Abstracts

for the 4ᵗʰ National Congress
of the Society of Clinical Biochemistry Specialists,
16ᵗʰ-20ᵗʰ October 2007, Fethiye, Turkey

A-1

Development of the Employees Occupational Safety and Health Program (EOSHP): A Requirement for Laboratory Accreditation Process

Yenice S*, Maden C*, Çakır N**

*Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Chemistry and, **Department of Quality Management, Gayrettepe, Istanbul, Turkey*

The EOSHP is based on the concept that employees have both the right and the need to know about the hazards they are exposed to while working and the identities of the chemicals that pose the hazard. Our aim is to put a system in place whereby the hazards of all chemicals are evaluated in the laboratory in compliance with the *Joint Commission International Accreditation Standards for Clinical Laboratories*. It is essential to communicate the hazard information and protective measures required to use these chemicals safely to exposed or potentially exposed employees who may use the chemicals. EOSHP comprises the following stages:

- The person responsible for developing, evaluating the effectiveness of, and updating the written EOSHP and a *Chemical Hygiene* Plan has been identified. His/her job descriptions, responsibilities and authorities were defined.

- A Hazard Communication Quality Standard (HCQS) was described within the content of EOSHP and a standard operating procedure has been written for the management of Hazardous Substances.

- An *Employee's Guide to Handle the Hazardous Chemicals* has been developed to assist the laboratory staff in complying with the EOSHP HCQS.

- The Staff who will be responsible for the initial set up of the EOSHP and the day-to-day activities necessary to comply with each aspect of the HCQS has been identified and appointed through the completion of necessary training. Job descriptions, responsibilities, and authorities were well defined.

- An inventory of all hazardous chemicals used in the laboratory was created.

- A written list comprising the hazard descriptions of chemicals was completed.

- Hazard symbols and classifications were delineated based on the guidelines of NFPA (National Fire Protection Association, USA).

- In compliance with the EOSHP HCQS, the Material Safety Data Sheets (MSDS) for the specific hazardous products or chemicals were provided. A guide has been published to explain the terms and definitions in the MSDS.

- Appropriate signs and labels have been prepared as hazard warnings to convey the hazardous effects of the materials.

- An EOSHP HCQS-required label has been designed that contains the identity of the product and appropriate hazard warnings. Labeling guidelines was published.

- Storage conditions and groups were identified for chemical substances. Special areas and cabinets were designated based on the hazard identifications.

- Safety equipments were acquired to ensure the protection of laboratory staff.

- Guidelines have been determined in the event of a chemical spill, incident, or leak from a sealed container.

- Initial and refresher trainings have been provided all laboratory staff. A copy of the *Employee's Guide to Handle the Hazardous Chemicals* has been handed out as training source document. Training of each employee was assessed by using a checklist and training records were kept.

The EOSHP was introduced as a reference case and published in the source book entitled **"Understanding Health Care Facility Safety"** by **Joint Commission**. (Working with Hazardous Chemical Materials. In: Understanding Health Care Facility Safety. International Edition. Joint Commission International. 2006; pp.149-152. (http:// www.jcrinc.com/publications.asp).

A-2

TSH Referance Interval and New Approach to the Upper Normal Group

Çevlik T, Aytekin M, Emerk K

Marmara University, Faculty of Medicine, Department of Biochemistry, İstanbul, Turkey

Over the past fourty years, improvements in the specificity of biochemical thyroid tests have dramatically impacted clinical strategies for detecting and treating thyroid disorders. Improvements in the sensitivity of assays to measure the pituitary hormone TSH now allow it to be used for detecting both hyper- and hypothyroidsm. Despite some gender, age and ethnicity related differences in THS levels it seems not necessary to change the reference interval for clinical purposes. Over the past two decades however the upper reference limit for TSH has steadily declined from ˜10 to ˜4.5 mIU/L not only the improvements in the sensitivity and specificty of the assays but the recognition that normal TSH values are log distributed played an important role. A recent follow-up study has found that individuals with serum TSH >2.5 mIU/L at their primary evaluation had an increased odds ratio of developing hypothyroidsm over next 20 years especially if thyroid antibodies are elevated.

In this study we examined the probability of having hypothyroidsm in patients with THS 2.5-4.2 mIU/L at their primary evaluation. 41 subjects were selected retrospectively ommiting patients with thyroid antibody positivity (TPO and ATG) , family history of thyroid disorder, HRT receivers and cronically ill. 40 subjects were used as a control group with same characteristics except their TSH values were 0.27- 2.5 mIU/L. Average age for the two groups were 40 and 39 respectively. TSH assays were performed using ROCHE E170 and chemiluminassance assay.

The results revealed that individuals with higher TSH values had a 20% higher rate of developing hypothyroidsm in two years with respect to the control group even tough their throid antibodies were negative This suggests that individuals with TSH values >2.5 has to be monitored yearly to catch the early onset of disease.

A-3

The International Quality Standarts for PT Provider and KBUDEK

Aytekin M*, Aslan B**, Bolayirli M***, Emerk K*

*Marmara University, Faculty of Medicine, Department of Biochemistry, **Sisli Etfal Hospital Department of Biochemistry, ***İstanbul University Faculty of Medicine Department of Biochemistry, İstanbul, Turkey

External quality control or proficiency testing programmes are the main instruments that provide data to improve analitic performance of participant laboratories (ISO / IEC 43 1997, ISO 13528 2006 , EN 45020 1998, ILAC G 13 2000). Beside that it provides

1. Interlaboratory comparison of analytical performance of the laboratory

2. Comparison of metod dependent analytical performance

3. Control of diagnostic tests

4. Education of laboratory staff

External quality control programmes are the main and unique tool of quality management system of clinical laboratories. External quality control testing providers should at least ensure base quality standarts which are recomended by ILAC in the ILAC G-13 document. These standarts include technical and management standarts.

1. Management requirments and KBUDEK

A. Management and organizational chart of kbudek abide for recomended standarts by this document

B. Quality management system of KBUDEK follows the recommended standarts of this document. Statistycal design was established according to ISO 13528 document. Operational procedure and content of participant laboratory reports are proper for ILAC G-13 2000 which is the last determined standart for PT providers by ISO. Confidentiality and ethical procedure are designed for this document.

C. Each of the reports that are send to the participant laboratories for performance assesment is preffered according to ILAC G 13 2000 2.3. All the contracts which have been performed with the subcontracter firms are proper to ILAC G 13 2000 2.5

2. Technical requirements and KBUDEK

A. The samples that are sent to the participant laboratories to measure, are all Certified Referance Material that their homogenity and stability are tested before sending to participants. KBUDEK buy these samples from a firm that ensure the recomended quality performance about the quality control samples

B. The method of assesment of data and analysis of performance that belongs participants laboratory are designed as described by the ISO 13528 2006 standarts.

C. The transportation of reference material to the laboratories, the designation of insert sheaths of them and end product evaluation for referance material are as described in ILAC G-13 2000 / 3.5.2.

D. The confidentiality of each report belonging to the participant laboratories are ensured by the technical manager and quality control consultant of KBUDEK as it is recomended by ILAC G-13 2000 3.8.

A-4

The Effect of Tacrolimus and Alemtuzumab Treatment on the Oxidative Stress and T-Cell Activity in Rats Subjected to 70% Partial Hepatectomy

Ay S*, Karabulut AB**, Kirimlioglu H***, Karadag N***, Yilmaz S****, Kirimlioglu V****

*Inonu University School of Medicine Department of Microbiology, Malatya, Turkey, **Inonu University School of Medicine Department of Biochemistry, Malatya, Turkey, ***Inonu University School of Medicine Department of Pathology, Malatya, Turkey, ****Inonu University School of Medicine Department of General Surgery, Malatya, Turkey

The synergic effect of alemtuzumab and Tacrolimus on the T-cell and antioxidant activity in rats subjected to 70% partial hepatec-

tomy was investigated; Thirty rats weighing 200-250 g were recruited in the study and divided into 3 groups (n:10). Group A received alemtuzumab 0.1 mg/kg/day intraperitoneally. Group B received simultaneously A and Tacrolimus 1 mg/kg/day subcutaneously and Group C received 1 mL of tap water daily. Drugs were administered 24 h before, immediately (0 h), 24 and 48 h after 70% partial hepatectomy except in Group C. All rats were sacrificed on postoperative day 2 kidney tissues were obtained for histopathologic examination, IL-6, TNF α, TGF β1, NO, MDA levels and GSH activity worked out.

In Group A and B; IL-6, TNF alpha, TGF beta were found to be significantly higher than Group C (p<0.05). NO levels were found to be decreased in Groups A and B than Group C, only the decrease in group A was statistically significant (p<0.05). GSH activity was found to be higher in Group A and B than Group C but only the increase in Group B was statistically significant (p<0.001). The increase in GSH was more than Group A which was significant (p<0.05). MDA levels were found to be decreased in both of the groups A and B when compared with that of Group C but the significant decrease was found to be only between Group B and C (p<0.05). The decrease in Group B was more than that of Group A which was statistically significant (p<0.05).

Histopathologically; among the groups of hematoxilene-eosine stained tissue, there was not any statistically significant difference.

Simultaneously application of alemtuzumab and Tacrolimus increases T-cell activity less than alemtuzumab alone in the kidney parenchyma. Simultaneously application of alemtuzumab and Tacrolimus are found to be at most effective on antioxidant activity and caused more decrease on oxidative stress. This is the first study conducted on partially hepactectomized rat kidney, showing the effect of tacrolimus that alemtuzumab on oxidative stress and T cell activity. For further evaluation of this effect more clinical and experimental studies are needed.

A-5

Oxidized Fibrinogen Binds Less Effectively to GpIIb/IIIa and to Human Platelets Than Native Fibrinogen

Tetik S*, Kaya K*, Eksioglu Demiralp E**, Yardimci KT*

*Department of Biochemistry, Faculty of Pharmacy, Marmara University, **Department of Haematology&Immunology, School of Medicine, Marmara University, Istanbul, Turkey

Background: Fibrinogen plays a central role in hemostasis. Alterations of protein structures by oxidants may result in partial or complete loss of protein functions.

Aims: We have investigated the effect of structural modifications induced by metal-ion catalyzed oxidation of fibrinogen on its binding capacity to Glycoprotein (Gp) IIb/IIIa and to human platelets.

Methods: Human fibrinogen was exposed to Fe^{3+}/ascorbate oxidative system. The extent of oxidation of fibrinogen at various incubation times (0h, 2h, 6h, 12h, 18h, 24h, 36h) was monitored by spectrophotometric and HPLC (protein PAC column) techniques. Sodium dodecyl sulfate-polyacrylamide gel electrophoresis analysis of oxidized and native fibrinogen was also performed. Binding activities of FITC labelled native and oxidized fibrinogens to GpIIb/IIIa coated micro beads and to isolated human platelets were evaluated by flow cytometry (Becton-Dickinson FACScan) in the presence and absence of ADP (10 μmol/L).

Results: The intensities of changes observed at spectrophotometric absorption values, at HPLC spectrums and shift in maximum absorption wavelenght were dependent upon the oxidation exposure times. Maximum oxidation was observed at 18h exposure time. Oxidatively modified fibrinogen showed less binding activity than native fibrinogen to GpIIb/IIIa coated micro beads and to isolated human platelets. Furthermore, unstimulated platelets showed lower binding capacity to oxidized fibrinogen than ADP-induced platelets.

Conclusion: These studies showed that oxidative modification of human fibrinogen caused decreased binding activity of fibrinogen to GpIIb/IIIa coated micro beads and to unstimulated or ADP activated platelets. In other words, Fe^{3+}/ascorbate oxidation resulted in partial loss of fibrinogen function with to platelets.

A-6

HDL Subclasses and Ox-LDL Levels in Coronary Artery Disease

Atalay S*, Özsavcı D**, Yurttagül K*, Gürkan U***, Şener A**, Uras F**, Emerk K****

*Haydarpasa Numune Train. and Res. Hospital, Clin. Biochemistry Dept, **Marmara University, Faculty of Pharmacy, Dept. of Biochemistry, ***Dr. Siyami Ersek Train. and Res. Hospital, Cardiology Dept., ****Marmara University, Faculty of Medicine, Dept. of Biochemistry, Istanbul, Turkey

Routine serum lipid parameters do not exactly reflect the alterations in lipoprotein metabolism as risk factors in coronary artery disease (CAD); search for parameters to reflect these alterations precisely is in progress. Recently, it has been shown that HDL subgroups have important role in atherogenesis development. Hence, subgroup – CAD - an oxidative stress interactions are gradually gaining importance.It has been published that HDL2 (LpA-I) is cardioprotective, but HDL3 (LpA-I/A-II) is atherogenic. HDL subgroups are assayed by several methods such as nuclear magnetic resonance, "vertical auto profile", HPLC and polyacrilamide gel (gradient or linear) electrophoresis. However, since HDL particles having heterogenous structure are assayed by various methods depent on its different features, it is difficult to find consistent results. In this study, using the polyacrilamid gel electrophoresis (Lipoprint, Quantimetrix), HDL subgroups were separated into 10 fractions and measured in 18 CAD(+) and 53 CAD(-) subjects. Routine lipid parameters are measured by Aeroset (Abbott) autoanalyser and ox-LDL levels were measured with ELISA method. In CAD(+) subjects, the 7th (the last fraction of HDL IM) (p=0.047) and 8th,9th,10th (HDL S) fractions were significantly increased compared to the CAD(-) group (p values: 0.050, 0.014, 0.035 respectively).

HDL and apolipoprotein A-I protect LDL from oxidation. It is known that when HDL S increases, its protective effect on oxidation decreases. However in this study, although ox-LDL levels were found to be slightly high in CAD(+) subjects, this difference was not significant (158.63±80.07; 163.2±82,08 mU/ml; p= 0.600). It has been reported that, as HDL particles get smaller in size, reverse cholesterol transport deteriorates and this condition con-

tributes to atherogenesis development. In this study, determination of higher HDL S levels in CAD (+) subjects supports these findings. Besides, as it is known that oxidative stres and oxidation products increase in atherosclerosis, apart from measurement of ox-LDL, further studies measuring other lipid peroxidation products and interactions of them with HDL subgroups in large number of subjects were needed.

A-7

Oxidative Stress and Inflamation in Hemodialysis Patients

Döventaş YE*, Coşkun C*, Kural A*, Seval H*, Basınoğlu F*, Koldaş M*, Döventaş A**

*Haseki Education and Research Hospital, Department of Biochemistry, Istanbul **Anadolu Health Center& Johns Hopkins Hospital, Department of Internal Medicine*

Background: Hemodialysis (HD) patients are frequently in a state of increased oxidative stress. The study was performed to investigate the association between serum levels of AOPP and inflamattion in hemodialysis patients.

Materials and Methods: Serum levels of TNF-alpha, AOPP levels were measured in 80 patients with no clinical signs of infection (40 female, 42 male, age mean 59±12)

The control groups were 30 healthy persons of similar age and sex. Serum levels of TNF-alpha were measured by immunometric assay, AOPP were determined spectrophotometrically (340 nm). Statistical comparisons were made using Student's t-tests, Mann-Whitney U-tests and correlation analyses.

Results: Higher plazma AOPP levels were found in patients with hemodialysis patients (78.66±28.18 μmol/L) as compared with those in healthy controls (32.9±6.76 μmol/L) (P<0.001). TNF-alfa levels in dialysis patients (21.39±9.59 μmol/L) were significantly higher than those in controls (8.2±2.3 pg/ml) (P<0.001). A highly significant correlation was also observed between plasma AOPPs and tumor necrosis factor TNF-alpha levels.

Conclusions: Oxidative stress, defined as a disruption of the equilibrium between the generation of oxidants and the activity of anti-oxidant systems, plays a significant role in the development of the inflammatory syndrome associated with chronic renal failure and hemodialysis.

