ON DIABETES MELLITUS

Murat Akşit, Merve Zeytinli Akşit, Banu İşbilen Başok
Tepecik Training and Research Hospital, Medical Biochemistry, İzmir

Objectives: Magnesium and zinc are trace elements required for growth and development. Disturbances in trace element status may lead to insulin resistance and hence development of diabetes and its complications. The aim of our study was to investigate the relationship among serum magnesium and zinc levels and diabetes mellitus.
Materials-Methods: In the study, between January 2016 and December 2017; the results of 138 patients who were tested zinc, magnesium, HbA1c, glucose, and insulin tests at the same time, were taken retrospectively. Patients were divided into three groups according to the glucose and HbA1c levels as indicated by ADA criteria: normal, prediabetes and diabetes. Analyzes were performed using Mann-Whitney U, Kruskal-Wallis and Spearman correlation tests were performed since the data were not normally distributed.
Results: Sixty patients were normal, 47 were prediabetic and 31 were diabetic, and their ages were 39(32-50), 53(46-64) and 62(53-68) years, respectively. Serum magnesium levels were significantly lower

in the diabetic group than in the normal and prediabetes group (p < 0.001, p=0.014,respectively). There was no statistically significant difference among the groups in terms of serum zinc levels (p=0.292). Magnesium levels were negatively correlated with both HbA1c and glucose values (r=-356, p < 0,001;r=-258,p=0,002,respectively).

Conclusions: Magnesium is a cofactor of various enzymes in carbohydrate oxidation and plays a role in glucose transport in and out of hepatocytes and beta islet cells. In several studies reported that, chronic hypomagnesemia has been associated with the development of insulin resistance. Magnesium-rich food and/or oral magnesium supplementation may benefit by increasing insulin sensitivity in diabetic patients with hypomagnesemia.

Keywords: Diabetes mellitus, hypomagnesemia, insulin resistance, zinc

PP-05

HOW IS EFFECT OF IRON DEFICIENCY ANEMIA ON HBA1C LEVELS IN NORMOGLYCEMIC INDIVIDUALS?

Murat Akşit[1], Merve Zeytinli Akşit[1], Giray Bozkaya[2]
[1]Tepecik Training and Research Hospital, Medical Biochemistry, İzmir
[2]Bozyaka Training and Research Hospital, Medical Biochemistry İzmir

Objectives: Iron deficiency anemia is the most common anemia in our country and around the world and restricts the use of HbA1c in diagnosis and treatment as it is known to be a cause of potential interference. This study is aimed to analyze the effect of iron deficiency anemia on HbA1c levels in population having glucose levels in reference range.

Materials-Methods: A total of 228 normoglycemic individuals (fasting blood glucose 70-100 mg⁄dL), including 103 iron deficiency anemia and 125 control groups, who were admitted to the Bozyaka Training and Research Hospital between January and June 2016 with fasting glucose, iron, unsaturated iron binding capacity, HbA1c levels and complete blood count were included in the study. HbA1C levels were measured by BIO-RAD Variant II HbA1c Analyzer using ion-exchange high performance liquid chromatography method.

Results: The study included 175 women and 53 men and the mean age was 48.7 ± 15.5 (18-88) years. HbA1c levels were significantly higher in the iron deficiency anemia group than in the control group. There was a significant negative correlation between HbA1c and Hb, Fe. (Respectively r:-0,255, p < 0,001; r:-0,236, p < 0,001).

Conclusions: Our data show that HbA1c levels may be misleading in assessing glycemic status in the iron deficiency anemia. Therefore, the presence of iron deficiency anemia should be questioned when HbA1c is used for diabetes diagnos is.

Keywords: HbA1c, iron deficiency anemia, diabetes mellitus.

PP-06

THE EVALUATION OF 25 HYDROXY D3 VITAMIN LEVELS IN OBESE DISEASES ON LABORATORY TRANSACTIONS

Fatih Hunç, Hale Maral Kır, Ceyla Eraldemir
Kocaeli University, Medical Biochemistry, Kocaeli

Objective: Vitamin D is a hormone that is studied on for long time, apart from the effect on calcium, phosphate metabolism, It acts multimeric functions. In this study, it is aimed to investigate the relationship between vitamin D levels and obesity, which is shown in the scientific literature recently. Obesity is a serious syndrome identified for global pandemic. 25 (OH) D3 is a form of vitamin D that is often used to measure body D vitamin state.

Method: Data is obtained retrospectively from January 2010 to May 2017 from Kocaeli University Medical Faculty Education and Research Hospital Central Laboratory information system. Statistical evaluation is performed with IBM SPSS 20.0 (SPSS Inc., Chicago, IL, USA). p < 0.05 is considered as sufficient for statistical significance.

Results: As a result of statistical analysis, 25 OH D3 levels are found significantly lower in the adult obese group than in the adult patient without chronic disease group (p < 0.001). Significantly higher levels of hormones are detected in males compared to females in the analysis (p < 0.001). There is a strong positive correlation and significant difference between age groups and D vitamine levels (r = 0.63, p < 0.001). Season makes significant difference in vitamin D levels (p < 0.001). The highest hormone levels are found in autumn and the lowest hormone levels are found in winter.

Conclusion: In this research, we find lower D vitamine levels in obese group than non-obese. Besides further researches are needed to understand the relationship between D vitamine and obesity.

PP-07

EFFECTIVENESS OF INTRAVITREAL RANIBIZUMAB INJECTIONS FOR DIABETIC MACULAR EDEMA TREATMENT: LONG TERM OUTCOMES

Mahmut Kaya, Nilüfer Koçak, Taylan Öztürk, Ziya Ayhan, Süleyman Kaynak
Dokuz Eylül University, Eye Diseases, İzmir

Objectives: To assess long-term effects of intravitreal ranibizumab monotherapy on retinal morphology in the treatment of diabetic macular edema (DME).

Materials-Methods: This was a retrospective noncomparative study. A total 123 eyes of 81 patients (31 females and 50 males; mean age, 60.4 years) with DME followed for at least 24 months were included. All patients were treated with at least 3 intravitreal ranibizumab injections for the treatment of DME. Intravitreal ranibizumab was given for 3 months then pro re nata (PRN). Complete ophthalmic examination, including determination of best-corrected visual acuity (BCVA), stereoscopic biomicroscopy, and retinal thickness measurement by spectral domain optical coherence tomography (SD-OCT), was done at baseline and at each follow-up visit.

Results: All patients completed 3 months of follow-up with a mean follow-up period of 41.4±6.52 months. The mean BCVA at baseline was 0.43±0.36 (Snellen), which significantly improved to 0.64±0.38 (p=0.02) at final visit. The mean central retinal thickness was 572.86±142.56 µm at baseline and decreased to 416.26±112.28 µm (p < 0.001) at final visit. The mean number of injections was 8.8 injections during this period.

Conclusıons: In real-life clinical practice, intravitreal ranibizumab injection has anatomical and functional effectiveness for the treatment of DME.

Keywords: Diabetic macular edema, ranibizumab, retinal thickness, visual acuity

PP-08

EVALUATION OF MICRORNA-223 EXPRESSION IN THE PLACENTA OF GESTATIONAL DIABETES

Dijle Kipmen Korgun[1], Segün Dogru[1], Mehmet Sakıncı[2]
[1]Akdeniz University, Faculty of Medicine, Medical Biochemistry, Antalya
[2]Akdeniz University, Faculty of Medicine, Obstetrics and Gynecology, Antalya

Objectives: Placenta is an organ which acts as a barrier between maternal and fetal circulation during pregnancy. A healthy pregnancy is closely associated with normal placental development. Gestational Diabetes Mellitus (GDM) is one type of diabetes that occurs during pregnancy and significantly increases the risk of a number of adverse consequences for the fetus and mother. Epigenetic alterations in the third trimester of pregnancy has been associated with risks of placenta-mediated complications of GDM. Placental expressions of characterized microRNAs (miRNAs) is thought to play an important role in the diagnosis of GDM as novel and effective biomarkers. The aim of the our study is to estimate the miR-223 expressions in placenta with GDM.

Materials-Methods: In this study, placental tissue from third trimester pregnancy were provided. miR-223 expression in placental tissue was assessed by Real-time PCR method.

Results: According to the Real-time PCR results; it was determined that the miR-223 expression decreased in the statistically significant range in GDM group compared to control group in placenta.
Conclusions: miR-223 is considered to be a novel biomarker related to diagnosis and treatment of GDM. In the studies conducted in recent years that epigenetic alterations regulate the maternal, fetal and placental processes, more evidence to understand the role of miR-223 in GDM are needed.
Keywords: Gestational diabetes, miR-223, placenta

PP-09
EFFECTS OF DIFFERENT CONTROLLED OVARIAN HYPERSITUMULATION PROTOCOLS ON EPITHELIAL-MESENCHYMAL TRANSITION ON HUMAN ENDOMETRIUM CELLS

Melike Özgül Önal[1], Yıldız Uyar[2], Ulviye Cansu Öztürk[2], Hafize Seda Vatansever[3]
[1]Mugla Sıtkı Koçman University, Department of Histology and Embryology, Muğla
[2]Manisa Celal Bayar University, Department of Obstetrics and Gynecology, Muğla
[3]Manisa Celal Bayar University, Department of Histology and Embryology, Manisa

Objectives: The pharmacological agents used in controlled ovarian hypersitumulation (COH) protocols induce ovulation by increasing oocyte count and quality, but the effects on endometrial epithelial cells are not known. Epithelial-mesenchymal transition (EMT) is biological process occurs in epithelial cells. During EMT, epithelial cells acquire mesenchymal properties such as fibroblast-like shape and mobility. EMT is basis for embryogenesis and also a key process in tumorigenesis because it promotes invasive and metastatic behavior of cancer cells. Aim of this study was to investigate the effects of COH protocols' drugs on EMT in CRL-1671 human endometrial cells.
Materials-Methods: Experimental groups were determined as control, growth hormone (GH), Gonadotropin (GnTR), GH and GnTR, Letrazol (L) and GnTR, and combined group (L+GnTR+GH). Syndecan-1, E-cadherin and N-cadherin distributions were studied by indirect-immunoperoxidase technique. Immunoreactivity intensities were scored as mild (+), moderate (++), and strong (+++).
Results: Syndecan-1 immunoreactivity was increased in GH group and decreased in L+GnTR+GH group. E-cadherin immunoreactivity was decreased in L+GnTR and L+GnTR+GH groups and N-cadherin immunoreactivity was increased in GH and L+GnTR+GH groups compared to the control.
Conclusions: E-cadherin decreases and N-cadherin increases during EMT. Syndecan-1 plays important role in adhesion and migration, and its expression is regulated by E-cadherin. It has been suggested that EMT process may occur in L+GnTR+GH group due to the reduction of Syndecan-1 immunoreactivity in parallel with E-cadherin and the increase of N-cadherin. In conclusion, endometrial epithelial cells might gain mesenchymal properties in L+GnTR+GH group, thus it is important to control endometrium in patients who are planned to use this treatment protocol.
Keywords: COH, CRL-1671, EMT.

PP-10
GALACTORRHEA AND HYPERPROLACTINEMIA DURING VORTIOXETINE USE; CASE REPORT

Hüseyin Murat Özkan
Istanbul Rumeli University, Children Hospital, İstanbul

Objective: Hyperprolactinemia is one of the most common endocrine disorders of the hypothalamic–pituitary axis. Hyperprolactinemia and galactorrhea are rarely seen as adverse effects of antidepressant drugs
Case: 33 years old women, between 2011-2017, three depressive episodes were observed and treated as a outpatient. In the first episode fluoxetine was used, no galactore was detected.
In the second episode, She was given escitalopram and visited a gynecology and obstetrics clinic with amenorrhea and galactorrhea. Her serum prolactin levels were 50.88 (normal range: 4.79–23.3 ng⁄ml) and magnetic resonance imaging findings were normal. Escitalopram was discontinued and during four week she was prescribed cabergoline 0.5 mg/week. (‹ 0.6ng/ml after one month, 16.56ng⁄ml in the third month).
In third episode (2016), she was given vortioxetine. At the beginning of the fourth month of treatment she developed galactorrhea and breast pain and prolactin level was measured as 43,65ng⁄ml. Vortiocetine was discontinued and prolactin level was measured at 20.14 ng⁄ml after 4 weeks of drug-free observation.
Conclusion: Blocking of dopamine (D2) receptors on the tuberoinfundubular pathway increases prolactin release and galactore is observed. According to literature reports, galactorrhea was not observed during the use of vortexetine. Galactorrhea associated with SSRIs are limited to case presentations. It is still unclear how antidepressants cause galactorrhoea by affecting the tuberoinfindubuler pathway. When galactore was observed during antidepressant drug use; prolactin levels and MRI should be investigated, and termination ⁄ replacement of antidepressant treatment is recommended if necessary.
Keywords; Vortioxetin, Galactorrhea, Hyperprolactinemia

PP-11
COMPARISON OF THYROID FUNCTION TESTS IN DIFFERENT AGE GROUPS AND THE RELATIONSHIP BETWEEN CREATININE

Çiğdem Fidan, Gülşah Demirci, Erdinç Devrim, Hasan Serdar Öztürk
Ankara University, Department of Medical Biochemistry, Ankara