A-8

Leptin, Ghrelin, Adiponectin and Resistin are Present in Human Breast Milk

Ozarda Ilcol Y, Hizli ZB

Department of Biochemistry, Uludag University Medical School, Bursa, Turkey

Background: Breast feeding may protect children from metabolic syndrome and other diseases later in life. Leptin, ghrelin, adiponectin and resistin are involved in energy regulation and metabolism. They are significantly regulated by nutritional status.

Objectives: The objectives of this study were to assess leptin, ghrelin, adiponectin and resistin concentrations in human breast milk and to determine the relationships between the concentrations of these hormones and duration of lactation.

Methods: Leptin, ghrelin, adiponectin and resistin were measured by immunoradiometric method in human breast milk samples obtained from 110 women enrolled either in the first three days (N=51, colostrum), days 4-30 (N=59, transitional milk) postpartum.

Results: Adiponectin, leptin, ghrelin and resistin were detected in human skim milk (mean: 15, SE: 0.9, range: 2.4-40.4 μg/L; mean: 1.1, SE: 0.06, range: 0-6.7 μg/L; mean: 484, SE:26, range: 161-891 pg/mL; mean: 34, SE:1.81, range: 21-76 ng/mL. Adiponectin, leptin and resistin concentrations in milk decreased with time and showed inverse relation (r=-0.407; P<0.001, r=-0.412; P<0.001 and r=-0.597; P<0.001, respectively) with the lactation days. Total ghrelin concentrations in transitional milk were higher (P<0.01) than in colostrum and showed positive relation (r=0.429; P<0.05) with the lactation days.

Conclusion: Leptin, adiponectin, ghrelin and resistin are present in breast milk, and their levels are affected differently by duration of lactation.

Key Words: Breast milk, leptin, ghrelin, adiponectin, resistin.

A-9

Evaluation of Correlations Between Adhesion Molecules (ICAM-1, VCAM-1) and Lipid Parameters in Patients with Rheumatoid Arthritis

Atay A*, Hür A*, Günaydın R**, Deveci K*, Memiş A***

*Department of Clinical Biochemistry, Ataturk Training and Research Hospital, **Department of Physical Medicine and Rehabilitation, İzmir Training and Research Hospital, ***Department of Physical Medicine and Rehabilitation, Ataturk Training and Research Hospital Izmir*

Excessive increase of cardiovascular disease risk was observed in patients with Rheumatoıd Arthrıtıs (RA) according to many reports. The aim of this study is to evaluate the correlations between adhesıon molecules [intercellular adhesion molecule-1 (ICAM-1), vascular cell adhesion molecule-1 (VCAM-1)] which have been in high levels in RA and lipid and lipoprotein levels which are among cardiovascular disease risk factors.

41 patients with RA (8 men, 33 women) who were treated because of this disease were accepted in the study. The mean age of patients was 55+/-11years. Patients were questioned about having hypertension, smoking and diabetes mellitus. Disease activity scores were calculated according DAS28 formula. Total cholesterol, HDL and LDL cholesterol, triglycerid, apolipoprotein A, B and lipoprotein (a) levels were determined usıng turbidimetric method and levels of ICAM-1 and VCAM-1 were measured using sandwich enzyme – linked immunosorbent (ELISA) assay in sera. Statistical analysis was performed using SPSS /Version 11.0 (SPSS Inc, Chicago) for Windows XP program.

There were negative correlations between ICAM-1 and HDL levels (r=-0.349, p=0.027) and between ICAM-1 and Apo A levels (r=-0.325, p=0.05) and between VCAM-1 and HDL levels (r=-0.342, p=0.031). Additionaly, positive correlation between VCAM-1 and triglycerid levels (r=0.305, p=0.05) were observed.

Many risk factors which caused to atherosclerotic proccess in RA have been reported in numerious reports. It was concluded that

increase in adhesıon molecules near by another affects may contribute to this proccess by affecting lipoprotein metabolism.

Key Words: Rheumatoıd arthritis, ICAM-1, VCAM-1, lipids.

A-10

Evaluation of Testis N-acetylated Derivatives of Neuraminic Acid Levels in Diabetic Rats

Yavuz B*, Uslu E*, Gümüştaş MK*, Altuğ T**, Dirican A***, Belce A*

*Istanbul University Cerrahpasa Faculty of Medicine, Department of Biochemistry, **Istanbul University Cerrahpasa Faculty of Medicine, Experimental Animal Production and Research Laboratory, ***Istanbul University Cerrahpasa Faculty of Medicine, Department of Bioistatistics

N-acetylated derivatives of neuraminic acid (NANA) play a central role in the biomedical functioning of human diseases including diabetes mellitus.

In this study our aim was to evaluate possible changes in testis NANA levels of diabetics. For this purpose, male Sprague-Dawley rats weighing 150-250 gr divided into two groups. Diabetes was induced by an intrapenial injection of streptozotocin (65 mg/kg body weight). Control group received only intrapenial saline solution. Blood glucose levels were measured regularly.

At the end of one month's period, rats were anesthetized with ether and were sacrified by cardiac excision. Testicular tissues were removed. Testis NANA levels were measured by using Warren's thiobarbituric acid method.

Testis NANA levels of control and diabetic groups were 4.75±1.36 and 10.33±3.24 NANA/gr protein respectively.

In diabetic group, testis NANA levels were significantly increased as compared to control group (p<0.001).

NANA levels are increased in various diseases. Several different mechanisms are assumed to responsible for elevated NANA concentrations in these disorders.

Diabetes is probably associated with testicular dysfunction, leading to reduced fertility. Because of NANA is an important component of cell membrane glycoproteins and glycolipids, a significant increase of testicular tissue NANA levels in diabetic rats may also contribute to testicular dysfunction.

A-11

The Level of Serum Vascular Endothelial Growth Factor (VEGF) in Nonalcoholic Steatohepatitit (NASH)

Ustündağ B*, Yalnız M**, Metin K*, Bahçecioğlu İH**, Özercan İH***

Fırat University, Faculty of Medicine, *Department of Biochemistry, **Department of Gastroenterology, ***Department of Pathology Elazig, Turkey

Introduction: Nonalcoholic steatohepatitis(NASH) is the form of the most serious nonalcoholic fatty liver disease. NASH may progress to liver cirrhosis, and NASH patients with liver cirrhosis have a risk of development of hepatocellular carcinoma. Angiogenesis has been shown to play an important role in the progression of chronic liver disease.Vascular endothelial growth factor(VEGF) is a potent angiogenic factor,and the widely studied one as a prognostic factor for cancer patients. However there are not data regarding serum VEGF levels in NASH.

Objective: The aim of the present study was to examine the changes of serum VEGF level in NASH that is a predispozan situation for liver cirrhosis and hepatocellular carsinoma.

Material and Methods: In this study, thirty-seven patients with biopsy-proven NASH (12 Female/25 Male mean age: 40.18±8.11y) and twenty-five healthy controls(14 Female/11 Male, mean age: 37.12±7.75 y) were enrolled. Biochemical parameters were measured with commercial kits in blood samples were collected from patients and control group after an overnight fasting. Serum VEGF levels were measured ELİSA kits.

Results: Serum VEGF levels were significantly higher in the NASH group (410.63±62.19 pg/mL) compared to the control group (124.15±15.76 pg/mL) (p<0.001).These differences were significantly higher in grade 3 than grade 1 and grade 2 in NASH patients (p<0.05, p<0.05)).On the other hand, NASH patients had higher BMI values and trigliserit levels than control group (p<0.05, p<0.01).There were significantly correlations between serum VEGF levels and BMI, AST/ALT ratio, GGT, total Cholesterol and tryglyceride levels in NASH patients.

Conclusions: Based on data, we concluded that serum VEGF levels were significantly higher in NASH compared to healthy controls and this increasing were closely related with the histopathologic grade in NASH patients. Therefore, measurement of serum VEGF levels may be useful in the following of progress of NASH.

Key Words: NASH, VEGF, histopathologic grade.

A-12

Effect of Ezetemibe Treatment on Bone Mineral Density and Metabolic Markers in Hyperlipidemic Patients

Sertbas Y*, Kucukkaya B*, Canbulat EC **, Kahraman C*, Karabulut S*, Erdem L*, Gültekin F*, Ayter M*, Sendag D*

*Fatih Sultan Mehmet Education and Research Hospital Internal Medicine, **Fatih Sultan Mehmet Education and Research Hospital Biochemistry Department

Objective: To evaluate whether ezetemibe treatment could modify bone mineral density (BMD) and bone turnover markers in hypercholesterolemic patients.

Methods: In our study we included 54 hypercholesterolemic (Total-cholesterol >200 mg/dL) patients (43 women, 11 men; age average: 52.6± 9.5) who attended our outpatient clinic. Before and after 1 year of ezetemibe treatment (10 mg/day), BMD was measured by dual-energy x-ray absorptiometry at the level of lumbar spines and femoral head and neck; they were sampled for measurements of plasma lipid profile, bone metabolic markers such as Ca, P, ALP, CTX, and bone specific ALP. All statistical analysis were performed using SPSS 11.0 statistical program.

Results: After 1 year of ezetemibe treatment, there were highly significant decreases of Total cholesterol (270.18±47.36 - 214.46±38; p<0.001), and LDL-cholesterol (189.57±38.58 - 144.01±32.05; p<0.001) but no significant differences were detected for plasma Ca (9.58±0.58 -9.61±0.44), P (3.12±0.38 –

2.95±0.48; p=0.824), Mg (1.99±0.29 - 1.99±0.15; p=0.314), bone specific ALP (55.93±7.92 - 56.25±7.49; p=0.875), CTX (0.44±0.24 - 0.46±0.21; p=0.385) parameters. Bone mineral density measurements of total spine (0.92±0.07 - 0.89±0.08; p=0.230) and total femur (0.93±0.12 – 0.92±0.12; p=0.327) also were not significantly different.

Conclusion: Our data confirm the effect of ezetemibe treatment onto LDL-cholesterol and Total-cholesterol but do not suggest any effect for bone turnover.

A-13

West Nile Virus Detection in Istanbul

Oba R, Özkan D, Özsavcı D, Uras F, Yardımcı T

Marmara University, Department of Biochemistry, Istanbul, Turkey

This study has been done aiming to search the presence of West Nile virus disease carried by birds and transferred from mosquitoes to humans inside Istanbul region borders.

It is known that being a negative impact source for life quality of humans, mosquitoes are the disease carriers and one of them is West Nile virus. This disease was first identified in 1937, and especially beginning from 1999 in America is observed.

The factors such as the risk of disease carrying, the very limited available information about the related vectors and as there is no vaccine against this disease, make the mosquito control the most important step of preventing the spread of the disease in human population. Virus detection was performed by Vectest Virus Antigen Test on vector mosquitoes. The female mosquitoes collected during the studies from 18 different regions in Istanbul were tested. *Culex pipiens, Culex theileri* and *Culex torrentum* were determined as main mosquito species.

Continuous observing of vector mosquitoes, vector control, focusing to terminate the vectors and stopping West Nile virus disease economically are aimed to gain important benefits by using the results of this test. The factors such as necessary searches and basic studies for disease control can not be done efficiently, and necessary comprehension and knowledge is not given to public yet, may increase the risk of possible cases.

In this study, as results of tests performed on the mosquitoes, the presence of West Nile virus is not found. However this is an initial study to collect basic datas and similar studies should be performed periodically and the scope of disease scan should be extended by evaluating human and bird blood samples.

A-14

Leptine's Role and Metabolic Syndrome Relationship on the Developing Cardiovascular Complications in Patients with Acute Coronary Syndromes

Çakır DÜ*, Yokuş B**, Öztürk B***, Mete N****, İltemur K*****

*Diyarbakir State Hospital, Department of Biochemistry, **Dicle University Veterinary Faculty Department of Biochemistry, ***Diyarbakir State Hospital, Department of Biochemistry, ****Dicle University Faculty of Medicine, Department of Biochemistry, *****Dicle University Faculty of Medicine, Department of Cardiology

It was emphasized that leptine, which is a risk factor for coronary artery disease has also a possibility of being risk factor on developing cardiovascular complications . In this study, effect of metabolic syndrome to Acute Coronary Syndrome (ACS) and complications was investigated by measuring levels of leptine and metabolic syndrome components at the beginning of the disease (1.day) and discharge time from hospital (5. days).

ACS (+) group was separated into 2 group: 1) Myocard infarction (MI, n:20), 2) Unstable Angina Pectoris (UAP, n:18) and 3) Control group (n:20). Leptine, glucose, insulin, HbA1c, total cholesterol, triglyceride, VLDL-C, HDL-C, LDL-C were measured and BMI, WHR, HOMA-IR were calculated.

When comparison made with respect to result of 1st. and 5th. days in groups, it was noticed that leptine, cholesterol, HDL-C and LDL-C in MI, HDL-C in UAP showed statistically significant decrease. It was found a significant correlation between waist circumference, HOMA-IR with leptine in MI, between blood pressure and triglyceride with HOMA-IR and between LDL-C and leptine in UAP and between BMI and leptine in MI and UAP. WHR (waist hip rate) were higher and HDL-C was lower and statistically significant in the ACS. It was found that HbA1c was higher significantly in MI and insulin is higher significantly in UAP.

The high leptine levels in MI support the opinion of leptine synthesis increases in the condition of inflammation. It can be stated that immune system activation of leptine can contribute developing inflammatory reaction on infarcted tissue in the coronary events and speed up repairing tissues during the tissues recover because of and angiogenic and revascularisation effects. It was observed that during the recovering of tissues, some of the metabolic syndrome components decrease in ACS and especially in MI.

Key Words: Acute coronary syndrome (ACS), myocard infarction (MI), unstable angina pectoris (UAP), leptine, metabolic syndrome, cardiovascular complication.

A-15

The Use Of HOMA Index as an Indicator to Detect Periferic Insuline Resistance for Polycystic Ovary Syndrome Patients

Karaer S, Güçtekin A, Bingöl S, Yaylagül E, Efesoy A

Department of Central Biochemistry, Ankara Numune Training and Research Hospital

Objective: Polycystic ovarian syndrome(PCOS) is one of the most common endoctrine disorders (%5-10) that is seen in reproduction age of women. Certain etiyoloji of this desease is still unknown. Those women who suffer from PCOS have a high insuline resistance prevalance and high metabolic disease risk in further age of their lives.

Material and Methods: The study was carried out on a control and sample group which are composed of 30 healthy and 49 ill (PCOS) persons respectively. On an empty stomach, glucose and insulin levels were measured before the study for both control and sample groups and then during the OGTT in 3 hours, PCOS's glucose, insuline and C-peptit values were measured simultaneously once in 30 minutes (0,30,60,90,120,180) periodically. HOMA indexes of each case were defined by using these glucose and insulin values.

Results: Acording to the ADA 2004 criteria when the fasting plazma glucose levels were evaluated there were no deficiency in neither IFG (Imparied Fasting Gluose) values nor imparied glucose tolerance (IGT) and DM. When the sample group is evaluated in the first 2 hours of OGTT case, by 20.4% were defined as IGT(10 sample) and 8% were NIDDM(4 sample). In normal toleranced group, HOMA index was 3.02 ±0.70, and in the sample PCOS group index was faund 5.25± 3.75 . HOMA indexes were found by using below formula.

HOMA index =Glucose (mmol/L) _ İnsüline (µU/mL)/ 22.5

In the study, cut-off insuline values were determined >20 µU/mL and >4.1 for hyperinsulemia and HOMA respectively. Insuline resistance was found by 49% for the sample group(24 sample) by using HOMA index values.

Conclusion: HOMA index which has been used for indicating periferic insuline resistance has high sensitivity and specificity showing insuline resistance on PCOS patients. Since glucose klemp, that has been used as referance, is an expensive, invasive, taking time techniques, it is not suitable for bother, routine, wide scaled and epidemiology studies. Since there are strong correlation with HOMA index, that makes the HOMA index the best suited technique for such cheap, easy, instant and routin studies. HOMA index can be used as a noninvasive way of detecting insuline resistance for whose metabolic glucose level unbalanced.

A-16

Mean Platelet Volume Provides a Useful Marker of Activity in Cardiac Syndrome X

Sogut E*, Evliyaoglu O**, Bitigen A***, Deveci K****

*Rize State Hospital, Dept. of Biochemistry and Clinical Biochemistry, **Beydagı State Hospital, Dept. of Biochemistry and Clinical Biochemistry, ***Kosuyolu Heart and Research Hospital, Dept. of Cardiology, ****Izmir Ataturk Training and Research Hospital, Dept. of Biochemistry and Clinical Biochemistry*

Platelet activation plays a key role in coronary artery disease (CAD), especially in myocardial infarction (MI), but whether it is involved in the pathogenesis of cardiac syndrome X (CSX) is not known. Thus, we assessed the mean platelet volume (MPV) as marker of platelet activation in patients with CSX.

The study group consisted of 24 patients who underwent coronary angiography and had a typical angina and positive exercise test. The control group consisted of 30 healthy volunteers with normal echocardographic and exercise stress tests, without symptoms of CSX. Laboratory parameters such as serum glucose, cholesterol, triglyceride, high density lipoprotein cholesterol (HDL-C), low density lipoprotein cholesterol (LDL-C), MPV and C reactive protein (CRP) levels were determined after angiographic diagnosis. Then the differences between the groups were evaluated. MPV was found to be elevated in CSX patients compared with controls (p <0.001). There was no difference between the groups in terms of age, sex, body mass index, blood pressure and heart rate and were also no differences between groups in serum cholesterol, triglyceride, glucose, HDL-C, LDL-C and CRP levels.

MPV is higher in CSX patients than in controls. Because increased MPV correlates with the platelet reactivity and aggregability, this finding predisposes to thrombosis. As a result, our study shows that increased MPV related with microcirculatory dysfunction and increased platelet reactivity may be the cause of ischemic symptoms in patients with CSX. The role of these abnormalities in the pathogenesis of CSX deserves investigation.

Key Words: Cardiac syndrome X (CSX), mean platelet volume (MPV).

A-17

Plasma Homocystein Levels In Patients With Non-alcoholic Steatohepatitis

Kuralay F*, Altekin E*, Yener S**, Demir T**, Akıncı B**, Akarsu M***, Yeşil S**

Dokuz Eylul University, School of Medicine, Departments of Biochemistry, Endocrinology** and Gastroenterology**, Izmir, Turkey*

Non-alcoholic steatohepatitis (NASH) is the most serious type between nonalcoholic fatty liver diseases (NAFL) that is distinguished by having its progressive potential into fibrosis and cirrhosis when it is not treated . Insulin resistance and hiperinsulinism play an important role in NASH etiopathogenesis. Homocystein (Hcy) is a protein that increased levels associate with insulin resistance and endothelial dysfunction. In literature, some studies demonstrate that plasma Hcy levels are elevated in patients with NASH and NAFL. However, there is no study comparing plasma Hcy levels between treated NASH patients and healthy control subjects. So, in the present study, we aimed to investigate the levels of plasma Hcy in patients with NASH who had normal liver enzyme levels after treatment. Twenty healthy control subjects and twenty patients with NASH diagnosed by liver biopsy were included. Antropometric measurements, serum transaminases, lipid parameters, fasting glucose and plasma Hcy levels were measured. Hcy levels were analysed by florescence-polarization immunoassay. Biochemical measurents were analysed by Roche Diagnostics in DP-Modular. Body weight, body mass index, waist circumference, fasting blood glucose were determined significantly increased in NASH group.There was no significant difference in lipid parameters and Hcy levels between control subjects and in patients with NASH having normal transaminases during follow-up after taken treatments with one or more combinations of diet, metformin, vitamin E, and ursadeoxycolic acid. We concluded that changing into normal levels of lipid parameters and Hcy levels besides liver transaminases in patients with NASH in result of the treatment is important to prevent from atherosclerotic complications depending on probable endothelial dysfunction in these patients.

A-18

Glycogen Phosphorilase-BB Isoenzyme in Early Diagnoses of Acute Coronary Syndromes

Atilla R*, Kuralay F**, Küme T**, Yenturalı S*, Karcıoğlu Ö*, Topaçoğlu H*, Ersoy G***

Dokuz Eylul University, School of Medicine, Departments of Emergency Medicine, Biochemistry** and General Surgery**, Izmir, Turkey*

Glycogen phosphorylase BB (GPBB) is the predominant isoenzyme in human myocardium. Since GPBB has been suggested as

a potential early marker of impending myocardial ischemia, we have investigated whether GPBB enzyme activity could help in early identification of patients with acute coronary syndromes (ACS) in the emergency department. Totally 39 patients who were admitted with an initial diagnosis of ACS having chest pain were included in the study (14 women, 25 men). Patients were grouped according to their final diagnosis during discharge from the emergency department as ST elevated myocardial infarction (MI) (STEMI), non-ST elevated MI (NSTEMI), unstable angina pectoris (UAP), Stable Angina Pectoris (SAP) and noncardiac chest pain. During emergency department follow-up, venous blood samples were collected five times at 0h, 2h, 4h, 6h, 12h. GPBB activities were analyzed by the method of ELISA (DIA-GENICS International Corporation, USA) and expressed as ng/ml. Stastistical analysis was done by Wilcoxon and Mann-Whitney U tests (SPSS 11.0). There were no significant differences in GPBB levels between noncardiac group and ACS group including STEMI, NSTEMI, UAP and SAP at any time points. We found significant difference in GPBB levels between myocardial damage group (STEMI + NSTEMI) and noncardiac chest pain group at 0h, 4h and 12h points. Similarly, when we compared STEMI and noncardiac group, we also found significant difference in GPBB levels at 0h, 4h and 12h points (respectively, p=0.004, p=0.016, p=0.034). In conclusion, GPBB can be used as an early and effective diagnostic biochemical tool to discriminate the STEMI and noncardiac events in patients with chest pain at emergency department.

A-19

Effects On Plasma Nitrite And Nitrate Levels Of Lithium Used For Treatment Of Bipolar Feeling Disorders

Aliyazıcıoğlu R*, Karahan SC**, Çolak M**, Vanizor Kural B**

*Karadeniz Technical University, SHMYO, Trabzon, Turkey, **Karadeniz Technical University, Faculty of Medicine, Department of Biochemistry, Trabzon, Turkey

Bipolar feeling disorders are the group of recurrent disorders, seen in high frequency and need long time treatment. Lithium is the most used drug in those diseases and treatment may continue year by year, even during all the life. A little information was known about bipolar feeling disorders. Recent report has displayed that reactive oxygen species including nitric oxide (NO) may play a role in ethyology of bipolar disorder.

In the present study, to investigate various effects of lithium, blood samples of 15 patients with bipolar feeling disorders in periods of pretreatment, stable of mood and follow-up were drawn, the levels of lithium, nitrite and nitrate were determined. In the follow-up period, nitrate levels were found significantly higher than in periods of pretreatment (p<0.01). A significant increased level of nitrate was found in posttreatment period of lithium with respect to pretreatment periods (p<0.001).

It was considered that NO secretion was increased due to decreased oxidative stress in posttreatment with lithium in patient, and so lithium might have a regulatory effect on NO metabolism.

A-20

The Association of Estrogen Receptor Alpha Gene Polymorphism with Cardiovascular Complications and Lipid Profiles in Type 2 Diabetic Men

Yüksel M*, Sancak S**, Velioğlu Öğünç A*, Yavuz D**

*Department of Medical Laboratory, Vocational School of Health Related Professions, Marmara University, Haydarpasa and **Section of Endocrinology and Metabolism, School of Medicine, Marmara University, Istanbul, Turkey

Estrogens have vasodilatatory, anti-inflammatory and anti-proliferative effects on the cardiovascular system as well as favourable effects on the lipid profile. Additionally estrogen also may influence insulin secretion in type 2 diabetes mellitus. The effects of estrogens on the vascular system are mediated by estrogen receptors alpha and beta. Estrogen receptor alpha (ERalpha) polymorphisms are associated with receptor expression and nonatherosclerotic diseases. In this study we aimed the significance of XbaI and PvuII restriction enzyme polymorphisms of ERalpha gene with lipid profile on male patients with type 2 diabetes mellitus (n=47), diabetic patients with cardiovascular diseases (CVD) (n=45) and healthy controls (n=60). Biochemical analysis of lipid parameters and hormone levels were determined by serum samples and DNA was extracted from blood leucocytes. After polymerase chain reaction with specific primers for ERalpha_gene, products were digested and electrophoresed in agarose gel and visualized. Statistical analysis were performed and p value of <0.05 was considered statistically significant.

The true importance of estrogen receptor polymorphism in increasing of plasma lipid profile (cholesterol, LDL-cholesterol, Apo B) and development of cardiovascular diseases in men still needs to be proven. In our study, the homoxygous XX and PP genotype was more prevalent in diabetic patients with CVD (both 41.2 %). Additionally xx genotype in healthy controls have a higher frequency than diabetic patients (46.7 % and 27.1 %, respectively). Cholesterol, LDL-cholesterol and Apo B levels are increased in diabetic patients with CVD and associated with XX polymorphism. But an association with PvuII polymorphism was not observed. Triglyceride, HDL-cholesterol, VLDL, Apo A levels have not relation with ERalpha polymorphisms. Our results suggest that ERalpha polymorphisms have a significant effect on cholesterol, LDL-cholesterol and Apo B levels in male diabetic patients with cardiovascular diseases. In conclusion, ERalpha gene is a potential candidate behind the pathogenesis of cardiovascular diseases in diabetes mellitus patients.

A-21

Serum YKL-40 Levels and Chitotriosidase Activity in Primary Prostate Cancer and Benign Prostatic Hyperplasia

Isman FK*, Kucur M**, Balcı C***, Hacıbekiroglu M**

*Taksim Teaching and Research Hospital, Department of Biochemistry, **Istanbul University, Cerrahpasa Medical Faculty, Fikret Biyal Central Reseach Laboratory, ***Taksim Teaching and Research Hospital, Department of Urology

Human cartilage glycoprotein-39 (HC gp-39) also called YKL-40 and chitotriosidase are homologues of family 18 glycosyl hydrolases secreted by human macrophages. Although high levels of

YKL-40 and chitotriosidase are associated with several diseases the physiological functions of these enzymes are still unclear. YKL-40, a growth factor for connective tissue cells, a migration factor for endothelial and vascular smooth muscle cells, is expressed by several types of solid human carcinoma, including prostate carcinoma.

The purpose of this study was to compare serum YKL-40 levels and chitotriosidase activity both in benign prostatic hyperplasia and primer prostate cancer.

YKL-40 and chitotriosidase were determined in serum samples from 93 patients with primary prostate cancer and 61 patients with benign prostatic hyperplasia. Serum YKL-40 levels were measured by ELISA and chitotriosidase activity was determined by fluorometer. PSA levels were also measured by using an automated system.

Serum YKL-40 levels were significantly higher ($p<0.001$) in patients with prostate cancer when compared to control group whereas there was no significant difference between BPH and control groups. Serum chitotriosidase activities were significantly higher only in carcinoma patients with Gleason high grade when compared with the control group ($p<0.001$). No significant difference was observed in BPH patients ($p>0.05$). Both YKL-40 and chitotriosidase were found statistically significant between primer prostate cancer and BPH.

High serum YKL-40 levels in patients with primary prostate cancer indicate that YKL-40 may have a function in progression of malignant diseases whereas no significant elevation was observed in benign prostatic hyperplasia. Meanwhile high serum chitotriosidase activity was observed only in patients with Gleason high grade indicating the possible macrophage involvement in cancer progression. Further studies are needed to elucidate the biologic role of YKL-40 in cancer aggressiveness and in progression of malignant diseases.

A-22

Circulating Adiponectin, ICAM-1 and VCAM-1 Levels In Haemodialysis and Type 2 Diabetic Patients

Guvenc Y*, Serteser M**, Onur E***, Taneli F***, Cander S****, Koken T**

*Celal Bayar University, Vocational School of Health Services, Biochemistry Department, Manisa, Turkey, **Kocatepe University, Faculty of Medicine, Biochemistry Department, Afyon, Turkey, ***Celal Bayar University, Faculty of Medicine, Biochemistry Department, Manisa, ****Kocatepe State Hospital, Internal Medicine Department, Afyon, Turkey

Adiponectin is a protein secreted by adipose-tissue. Recently, relationship between adiponectin and obesity, metabolic syndrome, inflammation, atherosclerosis and diabetes mellitus was intensively researched. The aim of the present study is to investigate serum adiponectin, ICAM-1, VCAM-1 levels in haemodialysis and type 2 diabetec patients. Sixty cases were included in the study and they were divided into four groups: Group 1: the control group (n=15), group 2: patients with type 2 diabetes (n=15), group 3: patients undergoing haemodialysis (n=15) and group 4: patients with type 2 diabetes and undergoing haemodialysis (n=15). Adiponectin, ICAM-1 and VCAM-1 levels were assessed by ELISA method. We found that adinopectin levels were signifi-

cantly lower but ICAM-1 and VCAM-1 levels were significantly higher in the diabetic group than the control group. In the patients with undergoing haemodialysis and undergoing haemodialysis with diabetes, adiponectin, ICAM-1, VCAM-1 levels were significantly higher than the control group. In the patients with undergoing haemodialysis and undergoing haemodialysis with diabetes, adiponectin, ICAM-1, VCAM-1 levels were significantly higher than the diabetic group. In the patients undergoing haemodialysis with type 2 diabetes mellitus, VCAM-1 levels were significantly higher than the patients only undergoing haemodialysis. As a result, it is considered that, adiponectin could be helpful in the treatment of diseases such as diabetes and cardiovascular disease. We suggest that biochemical mechanisms of adiponectin should be further investigated before it can be a candidate as a therapeutic agent.

A-23

The Diagnostic Significance of Ischemia-Modified Albumin in the Diagnosis of Pulmonary Embolism

Mentese A*, Karahan SC*, Turedi S**, Gunduz A**, Uçar U*, Turan I*, Ekici Yilmaz S**, Nuhoglu I**

*Department of Biochemistry, Faculty of Medicine, Karadeniz Technical University, Trabzon, Türkiye, **Department of Emergency, Faculty of Medicine Medicine, Karadeniz Technical University, Trabzon, Turkey

Pulmonary embolism (PE) is a common condition, the diagnosis of which in the emergency department remains problematical. Despite the use of various biochemical markers (such as D-dimer and C-reactive protein) and various probability calculation algorythms based on clinical findings for that purpose, there is still a need for more specific and practical markers in PE diagnosis. The aim of this study was to investigate the diagnostic value of ischemia-modified albumin (IMA) levels in the diagnosis of PE. This prospective study was performed in the emergency department between March and September 2006. The serum IMA levels of a total of 60 individuals, 30 PE patients who had been definitively diagnosed using spiral computed tomographic angiography and 30 healthy volunteers, were examined. The measurement of IMA levels in patient plasma yielded means of 0.724 ABSU in the PE group and 0.359 ABSU in the control group. Individuals with serum IMA values >0.480 were regarded as positive (cut-off level). When plasma IMA levels in the PE group were compared with those in the control group, statistically significant increases in IMA were observed in the PE group ($p<0.05$). Serum IMA levels were identified as a marker that can be used in the diagnosis of PE.