Objectives: Serum thyroid stimulating hormone (TSH) is the most sensitive indicator for the evaluation of thyroid functions. In thyroid diseases, laboratory findings should be evaluated to confirm hyperthyroidism or hypothyroidism since clinical symptoms are often non-specific. It is aimed to assess the age-related variability of thyroid function test results and to investigate the relationship between thyroid function tests and renal function tests.
Materials-Methods: Thirty patients who had creatinine, TSH, fT3, fT4, antiTPO and antiTG tests without any known thyroid disease were included in this study. They were examined at Ankara University Medical Faculty, Ibni Sina Hospital between November 2017 and January 2018. The patients were divided into 3 groups according to the age distribution of NHANES III (1st group: 20-29 years, 2nd group: 50-70 years, 3rd group: › 80 years). Results: It was found that the TSH values of the 1st group were significantly lower than those of the 2nd and 3rd groups ($p<0.05$). It was found that the fT3 values of 3rd group (mean: 4.22±0.81) was significantly lower than those of the 1st (mean: 5.79±0.45) and 2nd groups (mean: 5.47±0.48), ($p<0,001$, $p<0.01$, respectively). There were negative correlation between creatinine and fT3 and positive correlation between creatinine and fT4.
Conclusions: TSH values in the young age group were lower than the older age groups. It was supposed that this difference is due to the variable sensitivity of the hypothalamic-pituitary feedback system with increased age and the increase in TSH secretion as a result of decreased TSH receptor activity. It was also showed that conversion of T4 to T3 declined as GFR decreased.
Keywords: TSH, fT3, fT4

PP-12
THE RELATIONSHIP BETWEEN β2M AND LIGHT CHAIN CONCENTRATIONS, K⁄L RATIO AND CAPILLARY ELECTROPHORESIS

Gülşah Demirci, Çiğdem Fidan, Erdinç Devrim, Hasan Serdar Öztürk
Ankara University Faculty of Medicine, Depatrtment of Medical Biochemistry, Ankara

Objectives: Some biochemical markers are related to multiple myeloma disease activity, and one of the most important markers is beta-2-microglobulin (β2M) concentration. Free immunoglobulin light chains are synthesized as a 'by-product' of the immunoglobulin synthesis. An abnormal ratio of serum free immunoglobulin light chains [kappa(K)⁄lambda(L)] reflects excessive light chain production as a

consequence of clonal tumor proliferation. Our aim is to evaluate the variability of these biochemical analytes in different patient groups.
Materials-Methods: This study included 29 patients (16 female, 13 male) who applied to the Ankara University Medical Faculty, Ibni Sina Hospital between November 2017 and January 2018. Serum free light chain concentrations and simultaneous capillary electrophoresis tests were studied in the patients. Three groups were formed according to serum β2M concentrations (1st group: 3.5-9 mg⁄L, 2nd group: 9-18.9 mg⁄L, 3rd group: › 18.9 mg⁄L).
Results: Serum free kappa and lambda concentrations, K⁄L ratio and percentage of G band in capillary electrophoresis were compared in all 3 groups. The serum free lambda level of 1st group (mean: 33.09±36.55) was significantly lower than those of 2nd group (mean: 2.1±1.3; p<0.05). Also K⁄L ratio of 1st group (mean: 208.1±737.57) were found to be significantly higher than those of 2nd group (mean: 0.50±0.41; p<0.05).
Conclusions: Frequently serum free kappa and lambda concentrations are increased in patients with polyclonal hypergammaglobulinemia or renal impairment. However, in these two cases the free K⁄L ratio remains normal. Studies have showed that abnormal free K⁄L ratio originate only from clonal B-lymphoid or plasma cell proliferative disorders and is evidence of free monoclonal light chains in the serum. In our study, serum free K⁄L ratio was higher in patients with lower levels of β2M because the free lambda concentration was lower in this group.
Keywords: β2M, serum free K⁄L, capillary electrophoresis

PP-13
ENZYME REPLACEMENT THERAPY IN FABRY DISEASE: DOES IT ALL MATTER?

Zeynel Abidin Sayiner, Mustafa Araz, Ersin Akarsu, Suzan Tabur
Gaziantep University Faculty of Medicine, Endocrinology and Metabolic Diseases, Gaziantep

Objective: Fabry disease is a rare X linked disease which affects nearly 1 in 100.000 live births. The problem is deficient a-galactosidase enzyme which results accumulation of globotriaosylceramide within lysosomes. Renal dysfunction is common but cardiovascular system involvement is the most common cause of death in both genders among Fabry patients. Globotriaosylceramide (Gb3) level is also known as a predictor of renal insufficiency, cardiac involvement, and CNS pathology in Fabry patients. However treatment success evaluation are often a matter of debate and controversy especially for the renal progression degree albeit screning Gb3 level. We would like to present a Fabry patient who developed chronic kidney failure despite taking regular enzyme replacement therapy.
Case: 28 year old male patient. He was diagnosed with Fabry disease when he was 20 years old. He had mutation on GLA (galactosidase alpha) gene. The mutation was p.R227* (c.679C › T). He has been taking agalsidase beta 1 mg⁄kg every 2 weeks for 8 years. His last Gb3 level 2.5 ng⁄mL (0-3.5). His 280 mg⁄day proteinuria. During the last year his creatinin level had tendency to increase. He was using angiontension converting enzyme inhibitor for renal protection and reducing proteinuria. Aside from this drugs he also used pregabalin for neuropatic pain. On his last visit he had severe renal insufficiency. His creatinin level was 8.9 mg⁄dl. He had dispnea and severe edema on his both feet. After nephrology consultation hemodialysis was planned and administered. Despite the fact that the patient used enzyme replacement therapy the patient have hemodiyalysis three times a week since then. Aside from the hemodiyalysis treatment the patient is still receiving enzyme replacement therapy for other organ involvement.
Conclusion: Fabry disease is a rare disease. There is not enough data whether the enzyme replacement therapy is sufficient for prevention all implications of the disease. In our case the patient developed chronic renal failure although he had been taking enzyme replacement therapy. We dont have spesific predictive marker for organ involvement of the disease. Gb3 level is used for this purpose but in our case Gb3 level was not predictive. Hence more detailed case dependent studies are needed for clarifying the disease.
Keywords: Fabry Disease, Enzyme replacement therapy, Chronic renal failure

PP-14
ADULT ONSET TRIPLE A SYNDROME (ALLGROVE SYNDROME)

Yusuf Yalvac[1], Zeynel Abidin Sayiner[2], Mustafa Araz[2], Ersin Akarsu[2], Suzan Tabur[2]
[1]Gaziantep University, Internal Medicine, Gaziantep
[2]Gaziantep University, Endocrinology and Metabolic Diseases, Gaziantep

Objective: Triplea syndrome is an autosomal recessive, rare disease characterized by adrenal insufficiency, achalasia and alacrimalia. The AAAS (Achalasia-Addisonianism-Alacrima sydrome) associated gene is defined on chromosome 12q13. Triple A syndrome is usually diagnosed during childhood and infancy. We wanted to draw attention to the fact that Triple A syndrome can be diagnosed after the childhood.
Case: A 25-year-old woman presented with nausea and vomiting weakness, weight loss, skin thickening and dizziness during the last 1 week. The patient described swallowing difficulties especially with liquid foods, and had lost 8 kg in the last 6 months. In family history, 2 sisters were admitted to the endocrine clinic because of adrenal insufficiency. A synthetic ACTH stimulation test was performed to further test the patient with baseline cortisol levels of 0.7 µg ⁄ dL (3.7-19.4) and ACTH (adrenocorticotropic hormone) › 1250 pg ⁄ dL (10-46). Basal cortisol, 30 min, 60 min cortisol values were determined as 0.9 µg ⁄ dl, 1.2 µg ⁄ dl, 0.7 µg ⁄ dl respectively and the patient was diagnosed with primary adrenal insufficiency. Barium scintigraphy was found to be consistent with akalazya. When the story of the patient is questioned, she tells her that she can not cry even though she recently lost her mother. Allgrove syndrome was considered for the patient. Steroid replacement therapy was initiated (prednisolon 5 mg⁄day) for the treatment and the patient' complaints resolved gradually.
Conclusion: Allgrove syndrome was first described by Allgrove in 1978 as achalasia, alacrimal and adrenal insufficiency triad. Gazerian et al. Suggested that this syndrome should be named as 4A syndrome together with findings such as autonomic dysfunction, motor neuropathy and mental retardation in addition to classical triad. In our case, there was a hypotension hyponatremia and hyperpotasemia table as well as a hyperpigmentation table and a prescription adrenal insufficiency. Although triple syndrome is diagnosed in childhood, it should be considered in the differential diagnosis of adrenal insufficiency in adulthood with family history. The presence of this syndrome can be revealed by questioning difficulty in crying and difficulty in swallowing.