A-24

Hepatitis C Virus Infection Screening in Hemodialysis Patients

Balk M, Saydam G, Cengiz D, Türkmen A, Ayturan İ, Himmetoğlu T

T. Yüksek İhtisas Research and Training Hospital, Biochemistry Laboratory, Ankara, Turkey

Hepatitis C Virus (HCV) infection is the most common cause of acute or chronic hepatitis in dialysis patients.The prevalence of HCV antibodies in hemodialysis (HD) units has been reported to

range from 5% to 60%. The aim of this study was to establish the prevalence of HCV infection in chronic HD patients and clinical importance of tests used with this purpose was to determine.In this study, 70 HD patients undergoing regular hemodialysis in T.Yüksek İhtisas Hospital were studied and the prevalence of anti-HCV antibody (Abbott Axsyme MEIA HCV Version 3.0) was found 21%. The prevalence of HCV-RNA (RT-PCR kit ABgene) in this group was 66%. Mean ALT (IFCC Method) in HD patients was lower than in normal subjects (13.6±9.0 vs. 23±18 U/L, p<0.05). Mean ALT in Anti-HCV- HD patients was significantly lower than Anti-HCV+, HCV-RNA- HD patients (13.6±9.0 vs.19.4±5.0 U/L, p<0.05). Mean ALT in Anti-HCV+, HCV-RNA- HD patients was significantly lower than in Anti-HCV+, HCV-RNA+ HD patients (19.4±5.0 vs.39.3±22.3 U/L, p<0.05). The upper limit (mean+2SD) for ALT in normal healty subjects was 41 U/L. Sensitivity of ALT value ≥41 U/L in the diagnosis of HCVviremia was 50% and specificity was 100%. The positive predictive value of this test in diagnosis of hepatitis C viremia was 100%. The upper limit for ALT in hepatitis-free HD patients was 22 U/L. Sensitivity of ALT value ≥ 22 U/L in the diagnosis of HCV viremia was 100% and specificity was 80%. The positive predictive value of this test in diagnosis of hepatitis C viremia was 91%. Obviously, ALT is not a sensitive screening test for HCV infection in HD patients using normal reference values. Because ALT values are frequently lower in HD patients than in healthy individuals, the elevated ALT values in HD patients who are viremic with HCV may still fall within The normal reference range. Therefore, antibody screening combined with detection of HCV – RNA can be considered as the "gold standar" for diagnosing HCV infection in dialysis patients.

A-25

Urinary GGT Activity in Streptozotocin Induced Diabetic Rats

Şener A, Özsavcı D, Göker B, Yardımcı T

Department of Biochemistry, Faculty of Pharmacy, Marmara University

Gamma-glutamyltransferase (GGT) is a membrane enzyme that has great clinical important as a marker for several diseases. Its presence has been noted in such pathological conditions as cancer, alcoholism, hypertension, hyperinsulinemia and in patients receiving drugs known to increase serum GGT levels. GGT is also present in the kidney and appears to play a role in the clearence of plasma glutathione and its derivates within the glomerular filtration mechanism.

In the literature, studies investigating the effects of diabetes on urinary GGT levels are quite few. We aimed to evaluate the relationship between renal tubular damage and urinary GGT excretion. For experimental diabetes induction, 65 mg/kg streptozotocin (STZ) was administered intraperitoneally (i.p.) to rats. Urine samples of 24 hours and blood samples were collected in 10th day after STZ administration. Serum urea, uric acid, creatinine and glucose levels and were measured in control and STZ induced diabetes groups. GGT activity, creatinine, protein levels and creatinine clearance were determined in urine samples. Urinary GGT activity in the diabetic group (n:10) was significantly higher than that in the control group (n:12) (p<0.001). We propose that urinary GGT excretion is a good marker of renal tubular damage in rats with STZ induced diabetes.

A-26

The Comparison of Urine Specific Gravity Assays Using Refractometric and Dipstick Urine Analysis – Compatibility of Refractometric Analysis Results Determined by Two Separate Devices

Sekban H, Atalay S, Yekrek MM , Akarsu M, Akbaba D

The Health Ministry, Haydarpaşa Numune Training and Education Hospital, Department of Clinical Biochemistry, İstanbul

Urine specific gravity is an important indicator of the concentrating and diluting ability of the kidneys. The study had two aims, the first was to determine whether clinically significant differences exist between two separate devices using refractometry on urine specific gravity. The second aim was to compare refractometric and dipstick methods on urine specific gravity.

Regardless of gender, 499 fresh urine samples in plastic containers free of preservatives were collected from out and inpatients. The urine specific gravity was assayed using refractometric IQ200 urine analyser (Iris) and dipstick (Autation stick) simultaneously. The results were statistically processed using Medcalc programme. Statistically significant differences were found between dipsitck and refractometric urine specific gravity median results (1020 and 1015, respectively) (p<0.0001). Linear regression analysis yielded y = 385 + 0.62x and r = 0.704.

In addition, the urine specific gravity of 109 urine samples were simultaneously assayed with both refractometric IQ200 (median value: 1.017) and Urisys 2400 (Roche) (median value: 1.024) urine analyser. In the study population, the differences between the refractometric urine specific gravity readings of two separate devices were statistically significant (p<0.00028). Linear regression analysis yielded y = 73.39 + 0.924x and r = 0.980. Although the dipstick method is practical and carries the advantage of necessicating no specific devices, the refractometric method is more sensitive, thus the readings of refractometric and dipstick methods differ because of this high sensitivity. However, two refractometric devices are compatible but the presence of significant variability between results necessitates determining of laboratory reference ranges individually.

A-27

Melatonin Infusions Suppresses the Leptin Levels Independently from the Duration of Infusion

Serin E*, Karakas A**, Gunduz B**

*Abant Izzet Baysal University, Izzet Baysal Medical Faculty, Department of Biochemistry, **Abant Izzet Baysal University, Faculty of Arts&Sciences, Department of Biology

Melatonin is produced and released from the pineal gland into the blood especially at night and is referred to as the chemical experience of darkness. Leptin, the product of the ob gene is an adipocyte-secreted protein whose circulating levels in the fed state reflect body fat content in mice and humans and signal the status of energy stores to the brain. The rhythm of production and release of these two hormones are generated and controlled by the circadian clock which is located in Suprachiasmatic nucleus (SCN). The recent studies have shown that there is a direct or indirect relationship between leptin and melatonin hormones. In

the present study, the rhythm of leptin hormone release was investigated in melatonin infused adult male Syrian hamsters (*Mesocricetus auratus*). Hamsters were SCN lesioned and pinealectomized and then one or ten hour melatonin infusions were administered to these animals. Day (1200 h) and night time (2400 h) blood samples were collected from animals throughout the experiment. Leptin levels were measured by the ELISA method at the end of the experiment. Melatonin infusions suppressed the leptin levels independently from the duration of the infusion (p<0.05). This result demonstrated that the coincidence of the melatonin hormone and the melatonin receptors is important as the duration of the melatonin release.

A-28

Evaluation of Thyroid and Fertility Hormones on Randox Evidence Analyzer

Elmalı E, Arıkan Akan Ö

Ankara University, Medical School of Medicine, İbni Sina Hospital Central Laboratories

Background: Randox Evidence analyzer is a fully automated biochip array system that has been presented for advantages of detection of multipl analytes, with a high output of test results using minor amount of sample and reagent volumes. It utilizes conventional immunuassay technics for the measurement of analytes on the surface of the biochip.This study was designed to validate Evidence thyroid (fT3, fT4, TSH) and fertility (FSH, LH, PRL, Total Testosteron, Progesteron) tests compared with Roche E 170 module (Roche Diagnostics) electrochemiluminescense system existing at Ankara University Central Laboratories.

Method: Intra-assay (n=20) and inter-assay (n=24) variations were measured with Randox Evidence tri-level control materials. The clinical utility was established by comparison of patient results. Blood specimens of patients received to our laboratory were assayed by E 170 analyzer first and then by Evidence analyzer with duplicate analyses within day and average results are determined.

Results: Intra-assay CVs of fT3, fT4 and TSH tests were (mimimum-maximum %) 9.68-11.2 %, 5.3-6.4 %, 3.1-6.9 %, inter-assay CVs were 9.4-11.4 %, 2.3-6.3%, 9-10.3 respectively. Method comparison for TSH (n=151) r: 0.995 Evidence = 0.776 (E170)+0.928, for fT3 (n=99) r: 0.655 Evidence = 0.691 (E 170)-0.189, for fT4 (n=150) r: 0.808 Evidence = 0.688 (E 170)+5.428. FSH, LH, PRL, Total Testosteron and Progesteron tests' intra-assay CVs were (minimum-maximum %) 4.6-6.2 %, 3.9-5.1 %, 2.8-4.3 %, 4.5-7%, 6.2-18.6% and inter-assay CVs were 8-8.7% , 5.9-9.6% , 6-6.7 % , 8.4-12.7% , 10.7-28.9% respectively. Method comparison for FSH (n=114) r: 0.997 Evidence =0.870 (E 170)-0.999, for LH (n=78) r: 0.987 Evidence = 1.027 (E 170)-0.504, for PRL (n=114) r: 0.957 Evidence = 0.721 (E 170)+2.839, for Testosteron (n=105) r: 0.975 Evidence = 0.870 (E 170)+17.39, and for Progesteron (n=53) r: 0.940 Evidence = 1.173 (E 170)+2.021.

Conclusion: Evidence analyzer thyroid tests' discordances with our existing system (especially poor correlation for fT3) predicts that additive studies must be done. For progesteron high CV s at low control levels and discordances of patient results at low levels need to be reinspected. As a whole biochip array technology

with addition of estradiol to fertility hormones and sensitive TSH seems to be more useful in routine use after the amendments in the following days.

A-29

Obesity, Hypertension and ACE Polymorphism, in Postmenopausal Women

Çiloğlu F

GENLAB Medical Diagnostics and Research Laboratory, İstanbul, Turkey

The renin-angiotensin system plays an important role in blood pressure regulation, vascular and cardiac modification well as adipocytosis and possibly adipocyte metabolism. The aim of this study was to investigate the association of angiotensin converting enzyme (ACE) insertion (I)/deletion (D) polymorphism with obesity, body mass index, waist circumference and hypertension in postmenopausal women. For this purpose, in 186 women between the ages of 45-65, body weight, height, waist circumference and body fat mass as well as blood pressure values were measured. Those taking blood pressure medications were noted and blood samples were obtained from all for PCR determination of ACE genotype. The statistical analysis of the results showed that there was no significant association between having II, ID or DD genotypes of the ACE gene and weight, body mass index, body fat mass, waist circumference and the incidence of hypertension. Therefore we can conclude that ACE polymorphism is not a significant factor for obesity and hypertension in postmenopausal women.

A-30

The Comparison of Osteocalcine and Deoxypyridinoline Levels in Renal Transplant Recipients Treated with Cyclosporin A or FK506

Bozkaya G*, Nart A**, Onman T*, Uslu A**, Karaca B*

*İzmir Training and Research Hospital, **İzmir Training and Research Hospital, Department of Organ Transplantation

Aim: Posttransplantation bone loss and the risk for fractures commonly increases by treatment with immunosuppressants including cyclosporine and FK506. The aim of this study was to compare the possible effect of cyclosporine A and FK506 on bone formation marker serum osteocalcin and bone resorption marker urine deoxypyridinoline.

Method: The study was performed on 71 renal transplant patients, 43 receiving cyclosporin and 28 receiving FK506. Serum parathormone, calcium, phosphorus, alkalen phosphatase, osteocalcin and urine deoxypyridinoline levels were determined. Chemiluminescent method was used to measure osteocalcin and deoxypyridinoline levels. Blood cyclosporine and FK506 levels were determined by florescent polarization and microparticul enzyme immunoassay method, respectively.

Results: Although serum osteocalcin levels were found to be lower in FK506 group compared to cyclosporine group (9.7±1.4 vs 10.0±1.1), the difference was not significant statistically (p>0.05). Urine deoxypyridinoline levels were 10.8±1.9 in FK506 group vs 13.3±3.8 in cyclosporine group and there was not a statistically significant difference between them (p>0.05).

Parathormone levels were close to each other (p>0.05). A positive correlation was found between osteocalcin and alkaline phosphatase in FK506 and cyclosporine groups (r=0.457, 0,342, p<0.05, respectively) which may indicate an induction in bone formation. At the same time, parathormone was positively correlated with alkaline phosphatase in both groups (r=0.385 in CsA group, r=0.544 in FK506 group, p<0.05) indicating bone resorption. We were unable to obtain any correlation between urine deoxypyridinoline levels and other markers in both groups.

Coclusion: Our data suggest that treatment with FK506 or cyclosporine does not have different effects on bone formation and resorption markers. Other factors should be investigated to reveal the reasons for bone loss in renal transplant patients.

A-31

Secretory Phospholipase A2 (sPLA2) Activities in Breast Cancer Patients

Çiftçi O*, Bütün İ*, Sönmez H*, Gümüştaş MK *, Çelik V**, Kökoğlu E*

*Department of Biochemistry, **Department of Surgery,Cerrahpasa Faculty of Medicine, University of İstanbul*

PLA2 enzymes are a large enzyme family that mediates the hydrolysis of membrane phospholipids to arachidonic acid. Cyclooxygenase which are produced from arachidonic acid in forward steps are known to be effective in angiogenesis. The most studied enzyme is the sPLA2 in this enzyme family. It plays a direct role in cell proliferation, angiogenesis and apopitosis. And it has an indirect role in breast tumour growth through the free oxygen radicals and lipid peroxidation. Our aim was to investigate the levels of sPLA2 20 tumoural tissue (12 invasive, 8 mixt type) and peritumoural tissues.bloods of the ptients and 10 healthy subjects were also included. sPLA2 levels were determined by colorimetric method. There was a significant induction in tumoural tissues when compared with peritumoural ones. Serum sPLA2 levels were significantly higher in patients than the healthy subjects. sPLA2 enzymes are effective in neurotransmission, immun response, digestion and signal transduction. When sPLA2 activities are increased in pathological conditions the oxidative metabolisation of arachidonic acid by the lypooxygenase and cyclooxygenase pathways lead to free radical generation. Impaired organisation of the membrane structure results in the lost of membrane phospholipids, change in membrane permeability and ion Exchange defficiencies. These leads to many pathologic process such as cancer. We suggest that if the studies in cancer research include the inhibition of sPLA2; more information about this enzyme and its role can be understood.

A-32

The Production of A Kit For Identification of Estradiol Receptor Positive and Negative Tissues

Orhon S, Peker I

Marmara University, Faculty of Engineering, Department of Bioengineering, Biotecnology Laboratory 315, Göztepe, İstanbul, Turkey

Identification of target cells by immunohistochemical detection of covalently rearranged estradiol in rehydrated paraffin sections was presented by Jungblut and Sierralta in 1998. Localizing diffusible compounds at cellular and subcellular levels is notoriously difficult and fraught with pitfalls. Various techniques have been recommended during the past four decades. But most of them have been abandoned. Estradiol is released from the binding receptor and arrested in the molecular vicinity by Mannich reaction in acetic acid and formaldehyde. In this way, the diffusion of estradiol is prevented. Estradiol can be seen in its target cells where it is fixed by using immunohistochemical technique.

Nine mammary cancer tissues and three endometrial tissues for a total of twelve cases were collected in eight months by the permission of Marmara University the Faculty of Medicine Ethic Committee. All samples were submerged in 10% asetic acid and 4% formaldehyde immediately after operation. After fixation for a minimum of four hours, samples were paraffinized. Sections of 4-5 μm were cut, and anti-estradiol was applied by using an immunohistochemical technique.

Estradiol receptor was identified in the nuclei of epithelial and tumor cells of mammary cancer cases and endometria by using a classical immuhohistochemical method. Unfortunately, nuclear staining by applying anti-estradiol in the immunohistochemical studies was not realized but cytoplasmic staining was identified.