PP-15
INVESTIGATION OF THE EFFECT OF MARAS POWDER USAGE ON SERUM PROLİDAZ ACTIVITY IN HEALTHY ADULT MEN

Hakan Yıldırım
Sutcu Imam University, Medical Biochemistry, Kahramanmaraş

Introductıon: Prolidase is an exo peptidase in the plasma, brain and various organs that separates proline or hydroxyproline from the carboxyl terminal position of the dipeptides. It is thought that the use of Maraş herb on the activity of serum prolidase (proline dipeptidase), which is known to play an important role in the collagen balance in adults.
Materıals And Methods: A total of 90 people were included in the study, 50 working group using Maraş grass with similar age distribution in Kahramanmaraş province and surrounding provinces and 40 working people using Maras grass in approximately 7 months between June 2017 and January 2018. Prolidase levels were measured spectrophotometrically using modified Chinard technique in venous blood plasma samples from these groups. The obtained data were compared using the t test as appropriate. At the end of the study statistical analyzes were evaluated by SPSS 11.5 statistical program. A P value of ‹ 0.05 was considered significant.

Results: It was seen that the normal distribution of the groups was not appropriate. Mann Whitney-U test was used to compare the statistic of the groups. According to this test result, the difference between the groups was significant ($p < 0.001$). Plasma Prolidase levels were found to be 3439,143 ± 233,27 in the average and standard error levels in Marash ot users, and 2235,75 ± 169,57 in the non-UL users.
Conclusıons: The high levels of prolidase enzymes used in marash and its locusts, which are obtained from tobacco, known as nicotiana rustica, and mixed with 1⁄3 by the ashes of oak or grapevines; prochlorene, collagen and protein containing proline or hydroxyproline are more catabolized than normal individuals. This is thought to constitute one of the unknown harmful effects of maras.
Keywords: Maras powder, prolidaz, plazma

PP-16
RETROSPECTIVE OBSERVATIONAL STUDY: HEMATOLOGICAL PARAMETERS IN PATIENTS WITH THYROID DISEASE

Abdullah Sivrikaya[1], Emel Şahin[1], Sedat Abuşoglu[1], Büşra Ecer[1], Esra Paydaş Hataysal[1], Cem Onur Kıraç[2], Süleyman Hilmi İpekçi[2], Levent Kebapçılar[2], Ali Ünlü[1]
[1]Selçuk University Faculty of Medicine, Department of Medical Biochemistry, Konya
[2]Selcuk University Faculty of Medicine, Endocrinology and Metabolism Diseases, Konya

Background: Thyroid gland is located in the neck opposite C5-T1 vertebrae and it produces t3, t4 and calcitonin. Several studies have reported that thyroid hormones(t3-t4) have important roles in the hematopoietic system; because they indicate that thyroid hormones induce hematopoiesis, also several platelet abnormalities were seen in patients with thyroid disfunction and hypothyroidism may cause thrombocytopenia. Thyroid diseases are very common. The most common ones are hashimato, graves and multinodular goiter. Hashimoto and graves are autoimmune ones. Thyroid disorders are frequently accompanied with the different blood cell abnormalities. Mean platelet volume (MPV) is one of the platelet size and some studies have found differences in MPV values in thyroid disorders. So in this study, we aimed to determine the differences of platelet indices (MPV, PLT, MPV⁄PLT) in patients with and without thyroid dysfunction, also in patients between autoimmune ones and others.
Materıal-Methods: This study included 147 patients (49 Graves, 50 Hashimoto and 48 multinodular goiter) and 50 healthy individuals with similar age and gender distribution who admitted to Selçuk University Medical School Hospital between 01.04.2017 and 01.10.2017. Patients with chronic disease were excluded. Platelet indices (MPV, PLT, MPV⁄PLT) were performed with Beckman Coulter LH780 hematology analyzer. Statistical analysis was performed with SPSS v16. p values of < 0.05 were considered to indicate statistical significance.
Results: 80% of patients with thyroid disorder were female and 20% of patients were male. MPV, PLT, MPV⁄PLT values of patients with thyroid disorder and healthy control group were found as 8.47 ± 0.9 fl, 267.6±59.9, 0.0335 ±0.009 and 8.5 ± 0.93fl, 252.08 ± 61.5, 0.035 ± 0.009 respectively. No significant difference was observed in the MPV, PLT, MPV⁄PLT levels of patients with thyroid disorder compared to the healthy control group (p=0.873, p=0.117 and p=0.148, respectively. Statistical analysis was performed with IBM SPSS v21.
Conclusıon: As a result, there were no significant difference in platelet indices (MPV, PLT, MPV⁄PLT) between individuals who has thyroid disorder and healthy subjects. Therefore, we think that the platelet indices cannot be a diagnostic criterion for the thyroid disorder.
Keywords: Mean platelet volume, platelet volume, thyroid disease

PP-17
COMPARISON OF IMMUNOASSAY AND MASS SPECTROMETRIC SERUM VITAMIN D METHODS

Abdullah Sivrikaya, Sedat Abuşoğlu, Fikret Akyürek, Esra Paydaş Hataysal, Büsra Ecer, Ali Ünlü
Selcuk University Faculty of Medicine, Department of Medical Biochemistry, Konya

Objectives: Vitamin D is a steroid hormone precursor that undergoes chemical conversion in the liver and kidney: the first reaction produces 25OHD3, an objective indicator of vitamin D status, and the second produces the main bioactive form, 1,25-dihydroxyvitamin D (1,25(OH)2D). The aim of this study was to compare immunoassay and in-house mass spectrometric serum vitamin D methods.
Materials-Methods: A total of 78 serum samples were analyzed with mass spectrometry and Roche Total vitamin D commercial immunoassay kit. Mass spectrometric analyses were performed using an Shimadzu LC-20-AD (Kyoto, Japan) coupled with a ABSCIEX API 3200 triple quadrupole mass spectrometer (USA) equipped with an atmospheric pressure chemical ionisation (APCI) operating in positive mode for determination of vitamin D. Statistical analysis was performed with MedCalc v16.2.1.
Results: According to Deming regression analysis, the equation was found to be as Immunoassay = 1.0610 + 1.1117 LC-MS⁄MS. The Bland Altman evaluation demonstrated a partial mean bias of 32.9 % between both methods.
Conclusions: As consistent with our study's results, overall mean bias to ID-LC-MS⁄MS was reported as −7.1% for the Siemens ADVIA Centaur assay, −15.3% for the DiaSorin LIAISON assay; −8.4% for the Roche ELECSYS assay and −16.3% for the Abbott ARCHITECT assay. It might be effective to analyze the samples with clinical discordance in LC-MS⁄MS system.
Keywords: Vitamin D, Immunoassay, Mass Spectrometry