A-33

The Relation Between the Blood Lactate Concentration and Urinary Ureic Concentration Due to Overload in Elite Football Players (Female)

Kızılet T, Peker I

Marmara University, Faculty of Engineering, Department of Bioengineering, Biotecnology Laboratory 315, Göztepe, Istanbul, Turkey

By this research, a study on the relation between the blood lactate levels and urinary -ureic concentration of female football players due to overload was conducted. For this purpose, a group comprising 20 elite national female football players (under 19 years of age) was subjected to our study.

Prior to the test, the physical attributes of the subjects such as weight and height were detected. In the first morning of the 4 days test period, urinary samples of the subjects were taken in sterile containers. During the 1st and 3rd days of the test process, the subjects were led to 2 different exercises (Shuttle Run and repetitive sprint test) between 10:00-12:00 hrs and 80 blood samples in total were taken prior and after the test. The height average of the subjects of the work group was detected as 165.10 cm (+,083), arithmetical weight average as 56.90 kg. (±7.09) and their arithmetic age average 17.90 (+1.37267). The Max VO2 arithmetic average was 37.41 ml. kg/ min., lactate arithmetic average prior to the test 2.59 mmol/lt and the lactate arithmetic average after the test was 10.09 mmol/lt. The 1st day arithmetic average for urine was 1672.0 ml/day and the 2nd day arithmetic average for urine was 2234.5 ml/day. Likewise, the average results of the surveys

made on the urine of the subjects prior and after the test indicated a remarkable difference (p<0.05). No remarkable difference between the averages of the 3rd and 4th day urinary parameters of the subjects exists. (p>0.05)

Upon the assessment of our complete study in terms of our hypothesis, the additional increase of lactate level led by long term and frequent loadings as well as the high amount of ureic concentration increase were found remarkable.

All obtained parameters were analyzed in SPSS for Windows (Ver. 13.0). The parameters were subjected to Descriptive analysis and descriptive statistics. A t test (paired samples t test) was conducted on a single sample between the blood lactate and urine-urea concentrations. A correlation test was conducted in order to determine as to whether or not a relation between the blood lactate concentration and urine-urea concentration exists. Relations at p<0.05 and p<0.01 levels were searched between parameters. Consequently, both tests represent an increase in lactate levels and ureic concentration. This result indicates that the increase of urea also can be taken into consideration for the researches conducted on the impact of the loadings.

A-34

Evaluating Bone and Mineral Metabolism by Urine Pyridinium Cross Links in Hyperthyroidism and Subclinical Hyperthyroidism

Öztürk Ö, Güçtekin A, Bingöl S, Efesoy A, Yaylagül E

Department of Central Biochemistry, Ankara Numune Training and Research Hospital

Objective: In this study how bone resorption (urine Pyd, Dpd, Ca++/Cre, serum Ca++) and bone formation (BALP) biochemical parameters changed in hyperthyroid and subclinical hyperthyroid patients were investigated and it is evaluated that whether they can be used as markers of bone turnover or not. In addition the correlations between thyroid hormones and bone turnover markers were investigated and the best diagnostic marker was tried to be stated.

Material and Methods: 33 hyperthyroid,15 subclinical hyperthyroid patients and 40 control, diagnosed by considering fT3, fT4 and TSH, concentrations were included in the study. Pyd, Dpd levels in spot urine were studied by HPLC Method.

Results: Significant differences were stated in bone resorption markers (serum Ca++, urine Pyd, Dpd, Ca++/Cre) and formation markers (ALP, BALP) in hyperthyroid patients group (p=0.005, p=0.015, p<0.001, p<0.001, p<0.001, p<0.001 respectively). But in subclinical patients group just urine Pyd and Dpd (two of the bone resorption markers) were found significantly different (p=0.02, p=0.01 respectively). When we investigate the correlations between thyroid hormones and bone turnover markers, just in hyperthyroid patients there were positive correlations between urine Pyd, Dpd and fT3, fT4 and positive correlation between TSH and urine Ca/Cre ratio (p<0.01).

Conclusion: It is concluded that especially urine Dpd and Pyd (two of the bone resorption markers) can be helpfull biochemical markers for reflecting bone turnover in hyperthyroid and subclinical hyperthyroid patients. We observed that because of increasing bone formation and resorption rates in hyperthy-

roidism, the bone formation markers (ALP, BALP) and resorption markers (serum Ca++, urine Pyd, Dpd, Ca++/Cre) significantly rised in hyperthyroid patients. Although the increase of bone turnover in hyperthyroidism has been known since before, in subclinical hyperthyroidism this subject still remains uncertain because of inadequate studies about bone metabolism.

A-35

Insulin-Like Growth Factor (IGF-I) and CA 15-3 Values in Primary Breast Cancer Patients

Yücel N, Ciğerli Ş, Aslan B, Batı C, Eren N

Şişli Etfal Training and Research Hospital, Biochemistry and Clinical Biochemistry Department, İstanbul, Turkey

It is known that, like estrogens, ınsulin-like growth factor (IGF-I) with its mitogenic and antiapoptotic effects is a factor in the developement of breast cancer. In this study, we investigated the the efficacy of IGF-I on the diagnosis of primary breast cancer when measured along with carbonhydrate antigen 15-3 (CA 15-3).

40 primary breast cancer patient consulted in the General Surgery Department of İstanbul University Cerrahpaşa Medical Faculty and 30 healthy women were included in the study. The patients were divided into two groups as premenapausal and postmenapausal. IGF-1 and CA 15-3 measurement were performed with chemiluminescence method in Liaison immunoassay analyser. The mean plasma IGF-I levels was 140.8±90.6 ng/ml in premenapausal patient group, and 109.9±48.6 ng/ml in postmenapausal patient group. In control group, IGF-I levels were 126.6±40.7 ng/ml in premenapausal and 110.3±60.4 ng/ml in postmenapausal individuals. There was not any difference between two groups (p=0.9, and p=0.5 respectively). In breast cancer patients, the mean serum Ca 15-3 levels was 24.8±34.07 U/ml. Only 4 patients (%10) had results over 30 U/ml which was accepted as cut-off value. The mean serum Ca 15-3 values in control group was 17.8±8.0 U/ml which was not significantly different from the patients results (p=0.1). Finally, we concluded that IGF-I alone or along with CA15-3 is not a useful screening test for the diagnosis of breast cancer.

A-36

Role of Cyctatin C and β2 Microglobulin in Evaluation of Glomerular Filtration

Ciğerli Ş, Serin E, Eren N, Çoruhlu A

Şişli Etfal Training and Research Hospital, Biochemistry and Clinical Biochemistry Department

Although serum creatinine and urea are the most useful analysis methods in GFR investigations, low molecular weight proteins (LMW) have been investigated as GFR indicators for the reason that extrarenal factors play anger important role in their synthesis. β2 microglobulin and cyctatin C are the two parameters, which had been taken into the rutin analyses. The aim of this study is to evaluate the correlations of cyctatin C and β2 microglobulin concentration with the creatinine and whether LMW proteins are anger alternative marker for creatinine clearance.

In this study serum creatinine, cyctatin C, β2 microglobulin and creatinine clearance levels were evaluated in 74 patients with chronic renal insufficiency and control group involving 20 healthy people. Cyctatin C and β2 microglobulin levels were measured in Hitachi 717 autoanalyser using DAKO kits with the turbidimetric method.

The results of the control group were 1.03 ±0.23 mg/L for cyctatin C, 0.84±0.18 mg/dl for creatinine, 1.38±0.4 mg/L for b2 microglobulin, and 90.8±11.9 ml/min for GFR. The findings for these parameters in the patients group were 2.59±1.1 mg/L, 2.48±1.95 mg/dl, 9.41±7.6 mg/L, 22.0±15.4 ml/min respectively. Cytatin C and GFR were poorly correlated in the control group whereas there was a moderate correlation in the patient group. The correlation between creatinine and GFR was weak in the control group (r= 0.23); but moderate in the patient group. b2 microglobulin and GFR showed weak correlation (r=-0.48) in the control group and moderate correlation in the patient group (r=-0.67). In the patient group cyctatin C and creatinine were moderately correlated (r=-0.75) and cyctatin C β2 microglobulin were highly correlated (r=-0.90).

We may conclude that cyctatin C and β2 microglobulin may act as more useful GFR indicators than creatinine. Consequently, cyctatin C act as a better marker for GFR since that β2 microglobulin levels may rise independently of renal functions in the lymphoproliferative disorders.

A-37

The Importance of the Determination of Plasma Homocystein, Vitamin B12 and Folate Levels in the Diagnosis of Alzheimer Disease

Yurdakul D*, Aslan B*, Yücel N*, Turgay F*, Eren N*, Ciğerli Ş*, Kenangil G**

*Şişli Etfal Education and Research Hospital, Biochemistry and Clinical Biochemistry Laboratory, **Şişli Etfal Education and Research Hospital, Neurology Department

Considering that vascular damage has a role in the ethiology of Alzheimer disease, it is supposed that elevated plasma homocystein levels plays a role in the pathogenesis of the disease, and recently, determination of plazma homocystein, vitamin B12 and folate levels in the research of the disease has been supposed. The aim of our study was to determine plazma homocystein, vitamin B12 and folate levels of 20 Alzheimer patients and to evaluate them with comperative values of the control group. Patient group consists of 20 patients (12 female and 8 male), diagnosed, by DSM IV criteria and supportive diagnostic methods, as Alzheimer type demans in the Neurology Clinic of Şişli Etfal Education and Research Hospital. The control group consists of same number of age matched subjects without demans and peripheric or cerebrovascular disease. Homocystein is studied with DPC's Immulite One immunoassay analyser with the LKHO1 catalog number reagent working with competitif immunoassay principle. Folate and vitamin B12 levels were determined with electrochemiluminescence method in Roche Modular Analytics E170 immunoassay analyser. İn patient group, homocystein levels were 15.16±5.29 µmol/L, vitamin B12 levels

were 266.01±111.01 pg/ml, and folate levels were 7.21±4.23 ng/ml. Patient group homocystein levels were significantly higher (p<0.01) than those of the control group (9.59±2.82 µmol/L). Vitamin B12 levels of the control group (335.8±150.15 pg/ml) were lower than those of the patient group but this was not statistically significant (p>0.05). Folate levels of patient group were much higher (p<0,01) than those of control group (12.34±4.49) ng/ml. This conclusion concordant with other published studies supposes that elevated plazma homocystein levels is a risk factor for Alzheimer type demans.

A-38

Evaluation of the Measurement Uncertainty of Urea and Creatinine in Clinical Biochemistry

Berçik İnal B*, Koldaş M*, Döventaş Y*, Coşkun C*, Öztürk H*, İnal H**

*Haseki Education and Research Hospital, Clinical Biochemistry Laboratory, İstanbul, Turkey, **Internal Medicine Specialist, İstanbul, Turkey

Introduction: According to VIM (International Vocabulary of Basic and General Terms in Metrology), the definition of the term uncertainty is a parameter associated with the result of a measurement, that characterises the dispersion of the values that chould reasonably be attributed to the measurand. In addition to every parameter, the measurement uncertainty is that a value should be given by all institutions which have been accreditated. This value shows reliability of the measurement. GUM, published by NIST, contains uncertainty directions.

Material and Method: Urea and creatinine, parameters being measured routinely by Haseki Hospital Biochemistry Department, are assessed in this study. Those parameters have been measured by Roche/Hitachi otoanalyzer (P800 moduler) through specthrophotometric techniques. All the uncertainty sources were evaluated successively. According to GUM, the uncertainty is seperated as Type A and Type B. Type A is performed that the uncertainty value is found by statistically; However, Type B is performed that the uncertainty is calculated as regards the values are suggested by manufacturer companies. Four different types of distributions called rectangular distribution, triangular distribution, normal distribution and confidence interval were used for type B at this study. Calibrator drift uncertainty, reagent uncertainty and repeatability uncertainty were assessed. The same sample successively was studied 21 times both within-run and between-run, for repeatability uncertainty could be detected. After standard uncertainty of all this values were calculated, the squares of each values were calculated and added up and then the square root of the found value was calculated. This value is known for the combined uncertainty value (uc). When this value multiplicated with coverage factor, called k factor, expanded uncertainty value was found. A coverage factor is typically in the range 2 to 3 (U=kxuc).

Conclusion: According to unknown test reporting formula of Eurochem/Cıtac Guide CG4, the calculated results for uncertainty which calculated like defined at upper part was found for urea: X±0.035X(%95,k=2) and for creatinine: X±0.042X(%95,k=2).

Discussion: The uncertainty value of each routine parameters should be calculated by biochemistry laboratory. The uncertainty values are used in every area like food and medicine sectors, in the same way it should be used in biochemistry as well. Every mistake source which is able to influence the result in each step like preanalytic, analytic and postanalytic should be identified and given as uncertainty value.

A-39

Development of a Laboratory Waste Management Program in Compliance with the Accreditation Process

Yenice S*, Maden C*, Çakır N**

*Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Chemistry and **Department of Quality Management, Gayrettepe Mah. Cemil Aslan Güder Sok. No:8 Gayrettepe, 34349 Istanbul, Turkey*

In compliance with the *Joint Commission International Accreditation Standards for Clinical Laboratories*, a Laboratory Waste Management program has been established to safely control hazardous chemical and biological waste from receipt or generation through use or final disposal in the laboratory. The program includes following actions taken:

- A policy describing *Laboratory Waste Management* has been written within the content of *the Employees Occupational Safety and Health Program* (EOSHP) and a *Chemical Hygiene Plan*.
- A *Guide for Laboratory Waste Management* has been developed.
- The Staff who will be responsible for the implementation of *Laboratory Waste Management* program has been identified and appointed through the completion of necessary training. His/her job descriptions, responsibilities and authorities were defined.
- Chemical waste was characterized as non-hazardous or hazardous in accordance with the rules and regulations specified by OSHA (*The federal Occupational Safety and Health Administration,* USA). With this regard, a substance which exhibits one of the four hazardous characteristics (corrosivity, ignitability, reactivity, toxicity) was delineated as *Hazardous Chemical Waste*. Chemical waste that does not exhibit any of the hazardous characteristics as defined above has been considered non-hazardous chemical waste (TOKA, *in Turkish*).
- Any waste that is potentially biohazardous, infectious, or pathological was described as *Biological Waste.*
- A *Waste Characterization Checklist* was developed to determine whether the waste is hazardous or non-hazardous.
- Appropriate containers were designated to store the solid and liquid hazardous waste material.
- Incompatible hazardous materials were characterized and waste containers were segregated by hazard class.
- Labels were designed for hazardous, non- hazardous, and biohazardous wastes.
- A waste log was placed in use to record information for each addition of waste where a number of additions were made to a waste container.

- An accumulation area was designated in the laboratory where small quantities of hazardous waste are temporarily stored prior to collection for disposal by Housekeeping department.
- Specific handling procedures were applied for HPLC, mercury, photographic and radioactive wastes.
- Guidelines have been determined in the event of a spill or incident and drills have been performed prior to handling and disposing of any hazardous waste.
- Initial and refresher trainings have been provided all laboratory staff. A copy of the *Guide for Laboratory Waste Management* has been handed out as training source document. Training of each employee was assessed by using a checklist and training records were kept.

A-40

Study on the Reasons for Specimen Rejection by the Laboratory

Yenice S, Maden C, Özşen E, Gündoğan S, Esin T, Bıçakkıran S, Demir G, Öztepe N, Can A, Yüksel G, Kabadayı E

Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Biochemistry, Gayrettepe Mah. Cemil Aslan Güder Sok. No:8 Gayrettepe, Istanbul, Turkey

Objectives: The quality of laboratory testing is very dependent on the quality of specimens received. A specimen of low quality can produce inaccurate and potentially dangerous results. The objective of this study is to determine the reasons for specimen rejection.

Methods: Patient specimens received in the Clinical Biochemistry laboratory for the period of 3 months were included in the present study. Rejection criteria were defined for complete blood cell count (CBC) and clinical chemistry (CC) analyses. Unsuccessful specimens were recorded and data were collected. Rate of rejected specimens, frequency of rejection rates and source of most encountered rejections were statistically analyzed.