PP-18
SERUM ASYMMETRIC DIMETHYLARGININE LEVELS IN PREGNANCY PERIOD

Hatice Banu Keskinkaya[1], Sedat Abuşoğlu[1], Abdullah Sivrikaya[1], Setenay Arzu Yılmaz[2], Ali Ünlü[1]
[1]Selçuk University Faculty of Medicine, Department of Medical Biochemistry, Konya
[2]Selçuk University Faculty of Medicine, Department of Obstetrics and Gynecology, Konya

Objectives: There is a relationship between ADMA and endothelial dysfunction in women with high levels of asymmetric dimethyl arginine (ADMA) in early pregnancy. Variation of serum ADMA levels during pregnancy is crucial in understanding the pathogenesis of diseases and associating them with therapy, developing new treatment protocols, and even eliminating the risk factors of healthy persons without disease. Therefore, our aim was to determine the level of serum ADMA of pregnant participants who underwent first and second trimester screening.
Materials-Methods: A total of 200 pregnant women were included in the study. These participants were divided into 4 groups as second trimester control (n = 50) (group 1), second trimester high risk (n = 50) (group 2), first trimester control (n = 50)) (Group 3) and first trimester high risk (N = 50) (Group 4). Serum ADMA levels of each batch were measured on an ABSCIEX API 3200 instrument by liquid chromatography mass spectrometry (LC-MS⁄MS) method.
Results: Group 1 serum ADMA [0.13 (0.02-0.44)] levels were significantly higher than Group 2 (0.06 (0.02-0.17)) ($p < 0.001$). There was no statistically significant difference between Group 3 [0.11 (0.02-0.33)] and Group 4 [0.09 (0.03-0.24)] ADMA levels ($p = 0.08$).
Conclusions: ADMA levels diminish during normal pregnancy and reach the minimum at the end of the first trimester, then increase with the increase in gestational age. However, studies have presented that there is no difference between pregnancy week and low ADMA concentrations. Serum ADMA levels may not be used as a marker with an exception of preeclampsia.
Keywords: Asymmetric Dimethylarginine, Pregnancy, Mass Spectrometry

PP-19
PREDICTOR TESTS FOR IMMUNE INSUFFICIENCY IN HIV POSITIVE CASES

Ferhat Gürkan Aslan[1], Mehmet Köroğlu[1], Oğuz Karabay[2], Mustafa Altındiş[1]

[1]Sakarya University, Faculty of Medicine, Department of Medical Microbiology, Sakarya
[2]Sakarya University, Faculty of Medicine, Department of Infectious Diseases Sakarya

Objectives: Certain cytokines in acute HIV-infected patients are biomarker candidates for clinical development. Strong association between IFN-γ inducible protein 10 (IP-10) and low CD4 cell counts 2 years after the onset of infection suggests that cytokines may be useful biomarkers. The aim of this study is investigate the correlation of IP-10 with CD4 cells counts and viral load.
Materials-Methods: Study sample consists of 30 patients (13 with treatment and 17 without treatment) and 20 healthy voluntaries. Informed consent was obtained from all participants. Venous blood samples of patients (at 0, 3, and 6 months) and voluntaries were sent to the Medical Microbiology Laboratory of the Medical Faculty of Sakarya University for flow cytometry, nucleic acid assays and ELISA test. Data were collected using SPSS.
Results: Mean IP-10 level in patients is 344 ng⁄mL. Mean IP-10 levels in patients with and without treatment are 210 ng⁄mL and 422 ng⁄mL, respectively, while that in control group is 68 ng⁄mL. Results show a statistically significant difference in IP-10 levels between patient and control groups ($p = 0.006$), a moderate positive correlation between IP-10 and viral load values ($r = 0.59$, $p < 0.001$) and a moderate negative correlation between IP-10 and CD4 cells counts ($r = -0.51$, $p < 0.001$).
Conclusions: Results are in agreement with those of previous studies. Especially early IP-10 levels in HIV-1 patients are associated with CD4 (+) cell counts and viral replication. Further studies are needed to analyze IP-10 as biomarkers for prognosis.
Keywords: AIDS, biomarker, HIV, IP-10, cytokine

PP-20
THE EFFECTS OF SYRIAN CIVIL WAR ON TUBERCULOSIS CASES: CASE OF ŞANLIURFA

Elif Demir[1], Zeliha Demir Giden[2], Ramadan Giden[3]
[1]University of Harran, Medical Biochemistry, Şanlıurfa
[2]University of Durand, Chest Diseases Şanlıurfa
[3]Sanlıurfa Training and Research Hospital, Emergency Medicine, Şanlıurfa

Objectives: Tuberculosis (TB) is an infectious disease as old as human history. Throughout history, social and political events have led to the development of the disease. Industrial revolution, wars, bad living conditions, migrations, inadequate health politics, negligence following patients have caused this disease to spread. The number of those who migrated to my country after the end of civil war in Syria found millions. Şanlıurfa, which is a border city, is one of those who host the Syrian refugee population. The aim of the study is to analyze statistically the TB cases that took place in Şanlıurfa with the civil war that took place in Syria.
Materials-Methods: Five-year (2013-2017) TBC data in the Sanliurfa Haliliye Community Health Center Tuberculosis Unit and the 5-year Syrian asylum-seeker data from the Immigration Administration were evaluated statistically.
Results: In the civil war that started in Syria, while asylum claims were very few in the first period, there was a big increase in the number of asylum seekers by 2013 (224,655 people, 15 times increase compared to 2012). 1,519,286 in 2014, 2,503,549 in the year 2015, 2,749,140 in the year 2016 and 3,466,263 in the number of registered Syrian asylum seekers in 2017. Sanliurfa, has been the province that hosts the most refugees, the number of people approaching half a million Syrian refugees to Turkey. The total number of registered TBs in Şanlıurfa is 188 in 2013; 10 of them are Syrian, 1954 in 1954; 28 of these are Syrian, 1985 in 1985; 48 of them are Syrian, 214 in 2016; of which 36 are Syrian, and 2017 are 230 and 54 are Syrian.
Conclusions: With the increase in the number of asylum seekers every year, the number of TB cases with Syrian nationality has also increased. As most Syrian refugees are poor in terms of living conditions and conditions, particularly collective refugee camps are at great risk for a respiratory TB disease.
Keywords: Syrian Civil War, Tuberculosis, Sanliurfa

PP-21
USAGE OF MODIFIED REFERENCE RANGE OF MONOMERIC PROLACTIN IN HYPERPROLACTINEMIA EVALUATION

Melehat Dirican, Hacer Ebru Açıkgöz, Emre Sarandöl
Uludağ University, Department of Medical Biochemistry, Bursa

Objectives: To evaluate the usage of active monomeric prolactin (PRL) reference range in hyperprolactinemia.
Materials - Methods: PRL levels, reported in the previous 35 months in the Clinical Biochemistry Laboratory of the Uludag University Medical Faculty, had been evaluated. Three hundred and ninety cases were reported as high and 60 as normal. PRL was analyzed in the serum and then immediately after precipitation with polyethylene glycol in the supernatant (Spr-PRL). Concentrations of Spr-PRL were divided by that of untreated serum, and were expressed as R%. R% values ≤40% and ≥60% were considered as macroprolactinemia and true hyperprolactinemia, respectively. The intermediate values were defined as the grey zone. Spr-PRL, accepted as the active monomeric PRL, were evaluated according to the reference range (monomeric reference range) obtained from the control group.
Results: According to the R% criteria; macroprolactinemia was detected in 25.1% and true hyperprolactinemia was detected in 67.2 % of patients with hyperprolactinemia. When the data were evalutaed according to the modified reference range; 7 (2.7%) of the 263 true hyperprolactinemia reports were changed as macroprolactinemia and 13 (13.4%) of the macroprolactinemia were changed as true hyperprolactinemia.
Conclusions: We observed that some of the true hyperprolactinemia cases were ignored when the R% values were used as the sole criteria. Spr-PRL value is already achieved for determination of R%, it would be useful to determine reference range of Spr-PRL for each laboratory and report PRL levels using this parameter.
Key words: hyperprolactinemia; macroprolactin; monomeric prolactin; polyethylene glycol

PP-22
DETERMINATION OF MEDIAN VALUES OF TRIPLE SCREENING TEST PARAMETERS IN MUĞLA AND BALIKESIR REGION

Ercan Saruhan[1], Emre İspir[2]
[1]Mugla Sıtkı Koçman University, Medical Biochemistry Muğla
[2]Balkesir Atatürk State Hospital, Biochemistry Laboratory Balıkesir

Objective: To determine the median values of the triple screening test parameters used for prenatal screening in Muğla and Balıkesir regions and to compare them with the existing median values in Prisca risk assessment program.
Materials and Methods: In this study, 1503 pregnant women who applied to Muğla Sıtkı Koçman University Training and Research Hospital between 2012-2018 and 8774 pregnant women who applied to Balikesir Atatürk State Hospital between 2012-2016, beta-human chorionic gonadotropin (β-hCG), and unkonjuge estriol (uE3) were examined retrospectively. The difference between the calculated new median values and the existing median values in the Prisca program was evaluated statistically.
Results: 17th and 19th weeks AFP median values of the pregnants who applied to Muğla Sıtkı Koçman University Training and Research Hospital were higher than the median values in the program ($p<0,05$). The median value of β-hCG at 15th week was lower than the median value of the program ($p<0,05$). For all weeks, the uE3 median values were statistically different from the media values in the program ($p> 0.05$). AFP median values of the pregnants who applied to Balikesir Atatürk State Hospital were lower than the median values of the program ($p<0,05$). Except the 17th week, the median values of β-hCG were higher than the median values of the program ($p<0,05$). For all weeks, the uE3 median values were lower than the median values of the program ($p<0.05$).
Conclusion: Median values calculated locally instead of the data of the programs used for prenatal risk assessment will lead to more accurate results and decrease of risky interventions such as amniocentesis.
Keywords: Prenatal diagnosis, triple screening test, median values

PP-23
EVALUATION OF APRI, FIB-4, FORNS AND AAR INDICES BY USING DIFFERENT CUTTING VALUES IN HEPATIC FIBROSIS

Neslihan Cihan, Selin Yildiz, Ayşenur Macun
University of Health Sciences, Ankara Health Research and Application Center, Department of Medical Biochemistry, Ankara

Objectives: The aim of this study is to evaluate APRI, FIB-4, Forns and AAR indices in patients enrolled according to liver biopsy results and to determine new cut-off values for these indices.
Material-Methods: A total of 116 patients were included in the study. According to biopsy results, 100 patients with hepatic fibrosis and 16 patients without hepatic fibrosis were evaluated. Patients' indices are calculated by the following equations: APRI= [AST/URL] × 100/Platelet [10⁹/L], FIB-4= Age (J) x AST [U/L]/ [Platelet (10⁹/L) x √ALT (U/L)], Forns index=7.811-3.131ln(Platelet)+0.781ln(γGTT)+3.467ln(Age) – (0.014xCholesterol), AAR= AST [U/L]/ALT [U/L]. ROC curves were plotted by using the MedCalc program with different cutoff values for APRI, FIB-4, Forns and AAR indices.
Results: The best cut-off values determined by the area under the curve (AUC) for APRI, FIB-4 and Forns and AAR indices were 0.20 (AUC: 0.581), 0.50 (AUC: 0.633), 2.00 (AUC: 0.606), and 1.00 (AUC: 0.625), respectively. Sensitivity-specificity values for these cut-offs were 85%-31%; 89%-38%; 90%-31%, and 50% -75%. Positive and negative predictive values were found to be 0.55-0.67, 0.58-0.77, 0.56-0.75 and 0.66-0.60, respectively.
Conclusions: Our values were found to be lower than those reported previously in the literature. The reason for this is thought to be due to differences in the devices and methods used, due to differences in the fibrosis stages of the patient population. Additionally, most of the patients had AST and ALT values in the reference range and the number of pathologically negative patients was relatively inadequate.
Keywords: Biopsy, Fibrosis, Liver

PP-24
SERUM GALECTIN-3 LEVELS IN HASHIMOTO THYROIDITIS

Beyza Saraçlıgil[1], Esra Paydaş Hataysal[2], Mine Öztürk[3], Ali Ünlü[2]
[1]KTO Karatay University, Medicana Medical Faculty Hospital, Biochemistry, Konya
[2]Selçuk University Faculty of Medicine, Department of Medical Biochemistry, Konya
[3]KTO Karatay University, Medicana Medical Faculty Hospital, Endocrinology and Metabolic Diseases, Konya

Objectives: Hashimoto thyroiditis (HT) is a chronic autoimmune thyroid disease characterized by thyroid enlargement, thyroid autoantibody production and lymphocytic infiltration, mostly associated with thyroid hypofunction in various degrees. Galectin-3 (Gal-3) is a member of the multifunctional beta-galactoside-binding lectin family, which was several important regulatory roles in inflammation, immunity, and cancer. The aim of this study was to evaluate serum levels of Gal-3 in HT.
Materials-Methods: The newly diagnosed 59 HT patients aged between 27-57 years who were admitted to the Endocrinology outpatient clinic of KTO Karatay University Medicana Medical Faculty Hospital were included in the study and 26 patients with chronic disease and those who were pregnant were excluded from the study. Diagnosis was based on that HT patients had thyroid antigens (especially thyroperoxidase and thyroglobulin) antibodies and reduced echogenicity in the thyroid ultrasound. Serum Gal-3 levels were measured by the chemiluminescence microparticle immunoassay (CMIA) method (ABBOTT).
Results: A total of 33 cases were included in the study. The mean age of the patients was 26.2 years and the mean age was 37.2 ± 9.2 years. Serum Gal-3 level presented normal distribution with a mean of 13.14 ± 2.94 ng/ml. There was no correlation between age and galectin-3 levels (p=0.51). Serum TPO antibody levels had a median value of 824 (min-max 91-100) IU/mL and there was no correlation between TPO antibody and galectin-3 levels (p= 0.34).
Conclusions: Gal-3 levels should not be considered as a good marker for evaluation Hashimoto's thyroiditis.
Keywords: Hashimoto thyroiditis, Autoimmune thyroiditis, Galectin-3