Results: Of 25000 specimens that received in the laboratory for CBC, 24640 (98.5%) were suitable and 360 (1.4 %) were rejected. The percentile distribution of rejection rates (number of rejected specimens divided by the total number of specimens) were as follows: hemolyzed specimen (54.4%), insufficient amount of blood in collection tube (2.0%), unlabeled or improperly labeled tubes (4.6%), no test code marked on the requisition form for a particular test (3.2%), specimen lost or not received in the laboratory (0.8 %), wrong tube drawn for a particular test (1.2%), clots in anticoagulated tube (4.0%), damaged or cracked tube and insufficient specimen (0.3%), discrepancies between requisition form and labeled tube (0.3%), and unauthorized requisition form by the physician (29.1%). 35276 specimens were received for CC. 34868 (98.8%) of these were suitable and 408 (1.1%) were rejected. Reasons for rejection of the specimens for CC included hemolysis (62.5%), insufficient or unsuitable quantity of specimen (2.4%), inadequate labeling (4.2%), no test code marked on the requisition form for a particular test (2.7%), specimen lost or not received in the laboratory (1.7%), wrong tube drawn for a particular test (1.0%), clotted specimen (1.7%), damaged or

cracked tube and insufficient specimen (0.5%), and unauthorized requisition form by the physician (23.3%). Rejected specimens for CBC and CC were tracked and classified into three different groups based on the origins obtained from inpatient wards (IP), outpatient (OP) and emergency (ER) services. The percentile distribution of CBC specimens that were judged unsuitable for analysis from IP, OP, and ER were found 72.2%, 14.4% and 13.3%, respectively. Rejected specimens for CC received from IP, OP, and ER were distributed as 74.5%, 13.5% and 12.0%, respectively. Overall, suitable rates for the groups of IP, OP, and ER were 26.6%, 86.0% and 87.4%, respectively. Differences between the rejection rates were significantly (p<0.0001) higher in the group of IP compared to OP (59.5%) and ER (60.8%).

Conclusions: Most received specimens were suitable for laboratory analysis. OP and ER services were significantly more successful than IP services in collecting specimens from patients.

A-41

Evaluation of Critical Values Procedures in the Clinical Biochemistry Laboratory

Yenice S, Maden C, Özşen E, Gündoğan S, Esin T, Bıçakkıran S, Demir G, Öztepe N, Can A, Yüksel G, Kabadayı E, Kara A, Bulut G

Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Biochemistry, Gayrettepe Mah. Cemil Aslan Güder Sok. No:8 Gayrettepe, Istanbul, Turkey

Objectives: Critical values have been used to decide when to notify physicians and other care-givers of potentially life-threatening situations. *Joint Commission International Accreditation Standards for Clinical Laboratories* requires that the laboratory has to define a process for immediate notification of the responsible clinician when specific critical test results indicate that the patient's situation is life threatening. The aim of this study is to establish and evaluate the process including the means of notifying the clinician of these critical values.

Methods: Critical value limits were determined for routine chemistry, hematology, coagulation and toxic drug monitoring tests. A process was established to notify the responsible clinician or nurse concerning the critical test results immediately and to document the notification. The distribution of critical values and personnel involved in critical value calls were revealed for a period of three months. To determine whether clinicians were satisfied with the immediate communication of the critical values, a questionnaire was distributed to clinicians and data obtained were statistically analyzed.

Results: The distribution of critical values in the clinical biochemistry laboratory was as follows: prothrombin time (PT) 27.8%, bilirubin (neonatal) 22.2%, activated partial thromboplastin time (aPTT) 13.9%, potassium 11.1%, white blood cell count (WBC) 8.3%, and 2.8% for each glucose, hemoglobin, D-dimer, lithium, calcium (total), calcium (ionized) test. Of 66.7% of critical values was notified to the physician ordering the test and 33.3% was reported to the registered nurse. The technician performing the test (91.7%) or a laboratory clerk (8.3%) usually made the call.

A survey of physicians demonstrated that the notification performances of critical values were good (96.9%) and average (3.1%).

Conclusions: The critical value policy was achieved in the clinical biochemistry laboratory. A study to measure the exact notification times is still in progress.

A-42

Evaluation of Emergency Department Laboratory Test Turnaround Time

Yenice S, Maden C, Gündoğan S, Özşen E, Esin T, Bıçakkıran S, Demir G, Can A, Yüksel G

Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Biochemistry, Gayrettepe Mah. Cemil Aslan Güder Sok. No:8 Gayrettepe, Istanbul, Turkey

Objectives: Timely delivery of laboratory test results is crucial in rapid diagnosis and treatment of patients in the Emergency Department (ED). In this regard, Joint Commission International Accreditation Standards for Clinical Laboratories requires that the laboratory has to have a means of measuring turnaround time, and a way of ensuring that turnaround time is acceptable. The objective of this study is to determine the turnaround time (TAT) for emergency laboratory tests.

Methods: The present study examined TATs for emergency laboratory tests including complete cell blood count (CBC), Troponin-T, Creatine Kinase (Total) (CK) and Creatine Kinase-MB (CK-MB). Data were collected up to a total number of 100 for each analysis. The time period between specimen collection and reporting or releasing of the test results was measured as TAT. Median and 90th percentile TATs (the times by which 50% and 90% of each CBC, Troponin-T, CK and CK-MB test results were released) were calculated. These times were organized into percentile distributions in order to compare the TATs. This study also evaluated the degree of satisfaction with clinical biochemistry laboratory's ability to meet emergency test reporting deadlines among physician utilizers of emergency laboratory services.

Results: CBC, Troponin-T ("stat"), CK and CK-MB tests in the clinical biochemistry laboratory were performed by using the instruments of Sysmex XT-2000i (Roche Diagnostics), Elecsys 2010 electrochemiluminescence immunoassay (Roche Diagnostics), and Cobas Integra 400 (Roche Diagnostics), respectively. Median TATs were measured 14, 28, 36, and 36 minutes for CBC, Troponin-T, CK and CK-MB tests, respectively. The most rapidly delivered one fourth (25th percentile and below) of the CBC, Troponin-T, CK and CK-MB test results were released to clinicians within 12, 26, 35, and 35 minutes of the time the specimens were collected. At the other extreme, the most prolonged one fourth (75th percentile and above) of the CBC, Troponin-T, CK and CK-MB test results took 15, 30, 37, and 38 minutes to reach clinicians from the time the specimens were collected. Assessment of satisfaction questionnaires completed by physician utilizers of emergency department revealed that TATs were good (95.9%) and average (4.1%).

Conclusions: Emergency turnaround times for CBC, Troponin-T, CK and CK-MB tests generally met their reporting deadlines. A study to examine the leading causes for delay in pre-analytic, analytic, and post-analytic phases and effects on TATs was also planned.

A-43

Evaluation of Early Morning Inpatient Test Turnaround Time

Yenice S, Maden C, Gündoğan S, Özşen E, Esin T, Bıçakkıran S, Demir G, Öztepe N, Can A, Yüksel G

Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Biochemistry, Gayrettepe, Istanbul, Turkey

Objectives: *Joint Commission International Accreditation Standards for Clinical Laboratories* requires that the laboratory has to have a means of measuring turnaround time, and a way of ensuring that turnaround time is acceptable. The objective of this study is to evaluate timeliness of service by measuring the early morning–run inpatient test turnaround times (TAT).

Methods: The present study evaluated TATs for early morning –run inpatient complete cell blood count (CBC) and electrolyte tests. Data were collected up to a total number of 1000 for each analysis. The time period between specimen collection and reporting or releasing of the test results was measured as TAT. Daily morning blood collection times were classified in four different time intervals (Group I: 04:00-04:59 AM, Group II: 05:00-05:59 AM, Group III: 06:00-06:59 AM, Group IV: 07:00-07:59 AM). Corresponding TATs were tracked and recorded in four different clusters (TAT.I: 04:15-07:59 AM, TAT.II: 08:00-08:59 AM, TAT.III: 09:00-09:59 AM, TAT.IV: 10:00-10:59 AM). Reporting compliance rates for each pair of collection and TAT for CBC and electrolyte tests were determined. Median TATs were measured. We compared the frequency of these variables present in the shortest – and in the longest- performing 25th percentiles of median TATs, and then tested for differences between the groups using one-way analysis of variance (ANOVA).

Results: CBC and electrolyte (sodium, potassium, chloride) analyses in the clinical biochemistry laboratory were performed by using the instruments of Sysmex XT-2000i (*Roche Diagnostics*) and Cobas Integra 400 (*Roche Diagnostics*), respectively. For CBC specimens, reporting compliance percentage rate of Group I (n=22) with associated TAT.I was 100%. Group II (n=188) complied with the TAT.I and TAT.II in the rates of 97.87% and 2.13%, respectively. Group III (n=609) complied with the TAT.I, TAT.II and TAT.III in the rates of 94.09%, 5.58%, and 0.33%, respectively. Group IV (n=181) complied with the TAT.I and TAT.II in the rates of 61.88% and 38.12%, respectively. For electrolyte specimens, reporting compliance percentage rate of Group I (n=28) with associated TAT.I was 100%. Compliance rates of Group II (n=194) with associated TAT.I and TAT.II were 97.42% and 2.58%, respectively. Compliance rates of Group III (n=598) with associated TAT.I and TAT.II were 93.98% and % 6.02, respectively. Compliance rates of Group IV (n=180) with associated TAT.I and TAT.II were 73.33% and 26.67%, respectively. Median TATs of specimens obtained in Groups I, II, III, and IV for CBC and electrolyte tests were measured 30, 30, 31, 30 and 20, 21, 21, 24 min-

utes, respectively. For CBC, TATs of specimens collected in Groups I, II, III were compared with the TATs of Group IV and the differences were found to be statistically significant (P<0.05). For electrolyte tests, TATs of all specimen collection groups, excluding Group I, were compared and the differences were found to be statistically significant (P<0.05).

Conclusions: Early morning–run inpatient test turnaround times of CBC and electrolyte tests generally met their reporting deadlines. This study provided an outcome that the TATs of specimens collected at 07:00 to 07:59 AM increased in comparison to the TATs of samples collected earlier times. A study to examine the leading causes for delay in pre-analytic, analytic, and post-analytic phases and effects on TATs was planned.

A-44

Evaluation of Routine Outpatient Laboratory Test Turnaround Times

Yenice S, Maden C, Özşen E, Gündoğan S, Esin T, Bıçakkıran S, Demir G, Öztepe N, Can A, Yüksel G

Metropolitan Florence Nightingale Hospital, Laboratory of Clinical Biochemistry, Gayrettepe, Istanbul, Turkey

Objectives: The prompt and predictable reporting of routine outpatient tests is essential for outpatient care. In this regard, *Joint Commission International Accreditation Standards for Clinical Laboratories* requires that the laboratory has to have a means of measuring turnaround time (TAT), and a way of ensuring that turnaround time is acceptable. This study focused on the TAT of routine outpatient testing.

Methods: The present study examined TATs for routine outpatient tests including CBC, TSH, glucose, AST, ALT, aPTT, PT tests and urinalysis. The time period between specimen collection and reporting or releasing of the test results was measured as TAT. Median and 90th percentile TATs (the times by which 50% and 90% of each CBC, Troponin-T, CK and CK-MB test results were released) were calculated. These times were organized into percentile distributions in order to compare the TATs. This study also evaluated the degree of satisfaction among clinicians with the timeliness of clinical biochemistry laboratory service for routine outpatient testing.

Results: CBC, TSH, glucose, AST, ALT, aPTT, PT tests and macroscopic urinalysis in the clinical biochemistry laboratory were performed by using the instruments of Sysmex XT-2000i (*Roche Diagnostics*), Elecsys 2010 electrochemiluminescence immunoassay (*Roche Diagnostics*), Cobas Integra 400 (*Roche Diagnostics*), BCT coagulometer (*Dade Behring*) and Miditron® Junior II (*Roche Diagnostics*), respectively. Microscopy of urine was examined under the light microscope. Median TATs were measured 20, 55, 29, 39, 38.5, 23, 24 and 34 minutes for CBC, TSH, glucose, AST, ALT, aPTT, PT tests and urinalysis, respectively. The most rapidly delivered one fourth (25th percentile and below) of the CBC, TSH, glucose, AST, ALT, aPTT, PT tests and urinalysis test results were released to clinicians within 19, 51, 40, 37, 37, 22, 22 and 32 minutes of the time the specimens were collected. At the other extreme, the most prolonged one fourth (75th percentile and above) of the CBC, TSH, glucose, AST, ALT, aPTT, PT tests and urinalysis results took 23, 59, 44, 41, 40, 26, 27 and 36 minutes to

reach clinicians from the time the specimens were collected. Assessment of satisfaction questionnaires completed by clinicians of outpatient department revealed that TATs were good (93.8%) and average (6.2%).

Conclusions: Routine outpatient turnaround times for CBC, TSH, glucose, AST, ALT, aPTT, PT tests and urinalysis generally met their reporting deadlines. A study to examine the leading causes for delay in pre-analytic, analytic, and post-analytic phases and effects on TATs was also planned.

A-45

International Data Evaluation Standards for Proficiency Testing and KBUDEK

Aytekin M*, Aslan B**, Bolayirli M**, Emerk K*

*Marmara University, Faculty of Medicine, Department of Biochemistry, **Sisli Etfal Hospital, Department of Biochemistry, ***İstanbul University, Faculty of Medicine, Department of Biochemistry*

KBUDEK external quality programme is in effect starting from January 2006 abiding the rules of ISO 13528 2006 which is the main and most credible quality standarts document for proficiency testing providers. This document describes the statistical evaluation of result distrubition and guide proficiency test providers. KBUDEK uses the statistical approch suggested in the chart No1 of this document

1. If the distribution involves more than one mode each mode is evaluated as a group
2. Normality of each group is checked using normality rules
3. Mean and standart deviation is calculated for each normally distributed group
4. Outliers are determined using ±3SD rule
5. New means and SDs are recalculated
6. Groups are redefined according top the method and instrument
7. Reevaluate with respect to steps 2., 3., 4. and 5.
8. Shewarts graphs are formed for every analyte with respect to the groups described

Each participant receives amonthly repot containing

1. Shewarts graph for each analyte
2. Hitograms containing all of the results for each analyte

And a yearly report evaluating the performance of methods and instrumentsa

A-46

Employees' Perception of Quality in a University Hospital Central Laboratory

Çımrın D*, Tuncel P**, Veziroğlu H**, Arbak Y***, Sürer E*, Abacıoğlu H*

*Dokuz Eylül Üniversity Hospital Central Laboratory, **Dokuz Eylül Üniversity Medical School Department of Biochemistry, ***Dokuz Eylül Üniversity Faculty of Business*

Quality is synonymous with excellence and superiority. Dokuz Eylül University Hospital Central Laboratory management has decided to implement a quality-based management system, ensure the competence of the laboratory and attain accreditation based on ISO 15189. To implement a new quality system in a large hospital clinical laboratory is a serious cultural change and needs the participation of all employees.

To learn the attitude of the personnel about the present and the new quality-based management system was thought to help the planning of the implementation process. A questionnaire was administered to 148 out of 167 personnel. 148 responders consisted of 18 residents, 16 nurses, 82 technicians, 24 administrative and 8 cleaning staff. None of them had any training course when they had completed the survey.

The questionnaire consisted of 2 sections and 27 questions. In the first section, the employees' perception and attitude toward the present and new management systems and in the second section their knowledge about quality-associated concepts were evaluated. The attitudes were measured on a 5-point Likert scale and the knowledge was evaluated with yes-no answers. The responses were interpreted as follows: the implementation of a quality based system will improve the processes of the laboratory but will not affect the workload; the assessment of the user needs will help to fulfill the requirements of the users; internal or external audits will not be disturbing and most of them declared willingness to take part in the implementation process.