PP-25
PREPARATION OF MOLECULARLY IMPRINTED POLYMERS FOR TESTOSTERONE DETERMINATION

Volkan Yetgin, M. Nalan Tüzmen
Dokuz Eylül University, Chemistry Department, İzmir

Objective: Molecular imprinting is a technology for producing cavities around a template molecule, where only a template molecule can enter, by polymerizing a suitable monomer. With this technology, artificial receptors can be generated and the template molecule in a sample can be selectively separated. In this study, polymers with specific selectivity to testersterone were also produced by molecular imprinting technology. The testosterone is an androgen group hormone, a steroid hormone, released from the adrenal glands. Testosterone is used as a marker of male fertility efficiency and doping agent. Therefore, its determination selective sensitive control becomes important.
Materials-Methods: Testosterone-imprinted polymers were synthesized by the miniemulsion technique using methacryloilamidotriptophane (MATrp) monomer. Characterization of the prepared polymer was carried out using FTIR, SEM and Particle Size Measuring Instruments. After characterization, template removal was carried out with the aid of a suitable agent. Testosterone adsorption capacities of removed polymers were determined by High Performance Liquid Chromatography (HPLC) using standard testosterone solutions.
Results: The template molecule from the testosterone-imprinted MATrp polymer was removed using a mixture of methanol: 1% acetic acid (1: 1) and confirmed by HPLC. It has been determined that the imprinted polymer synthesized has a spherical structure and nanoscale according to the characterization data. The assay was carried out at a flow rate of 1.5 mL/min using a C18 column (5 mm particle diameter, 4.6-150 mm) and ACN: MeOH: 1% AcAc mobile phase (40:30:30) by HPLC.
Conclusion: As a result of this study, a novel, economical, selective and easily applicable material for testosterone adsorption and determination has been obtained. With testosterone specific polymers developed by molecular imprinting, the benefits of widespread use, such as low sample throughput, high selectivity, and discrimination of complex compounds with different compounds, will be achieved.
Keywords: Testosterone, molecular imprinting, HPLC

PP-26
EVALUATION OF POLYCLINIC BIOCHEMICAL TEST RESULTS IN THE TRAINING AND RESEARCH HOSPITAL

Serdar Turkmen[1], Hakan Cengiz[2], Sunay Oz[3]
[1]Gaziosmanpasa Taksim Training and Research Hospital, Biochemistry, Istanbul
[2]Molecular Medicine, Institute of Health Science, Dokuz Eylul University, Izmir
[3]Family Medicine, Gaziosmanpasa Taksim Training and Research Hospital, Istanbul

Objective: Family Medicine is a clinical specialty with a specific education content, outpatient practice and primary care orientation. In this study; In Istanbul GOP Taksim EAH, biochemical test numbers and results were investigated and the status was determined in all policlinic requests of the family physician in the 3rd step.
Method: In this retrospective study, patients who applied to family medicine clinic in the last year were examined and examined. Biochemical measurements; Beckman AU680 autoanalyser, Hormone measurements; Beckman Unicel DXI 800 and HbA1c; BioRad VARIANT™ II was made on these devices. Biochemistry test results and pathologic results were interpreted as the effect of diagnosis. The data was received via the automation system. Descriptive and frequency statistical analyzes were performed using the SPSS 17.0 program.

Results: As a result of the data obtained from the laboratory data, 37.454 Biochemistry test, 12.991 Hormone test and 845 HbA1c test were conducted from January 1, 2017 to December 31, 2017 in the patients who applied to the Family Physician Policlinic in our hospital. Approximately 3,700,000 biochemical tests and 750,000 hormone tests were conducted in our laboratory in 2017. Among these tests, HbA1c (403 test results> 6.0, total 835 tests) and Glucose (418 test results> 126 mg / dl, total 2923 tests) were found in the highest pathological values. The Toxicity Blood Sugar test, which is one of the other tests related to diabetes mellitus, was performed 77 times and 16 of them (≥200 mg / dl) were found pathologically. The most commonly requested hepatic function tests were ALT (267 test result K>35 - E> 50 U / L, total 3078 test) and AST (172 test result K> 35 - E> 50 U / L, total 3066 test) were found to be normal values.
Conclusion: It is understood that the family medicine specialist policlinic available in our hospital has functions for the coordination of health services between the 1st step and 2nd step in the hospital and outpatient clinics. The periodic (general) health examination is the leading reason for listing the reasons for referral to family medicine outpatient clinics.
Keywords: Clinical Biochemistry, Family Medicine, Laboratory Test Results

PP-27
THE RELATIONSHIP BETWEEN INFLAMMATION AND BONE TURNOVER MARKERS IN TYPE 2 DIABETIC OSTEOPOROTIC HIP FRACTURE PATIENTS

Aylin Sepici-Dinçel[1], V. Ercan Dinçel[2]

[1]Gazi University Faculty of Medicine, Department of Medical Biochemistry, Ankara
[2]T.C. Ministry of Health, Public Hospitals Authority, Ankara 1. Regional General Secretariat, Health Sciences University, Ankara Training and Research Hospital, Orthopedics and Traumatology Clinic, Ankara

Objective: Bone fragility directly increases with diabetes duration, with poor glucose control, microvascular complications and need of insulin. The aim of this study was to determine the possible association of cytokinin levels with local bone formation inhibitors in diabetic and non-diabetic hip fractures with diabetes metabolism.
Materials and Methods: In Group 1, 14 patients (9 female / 5 male, 76.28 ± 3.91) hip fractured patients with type 2 diabetes and in Group 2, 13 patients (9 female / 4 male, 74.38 ± 7.07) hip fractured patients without diabetes were included in the study. Both groups of patients had osteoporotic fractures after low-energy trauma. Bone mineral density measurements were done with Lunar DXA. IL-17 and sclerostin (SOST) levels were determined by ELISA method.
Results: The statistical significant differences for BMD values were observed between two groups only at Total T and Z scores ($p < 0.029$, $p < 0.036$ respectively). No differences were observed for IL-17 (pg/mL) (96.69 ± 18.87, 100.18 ± 15.88) and SOST (ng/mL) (41.15 ± 18.33, 57.55 ± 33.75 respectively, $p > 0.05$), when compared to control grup, it was observed that the levels of both markers were increased ($p<0.05$).
Conclusion: Sclerostin is a local bone formation inhibitor and antagonizes the Wnt signaling pathway in osteoblasts in order to decrease the bone formation. Besides can be worked on the resorption side also. On another pathway many regulatory cytokines such as TNF-a, IL-1, IL-11, IL-17 can stimulate osteoclastogenesis mediators by increasing the bone resorption. IL-1 and TNF-α induce osteoclastogenesis by RANKL system leading to IL-17 synthesis by osteoblast and stromal cells. IL-17 is an important cytokine in osteoclastic bone resorption. Identification of different biomarkers for bone with other organ associations may improve the sucsess and treatment of diseases, in an attempt to meet large groups in which specific functions of bone tissue can be assessed.
Key words: Diabetes Mellitus, IL-17, sclerostin