They are satisfied with the present management system and consider the top management reliable. Although they have some idea about the quality management systems, it is inadequate.

In conclusion, to successfully establish the quality-based management system and ensure its continuity; laboratory management's support and promotion of the employees for participation in the implementation process and a well-structured training program seems to be facilitating.

A-47

Determination of Uncertainty of Measurement of Routine Clinical Chemistry Tests: Implications for Accreditation

Altekin E*, Çoker C*, Şişman A*, Çımrın D**

*Dokuz Eylul University Faculty of Medicine, Department of Biochemistry, **Dokuz Eylul University Faculty of Medicine, Central Clinical Laboratory of University Hospital Inciralti, Izmir, Turkey*

Objective: We determined the uncertainty of measurement in the quantitative tests, previously validated, in our laboratory to conform to quality standarts for ISO 15189.

Introduction: The uncertainty of measurement is a parameter associated with the result of a measurement that characterises the dispersion of the values that could be reasonably attributed to the measurement. This parameter indicates the reliability of result.

ISO 15189 (5.6.2) emphasizes the use of uncertainty to describe the quality of the measurement process.It is a requirement of ISO 15189 that laboratories "shall determine the uncertainty of meas-

urement of results, where relevant and possible will be taken into account" Sources that contribute to uncertainty may include sampling, sample preparation, sample portion selection, calibrators, reference materials, input quantities, equipment used, environmental conditions, condition of the sample and changes of operator. Although there are different approaches for determining the uncertainty of measurement of a given test, the use of internal quality control data over a reasonable period of time is suggested as a practical method for clinical laboratories.

Method: Internal quality control data obtained over at least 30 sets of internal quality control data over reasonable period of time (not all in one batch) were evaluated for 20 test parameters. The calculation of uncertainty of measurement was performed by calculating CV %x2 value for each test.

Results: The uncertainty of measurement for test parameters were found between (%2.9-9.8) at low level quality control material and (%3.0-8.0) at high level quality control material respectively.

Conclusion: The values calculated for the quantitative tests in our laboratory will help us answer the questions 'Is the most recent result for a test significantly different from the previous result? Does the change represent a significant change in the patient's condition? ' Thus, the uncertainty of measurement is a parameter obtained from routine laboratory data that will contribute to clinical laboratories for making a more objective interpretation and consultation regarding the test results.

A-48

Comparison of Three Methods in Serum Digoxin Levels

Kösebalaban S, Bulut Can E

SB Dışkapı Yıldırım Beyazıt Hospital Clinical Biochemistry Department

Digoxin is a potent cardiac glycoside widely prescribed in cardiology clinics, which has a low therapeutic ratio (a very small difference between therapeutic and tissue toxic levels). Intoxication symptoms are often indistinguishable from the original condition for which the drug was prescribed. Depending on this information, we studied the serum levels of digoxin with three different methods.

In this study, 38male and 32 female in the sum of 70 patient's serum have been used. Serum digoxin levels were detected with Fluorescence Polarization Immunoassay (FPIA), Cloned Enzyme donor Immunoassay (CEDİA) and Chemiluminescence. All serum were analysed in the same day and the results were determined statisticly. Low and high levels of serums were examined with each method. Additionally withinrun and between run experiments with linearity equations and the effect of dilution has been observed.

For this aim , specimens with known levels have been analyzed 20 times in one day and following that 20 days everyday at the same time . In dilution study, we prepared one high level of specimen with 1/2 , 1/3 , 1/4 ,1/5 proportions. After taking the results expected values were compared with recovery values. In linearity studies, we have used toxic levels of digoxin and regration analysis was done.

There was no significal difference between the three methods. Within-run and between run tests were succesfull having proper %CV values which were above %5.In dilution study, %recovery values were of no significal difference. In the same study 1/2, 1/3, 1/4 proportions were well-matched with the expected values while 1/5 and upper dilutions were deviating than expected values.

As a result, all three methods have the same statistical values when compared to each other.

A-49

Comparison of Serum Phenobarbital Levels Detected with Fluorescence Polarization Immunoassay (FPIA), Chemiluminescence and a New Technique Cloned Enzyme Donor Immunoassay (CEDİA)

Kösebalaban Ş, Tabur G

SB Dışkapı Yıldırım Beyazıt Hospital Biochemistry Laboratoires

Phenobarbital is an efficient antiepileptic used in both partial and generalized tonic- clonic seizures. 15-40µg/ml is the optimum serum concentration.

CEDIA (cloned enzyme donor immunoassay) is a homogenous immunoassay based on the bacterial enzyme ß-galactosidase of *E.coli*. *E.coli* obtains Z,A,Y genes. The Zgene of the lac operon of Escherichia coli encodes a large enzymatically inactive polypeptide that spontaneously aggregatesand folds to form active ß-galactosidase; which has been genetically engineered into two inactive fragments. These two fragments of the enzyme recombine to the active enzyme. Drug in the sample competes with drug conjugated to one of the inactive enzyme fragments for an antibody-binding site. If there is drug in the sample it will bind to the antibody and leave the drug conjugated enzyme fragment free. This fragment binds to the other unit of the enzyme and produces the active enzyme. The amount of the active enzyme, that generates a color change, is proportional to the antigenic concentration.

Fluorescence Polarization Immunoassay (FPIA) employs the decrease in fluorescence intensity that occurs upon binding of the fluorophore labeled ligand by antibody as the analytical signal whereas Chemiluminescence employs luminescence materials for labeling.

Our aim in this study is to compare the results of patients whom were using phenobarbital as medication, analysed with both Fluorescence Polarization Immunoassay (FPIA) and Chemiluminescence to CEDIA.

50 patients of using phenobarbital was selected and analysed with Fluorescence Polarization Immunoassay (FPIA) , Chemiluminescence and CEDIA with 3 different analysers in the same day. It was shown that there was no meaningful difference between the three methods.

Within-run analyse was done with all the three methods 20 times in the same day. %CV value obtained was smaller than %5. Between-run analyse %CV values for FPIA is 7.22 , for CL 4.46 and for CEDIA is 3.47. Dilution analyses showed no meaningful difference between the three methods.

Linearity analyse was also held but the results obtrained from this analysis couldnt give proper statistical values. This was explained as insufficient material. As a result there was no siginifical difference between the three methods.

A-50

Does Colostrum Act as a Free Radical Scavenger?

Kucur M*, Isman FK**, Hacıbekiroglu M*, A Belce***

*Fikret Biyal Central Research Laboratory, Cerrahpasa Faculty of Medicine, Istanbul University, **Taksim Teaching and Research Hospital, Clinical Biochemistry Department, ***Department of Biochemistry, Cerrahpasa Faculty of Medicine, Istanbul University

Colostrum is a rich source of nutrients, antibodies and growth factors for the suckling. Besides the most potent natural immune booster it also manifests antioxidant properties.

The aim of this study was to determine whether colostrum acts as a free radical scavenger and this scavenging capacity shows a dose-dependent manner.

In this study the superoxide radical and hydrogen peroxide (H2O2) scavenging capacities of colostrum were determined spectrophotometerically by adding various amounts of bovine colostrum on the medium, based on the methods of Sun and Beers-Sizer respectively.

The inhibition of superoxide radicals by adding 20 μL of colostrum on the medium was measured as 14.64%, while 38.72% inhibition was observed at 140 μL. This inhibition was subsequently increased to 50% by adding 200 μL of colostrum. Above this dose no change was observed. Similarly, H2O2 scavenging capacity of colostrum was also increased by adding various amounts of bovine colostrum on the medium. The breakdown of H2O2 by adding 10 μL of colostrum on the medium was measured as 10% while 35% of H2O2 was breakdown at 60 μL of colostrum. Finally we observed 40% of H2O2 was decomposed by adding 80 μL of colostrum. Above this dose the breakdown of H2O2 remained constant.

Colostrum probably acts as a radical scavenger towards superoxide radicals and hydrogen peroxide in a dose-dependent manner. We assume that mainly colostral superoxide dismutase and other colostral antioxidants such as catalase may contribute to scavenging capacity of colostrum.

A-51

External Quality Assessment In Clinical Chemistry Laboratory of Akdeniz University Hospital

Ozben T

Akdeniz University, Faculty of Medicine, Department of Biochemistry, Antalya, Turkey

Modern methods of diagnosis have gone through a remarkable development in recent years due to the huge amount of progress made in laboratory medicine. The more reliable they can be determined, the more importance and weight is attributed to the results of clinical analysis. The two criteria for reliability of a lab-oratory method are precision and accuracy and these can be checked and judged with the help of the statistical quality control. The execution of internal and external laboratory quality control is necessary for any analytical laboratory. In internal quality assurance, the performance of analytical methods can be monitored by analyzing specimens whose concentrations are known, then comparing the observed values with the known values. External quality assurance can be organized through professional societies or manufacturers of control materials with the help of data processing programs because of the necessity of processing the data gathered. The term interlaboratory comparative studies means multiple determinations of identical samples which are carried out by different laboratories within a prescribed period of time, independently of one another. Both external and internal quality assurance studies are widely carried out by the clinical laboratories in Turkey. In this symposium, we will present our RIQAS external quality assessment results in Akdeniz University Hospital Central Laboratory. We found RIQAS external assessment results mostly satisfactory ranging from excellent through acceptable. Very few results were indicated as need for improvement.

A-52

Drug Interferences on Serum Levels of Mycophenolic Acid Analysed by CEDIA

Kösebalaban Ş*, Serkant U*, Çoşkunoğlu C*, Barak A**

*SB Dıskapi Yildirim Beyazit Hospital, Clinical Biochemistry Laboratory, **Hacettepe University, Biostatistics Department

Mikofenolat mofetil (MMF) is used with both corticosteriods and cyclosporines in inhibiting the acute rejection of renal transplantation patients. Monitorization of serum Mikofenolat mofetil (MMF) is essential for transplant patients and both analitic and medical ineterferance factors must be determined during the analyse .

The aim of this study is to determine the drug interferances (verapamile 240 mg/day, trimethoprime 200 mg/day) on serum Mikofenolat mofetil (MMF) levels analysed by CEDIA. Thus more reliable results should be obtained for the clinician who has been taking care of a post transplantation patient.

Due to the IFCC criterias with Isoptin 40mg/day there was no siginifical differences, while 2, 4 ve 6 times of routine daily doses have also no significal meaning (p>0.559).

With Trimetoprim Sulfomethaxasole, 200 mg/day there was no interferance detected with both the therapeutic and 4 times bigger doses. On the other hand there was statistical difference between double doses versus 4 times bigger one (p<0.05).

A-53

The Effects of Lipemia on Serum Levels of Mycophenolic Acid Analysed by CEDIA

Kösebalaban Ş*, Çoşkunoğlu C*, Serkant U*, Barak A**

*SB Diskapi Yildirim Beyazit Hospital, Clinical Biochemistry Laboratory, **Hacettepe University Bioistatistics Department

Lipemia generates interference with both light distribution, scattering and volumetric changes. Scattering is the major problem with lipemic serums especially with spectrophotometric methods. Also partion errors occur when the solution inquieres small non-polar molecules. These errors usually occur within the immunologic methods. If the analite is desolved in lipid phase than the readings will be decreased depending on the proteines desolving in liquid phases.

The aim of this study is to determine the lipemia interference on serum Mikofenolat mofetil (MMF) levels analysed by CEDIA. To determine this hypothesis lipovenöz solution is added to specimen partionally.With this aim, both in vivo and in vitro pools of Mikofenolat mofetil pools with 2 different concentrations were examined by adding at 3 different concentrations of lipovenöz %20 (5 g/L, 10 g/L, 20 g/L).

In our study we find no significal differences with the Mikofenolat mofetil results obtained from CEDIA. The effect was tested by the results obtained from lipemic pools and comparing them with the original values. In our study there was no significal differences with the Mikofenolat mofetil results obtained from CEDIA (p<0.05).

Deviation from the expected values in a laboratory test depends on either endogenous or exgoneous resources. Interference is caused by some inner substances that deprivates the result from its original value. Endogenous interferance has 4 main causes.

They are: hemolysis, lipemia, bilirubinemia and paraproteins.

Hemolysis is defined as elevated serum Hb concentrations caused by in vivo or in vitro ways.

In vitro hemolysis occurs during te specimen collecting, transmition or centrifuge.

In vivo hemolysis occurs when red blood cells fragmented in vasculer bed.

The aim of this study is to determine the hemolysis interferance on serum Mikofenolat mofetil (MMF) levels analysed by CEDIA .

A-54

The Effects of Bilirubin on Serum Levels of Mycophenolic Acid Analysed by CEDIA

Kösebalaban Ş*, Serkant U*,Çoşkunoğlu C*, Barak A**

*SB Diskapi Yildirim Beyazit Hospital, Clinical Biochemistry Laboratory,
**Hacettepe University Bioistatistics Department*

Bilirubinemia is one of the endogen interference causes. It is an important factor because of its spectral characteristics. Spectral interference is related with bilirubin's (direct and indirect) absorbance between 440 and 540 nm wavelength. An other reason for interference is that bilirubin may react with indicators. To determine the negative effects of hemolysis, lipemia and bilirubinemia on the results of the method, we evaluate the analyte levels after adding the interfering agent into the samples. The interference substances are usually been established by the producer companies of the reagents. But if an interference substance is not mentioned by the producer, the change in the results are compared after adding the agent into the sample. The constant error

is equal to the determined interference value. To investigate this chemical interferece with a new method, CEDIA, we added bilirubin standarts of 300 and 600 mg/dl concentration into both in vivo and in vitro serum pools having mycophenolate at different levels, and compare the results. İn our study, we did not observe any bilirubin interference with CEDIA method in determining mycophenolate levels (P> 0.005).

Both in vivo and in vitro pools of mycophenolat pools with 2 different concentrations were examined by adding 40, 80, 160 microliter of hemolysate containing 1, 2, 4, g/L Hb concentrations. After than specimens were detected with CEDIA. % relative error was parallel of those expected concentrations and Hb concentrations (p<0.05).

A-55

Amniotic Fluid Adenosine Deaminase and Nitric Oxide Levels in Uncomplicated Pregnancies

Kafkasli A*, Karabulut A**, Ustun Y*, Aladag H*, Kıran RT**

*Inonu University, School of Medicine, Department of Obstetrics and Gynecology, Malatya, Turkey, **Inonu University, School of Medicine, Department of Biochemistry, Malatya,Turkey*

Adenosine deaminase (ADA) is a purine catabolizing enzyme that is essential for the proliferation, maturation and function of lymphoid cells, and congenital deficiency of this enzyme is associated with severe combined immunodeficiency disease. Nitric oxide (NO), originating from vascular endothelium inhibits the adhesion and platelet aggregation and inhibits the contraction of smooth mucle. ADA is highly expressed in trophoblast cells of the placenta and has a critical role for embryo development also NO is released from human umbilical vessel. The aim of this study is to evaluate the amniotic fluid adenosine deaminase (ADA) and (NO) levels in uncomplicated pregnancies.

ADA and NO levels were evaluated in 75 amniotic fluid samples from singleton uncomplicated pregnancies. Amniocentesis was performed for genetic analysis between 16-19 weeks of gestation. ADA and NO values were analyzed according to the gestational weeks.

Distribution of the patients to the gestational weeks were as follows; Group 1; 16 weeks (n=19), group 2; 17 weeks (n:18), group 3; 18 weeks (n:20) and group 4; 19 weeks of gestation (n:18). Mean maternal age was 32.08±6.1 (19-42) years. Mean ADA levels were 13.1±7.9 IU/L, 15.0±11.2 IU/L, 19.8±16.3 IU/L and 19.7 IU/L in 16, 17, 18 and 19 week of gestation respectively. All the ADA values were comparable in each week of gestation. Similarly, amniotic fluid NO levels were comparable in all weeks. Mean NO levels were calculated as 52.3±15.1 μmol/L, 54.1±16.8 μmol/L and 51.2±13.2 μmol/L, 51.8±17.4 μmol/L in 16, 17, 18 and 19 weeks of gestation respectively. ADA and NO levels pozitively corralated with gestational weeks.