PP-28
BIOMARKERS RELATED WITH GALECTIN-1 IN MODERATE AND MEDIUM/SEVERE LEVELS OF OBSTRUCTIVE SLEEP APNE SYNDROME

Ayşe İriz[1], Rabia Şemsi Özkısa[2], Rabia Tural[2,3], Aylin Sepici Dinçel[2]
[1]Gazi University Faculty of Medicine, Ear Nose Throat Disease Department, Ankara
[2]Gazi University Faculty of Medicine, Department of Medical Biochemistry, Ankara
[3]Sinop University, Vocational School of Health Services, Sinop

Objectives: Galectins play a key role in many pathological conditions such as autoimmune diseases, allergic reactions, tumor cell metastasis and inflammation, especially in cellular functions, primarily galectin-1 (GAL-1) can play a key role for migration, chemotaxis, proliferation, apoptosis and differentiation. There is an increased risk of inflammation and cardiovascular disease in obstructive sleep apnea syndrome (OSAS) with recurrent hypoxic attacks. This preliminary study aimed to evaluate the association between galectin-1 levels and related biomarkers with disease activity and risk factors.
Materials and Methods: In group 1, 10 (2 female / 8 male) patients with medium/severe OSAS and in Group 2, 10 (6 female/ 4 male) patients with moderate OSAS were included in the study. The demographic characteristics of the patients were recorded. Apnea-hypopnea index (AHI) and pO2 saturation measurements were performed by diagnostic polysomnography (PSG). Gal-1, sclerostin (SOST) levels were determined by ELISA method and paraoxonase-1 (PON-1) kinetic spectrophotometric method.
Results: The mean age and body mass indexes of both groups (30.9 ± 1.2, 27.1 ± 0.9 respectively) were calculated. The values of AHI (30.96 ± 4.64 and 6.03 ± 1.42, $p <0.001$) and pO2 saturation (18.6 ± 8.7 and 1.4 ± 0.7, $p <0.002$) of the groups were statistically different. There was no difference between SOST (14.97 ± 2.20, 17.41 ± 1.05, ng/mL) and PON-1 (U/L) levels among the groups. There was a statistically significant difference between the two groups at the levels of Gal-1 (0.88 ± 0.19 and 2.04 ± 0.25, $p <0.002$, ng / mL).
Conclusion: We suggest that the association of the increase in apnea-hypopnea index with different biomarkers will guide the diagnosis, follow-up and treatment of the disease.
Keywords: OSAS, Gal-1, PON-1, SOST

PP-29
EVALUATION OF N-TELOPEPTIDE LEVELS IN ROMATOID ARTHRITIS

Ercan Dinçel[1], Rabia Şemsi Özkısa[2], Funda Kosova[3], Aylin Sepici Dinçel[2]
[1]Health Sciences University, Ankara Training and Research Hospital, Orthopedics and Traumatology Clinic, Ankara
[2]Gazi University, Faculty of Medicine, Department of Medical Biochemistry, Ankara
[3]Celal Bayar University, Manisa

Objective: Rheumatoid arthritis (RA) is a chronic, autoimmune, inflammatory disease involving synovial joints. In this study, it was aimed to investigate the levels of N-telopeptide (NTX) which is a resorption marker, in patients with rheumatoid arthritis compared to healthy controls.
Materials and Methods: The study consisted of age and gender matched patients with rheumatoid arthritis and control group. NTX levels of all serum samples were measured using the ELISA method.
Results: There was no age differences between the study groups (Romatoid arthritis group (RG: 51.9 ± 14.1, CG: 56.8 ± 10.2, $p> 0.05$). The results of NTX levels showed statistically significantly lower levels in romatoid arthritis group (RG: 13,37 ± 6,25, CG: 17,85 ± 6,76 nM BCE $p <0.05$). These values were evaluated by disease activity.
Conclusion: During inflammatory chronic rheumatic diseases differences of bone turnover markers are expected. This change was assessed by N-telopeptide levels in our study group and the lower level of resorption marker compared to control group suggested that the bone turnover is declined and that the reduction in resorption is also accompanied by a decrease in formation. The evaluation of the expected bone resorption for bone mass in inflammatory diseases could not be quided only with one resorption or formation marker. The markers of bone turnover need to be evaluated together as resorption or formation markers.
Keywords: Bone turnover, N-telopeptide, Rheumatoid arthritis

PP-30

LOW NEUTROPHIL-LYMPHOCYTE RATIO IN PATIENTS WITH EUTHYROID CHRONIC AUTOIMMUNE THYREOTIDIS

Büşra Ecer[1], Esra Paydaş Hataysal[1], Hüsamettin Vatansev[1], Emel Şahin[1], Sedat Abuşoğlu[1], Cem Onur Kıraç[2], Levent Kebapçılar[2], Süleyman Hilmi İpekçi[2], Ali Ünlü[1]

[1]Selçuk University, Faculty of Medicine, Department of Medical Biochemistry, Konya

[2] Selçuk University, Faculty of Medicine, Endocrinology and Metabolic Diseases, Konya

Objective: Autoimmune thyroid Disorders(ATD) include Graves’ disease and Hashimoto’s thyroiditis which are the most common causes of thyroid gland dysfunctions. The neutrophil-lymphocyte ratio(NLR), usually determined from peripheral blood, is calculated by dividing the number of neutrophils by number of lymphocytes. Thyroid disorders are frequently accompanied with the different blood cell abnormalities. In this study, our aim was to compare NLR in patients with ATD to control groups.

Materıal-Methods: A total of 200 patients were enrolled in this prospective study, including 100 patients with euthyroid chronic autoimmune thyreotidis and 100 healthy controls who admitted Selçuk University Medical Faculty between 01.04.2017 and 01.10.2017. Patients with other chronic diseases were excluded. Complete Blood Count analysis was performed with Beckman Coulter LH780. Statistical analyses were performed using the IMB SPSS, Version 20.

Results: There were no statistical differences between ATD group and control group for Leucocyte count and Neutrophil count. (p=0.14, p=0.89 respectively) . The NRL values were statistically lower in patients with ATD median 2.01 (0.73-4.40) compared to control group median 1.8(0.67-5.24) ($p<0.049$).

Conclusıon: Our results show that NLR values were lower in euthyroid ATD patients than in healthy control group. However, there were no significant differences in neutrophil and leucocyte count between the individuals with euthyroid ATD and control group.