ADA and NO levels during the placentation is important for regulating certain physiological and pathophysicological changes in pregnancy. This study firsly recognized for, amniyotic fluid ADA and NO levels were high fetal-maternal interface during post implantation stages of gestation.

A-56

The Effects of Anti TNF-α (Infliximabe) on Oxidative Damage and the Level of Liver Tissue Antioxidant Enzyme in CCL4 Induced-Liver Fibrosis Model

Metin K*, Ustundag B*, Ozercan İH**, Bahcecioglu İH***

*Fırat University, Faculty of Medicine, Department of Biochemistry, **Department of Pathology, ***Department of Gastroenterology, Elazig, Turkey

Liver fibrosis is characterized by imbalance between the synthesis and destruction of the extra cellular matrix in favor of the synthesis with the activation of profibrogenic mediators due to toxic oxygen radicals.

The aim of the present study was to evaluate the effect of anti-TNF-α(infliximabe) on oxidative damage,liver fibrosis and the level of liver tissue antioxidant enzyme in the experimental liver fibrosis model-induced by carbon tetrachloride.

Thirty-seven male Albino Wistar rats were divided into three groups. Group1 (n=9) (received an intraperitoneal injection of olive oil for a period of 5 weeks), Group2 (n=9) (received serum physiologic and CCl4 three times a week for a period of 5 weeks), Group 3 (n=9) (received intraperitoneal injection of 2 mg/kg anti-TNF-α (Infliximabe) for a period of 5 weeks, starting from the day before the CCl4. The liver tissue were evaluated on steatosis,necrosis, inflammation and fibrosis by histopathologicall. Plasma malondialdehyde (MDA) and Nitric oxide(NO) levels and liver tissue MDA levels and antioxidant enzyme levels were measured by appropriote methods.

The level of plasma MDA and NO were increased in CCI4 group compared to the control group but the increasing was decreased significantly by treatment Anti-TNF-α (p<0.05, p<0.01).Steatosis and fibrosis were decreased in the CCI4+anti-TNF-α compared to CCI4 group (p<0.05, p<0.01). Although the level of Liver tissue MDA were increased in CCI4 group, it was decreased significantly CCI4+anti-TNF-α group (p<0.01). Liver tissue antioxidant enzymes Glutathione peroxidase, superoxide dismutase and catalase were increased significantly in the CCI4 +anti-TNF-α whereas they were significantly decreased in the CCI4 group compared to the control group (respectively (p<0.05, p<0.01, p<0.01)).

Based on data it is suggested that anti-TNF-α (infliximabe) seem to to be effective in preventing liver damage by decreasing lipid peroxidation and inflammation,steatosis and fibrosis in CCL4-induced liver fibrosis model. Also,it stimulate and increase the activity of the liver tissue antioxidant enzymes.

Key Words: Liver damage, anti-TNF α (infliximabe), carbon tetrachloride.

A-57

The Effects of Different Hypertension Models on Antioxidant Enzyme Activities and Lipid Peroxidation in Heart Tissue

Kipmen Korgun D*, Hacioğlu G**, Ağar A**, Gümüşlü S*

Akdeniz University, School of Medicine, Departments of Biochemistry and Physiology**, Antalya

Oxidative stress plays a major role in the initiation and progression of cardiovascular dysfunction associated with diseases such as hypertension, diabetes mellitus, ischemic heart disease, and chronic heart failure. The aim of the present study was to investigate the effects of the different hypertension models on antioxidant enzyme activities and lipid peroxidation of rat hearts. Male Swiss-Albino rats were used in this study. Rats were divided into the following six groups namely; control (C), SHAM operated (SHAM), 1 kidney 1 clamp (1K-1C), 2 kidney 1 clamp (2K-1C), deoxycorticosterone acetate (DOCA) (15 mg/kg twice per week for 10 weeks), N-omega-nitro-L arginine-methyl ester (L-NAME) (50mg/kg/day for 75 days). The activities of catalase (CAT), Cu,Zn-superoxide dismutase (Cu,Zn-SOD) and selenium dependent glutathione peroxidase (se-GSH-Px) and glutathione (GSH), conjugated diene (CD) and thiobarbituric-acid-reactive substances (TBARS) levels were determined in heart homogenates. The activity of Cu,Zn-SOD were found to be decreased in 1K-1C, 2K-1C and L-NAME groups, while significantly increased in DOCA group. CAT activities were found to be significantly higher in 1K-1C, 2K-1C, and DOCA groups than in control groups, whereas decreased in L-NAME group. GSH-Px activities were significantly higher in 1K-1C and DOCA groups compared with controls. The levels of GSH were significantly increased in 2K-1C group with respect to the control groups, whereas significantly decreased in 1K-1C group. CD and TBARS levels were significantly increased in all hypertensive groups. Our results suggest that different hypertension models have different degrees of influences on antioxidant defence systems and lipid peroxidation in the heart.

Key Words: Hypertension, heart, antioxidant enzyme, lipid peroxidation.

A-58

The Effect of Dexmedetomidine on Reactive Oxygen Species Formed by Intestinal Ischemia-Reperfusion Injury in a Rat Model

Yağmur F*, İnci F**, Doğan İV**, Eti Z**,Göğüş FY**, Haklar G*

*Department of Biochemistry and **Anesthesia and Reanimation, School of Medicine, Marmara University, İstanbul

Dexmedetomidin is an adrenoreceptor agonist which is used as a potential adjuvant under general anestesia. It decreases sympathetic activity by inhibiting norepinephrine release from nerve terminals. In this study we aimed to investigate the effect of dexmedetomidine infusion on reactive oxygen species (ROS) in a rat model of intestinal ischemia-reperfusion (IR).

Male Spraque-Dawley rats (n=28) were used and the study was approved by Marmara University experimental animal ethic comittee. Kethamine anesthesia (100 mg/kg) was applied to all animals together with tracheotomy and right external jugular vein cannulation. Then mid-line laporotomy was made and arteria mesenterica superior was exposed. We had 4 groups: ischemia control group (group C), ischemia with dexmedetomidine infusion group (group CD), ischemia-reperfusion control group with saline infusion (group IR-SP), ischemia-reperfusion with dexmedetomidine infusion group (group IR-D). For IR groups 30 minutes ischemia is followed by 60 min reperfusion. At the end of 90 minutes we took tissue samples from ileum of all rats. ROS levels were measured with luminol and lucigenin enhanced chemi-

luminescence. Tissue glutathione levels, lipid peroxidation and myeloperoxidase activities were also measured. Luminol chemiluminescence measurements and myeloperoxidase activities were significantly higher in IR-SP group when compared to group C. Also, in IR-D group these values were not statistically significant than group C but significantly lower than IR-SP group (p<0.001). There were no difference between groups for lucigenin chemiluminescence measurements. In IR-D group lipid peroxidation and glutathione levels were not significantly different than group C but significantly lower than IR-SP group (p<0.05).

As a conclusion, mesenteric ischemia–reperfusion leads to increases in ileal ROS level in rats together with myeloperoxidase activities and lipid peroxidation concentrations. On the other hand, dexmedetomidine infusion during ischemia–reperfusion helped to prevent these increases and thus can have an antioxidant potential.

A-59

The Effect of Glycemic Control on Oxidative Stress (MDA-LDL-IgG) in Patients with Type 2 DM

Ozdemir AT*, Aral H*, Erdenen F**, Ozgul Ozdemir RB**, Emecen O*, Guvenen G*, Muderrisoglu C**

*Ministry of Health, Istanbul Training and Research Hospital, *Central Clinical Chemistry Laboratory, **Internal Medicine Clinics, İstanbul,Turkey*

Persistence of hyperglycemia was recorded to cause increased production of oxidative parameters. We investigated the effect of glycemic control on oxidative stress and lipid profile in type 2 diabetes mellitus. Serum total cholesterol, HDL cholesterol, LDL cholesterol, triglyceride, HbA1c and MDA-LDL-IgG levels were assessed in 70 subjects (25 male, 45 female). None were taking medication or other agents known to affect lipid metabolism during the last three months' time. All cases were evaluated in four groups: as metabolically poorly controlled DM (HbA1c > 8 %, n=22), well controlled DM (HbA1c ≤ 8 %, n=18), hypercholesterolemic patients (n=15) and control group (n=15). HbA1c was assayed by means of Synchron LX-20 (Beckman Coulter Inc, Fullerton, USA). MDA-LDL-IgG was assayed by ELISA (Labor Diagnostika Nord GmbH & Co. KG, Nordhorn, Germany). Serum MDA-LDL-IgG levels were significantly increased in metabolically poorly controlled group (504.22±260.68 U/L) in relation to metabolically well-controlled (342.16±115.59 U/L) DM patients (p=0.021), but there was no significant difference in LDL cholesterol levels between these groups (141.14±40.24 mg/dl vs. 134.83±29.05 mg/dl) (p=0.923). Since MDA-LDL-IgG as an oxidative parameter is well correlated with metabolic control (r=0.498) in whole, it may be appropriate to evaluate MDA-LDL-IgG in addition to routine laboratory assessments.

A-60

Serum Oxidized Low Density Lipoprotein, Paraoxonase 1 and Lipid Peroxidation Levels During Oral Glucose Tolerance Test

Serin O*, Konukoglu D**, Fırtına S**, Mavis O***

*Taksim Education and Research Hospital, Department of Biochemistry, Istanbul, Turkey, **Istanbul University, Cerrahpasa Faculty of Medicine, Department of Biochemistry, Istanbul, Turkey, ***Taksim Education and Research Hospital, Department of Internal Medicine, Istanbul, Turkey*

The mechanisms underlying diabetes accelerated atherosclerosis are poorly understood., Increasing evidence suggests that oxidative stres and lipid peroxidation are contributing factors . To evaluate the effects of postprandial hyperglycemia on the oxidative stress, serum oxidized low density lipoprotein (oxLDL), paraoxonase 1 (PON1) and thiobarbituric acid reactive substances (TBARS) concentrations were measured in subjects with normal (NGT) (n=35), impaired (IGT) (n=25) and diabetic (DGT) (n=20) glucose tolerance that were classified after oral glucose tolerance test. In NGT group 2 hours' TBARS and oxLDL levels were not statistically different when compared to baseline; their 2 hours' PON1 activities were higher when compared to baseline (p<0.01). Subjects with IGT and DGT have higher 2 hours' serum TBARS and oxLDL levels than their baseline levels (p<0.01, for each). Baseline oxLDL levels of both IGT and DGT groups were higher than NGT group (p <0.01 and p<0.01, respectively). While there were not any significant difference in 2 hours' versus baseline PON1 activities in the IGT group; the 2 hours' versus baseline PON1 activities in the DGT group were significantly lower (p<0.01). The postchallenge 2 hours' PON1 activities of both IGT and DGT groups were lower than NGT group (p <0.01 and p<0.01, respectively). Baseline oxLDL was positively correlated with 2 hours' glucose (r=0.613, p<0.01) in IGT and DGT groups. PON1 activities were correlated with HDL- cholesterol, total cholesterol and fasting glucose (r=0.680, r=0.698 and r=0.431, respectively, for each p<0.01) in NGT. In conclusion, oxidative stress occurs at an early, even in the impaired glucose tolerance stage of diabetes and protective effects of HDL against atherosclerosis may be dependent on the PON1 activities.

A-61

Glutathione, Activities of Glutathione - Related Enzymes and Lipid Peroxidation in Peritoneal Dialysis Patients

Gümüşlü S*, Göçmen AY*, Şahin E*, Tuncer M**, Koçak H**

Akdeniz University, Faculty of Medicine, Departments of Biochemistry and Nephrology**, Antalya, Turkey*

Chronic renal failure patients having peritoneal dialysis treatment are thought to be at high risk for oxidative damage caused by free radicals. In this study, glutathione peroxidase (GSH-Px), glutathione reductase (GR) and glucose-6-phosphate dehydrogenase (G-6-PD) activities, and reduced glutathione (GSH), oxidized glutathione (GSSG) and thiobarbituric acid-reactive substances (TBARS) concentrations were measured in erythrocytes of peritoneal dialysis patients and controls. GSH-Px and GR activities, and GSH, GSSG and TBARS levels were found to be significantly higher in patients than in controls. Glucose-6-phosphate dehydrogenase activities of patients were decreased significantly with respect to the control group. According to our results, concentration of glutathione, activities of glutathione-related enzymes and levels of TBARS in peritoneal dialysis patients were changed. The reason for the changes in enzyme activities and glutathione concentration may be the increment of lipid peroxidation and then the beginning of other mechanisms related with oxidative stress that increases the hepatic synthesis of GSH.

A-62

Advanced Oxidation Protein Products, FOX and Malondialdehyde Levels in Thyroid Cancer

Kosova F*, Çetin B**, Akıncı M**, Sepici A***, Arı Z****, Altan N***, Aslan S**, Çetin A**

*Celal Bayar University, Department of Biochemistry, Manisa, Turkey, **Ankara Oncology Hospital, Department of 1. General Surgery, Ankara, Turkey, ***Gazi University, School of Medicine, Department of Medical Biochemistry, Ankara, Turkey, ****Celal Bayar University, School of Medicine, Department of Biochemistry and Clinical Biochemistry, Manisa, Turkey

The aim of this study was to compare advanced oxidation protein products (AOPPs) as a new and quite specific oxidative stress marker, lipid peroxidation products malondialdehyde (MDA) and ferrous oxidation in xylenol orange (FOX), which was originally developed to measure hydroperoxides, in blood samples of thyroid cancer patients compared to healthy controls.

35 female thyroid cancer patients who had undergone total thyroidectomy (mean age 41±13) and 39 female control subjects (mean age 42±13) were included into this study. Pre and post thyroidectomy, AOPPs, FOX and MDA levels were studied.

Prethyroidectomy AOPPs, FOX and MDA levels were significantly higher ($p < 0.05$), compared to control. In postthyroidectomy AOPPs, FOX and MDA levels ($p < 0.05$) were significantly decreased, compared to prethyroidectomy levels. However, postthyroidectomy, decreased AOPPs, FOX and MDA levels were still significantly higher, compared to control ($p < 0.05$).

In conclusion, AOPPs, FOX and MDA levels which are markers of protein oxidation and lipid peroxidation were induced during thyroid cancer and begin to decrease postthyroidectomy which can reflect the oxidation status in thyroid cancer.

Key Words: Thyroid Ca, advanced oxidation protein products, malondialdehyde, FOX.

A-63

Protective Effect of L-Arginine in Cisplatin-Induced Renal Damage in Rats

Şener A, Köksal M, Oba R, Yardımcı T

Department of Biochemistry, Faculty of Pharmacy, Marmara University, İstanbul, Turkey

Increase of lipid peroxidation and glutathione (GSH) depletion in kidney tissues have been observed in rats with cisplatin (CDDP)-induced nephrotoxicity. This investigation elucidates the role of L-arginine, the substrate of nitric oxide synthase (NOS), on lipid peroxidation and urinary excretion of nitrite (NO2) + nitrate (NO3) in rats with CDDP induced renal failure. CDDP (3 mg/kg, once a day)was injected intraperitoneally for 5 days. In subgroups, daily L-arginine (0.2 g/kg) or NG-nitro L-arginine methyl ester (L-NAME) (NOS inhibitor, 20 mg/kg) were administrated intraperitonally 1 hour prior to CDDP treatment. Treatment with CDDP alone resulted in significant increase in plasma creatinine(Cr), blood urea nitrogen (BUN) levels, daily urine volume and significant decrease in creatinine clearance and kidney weight. Administration of L-arginine prevented the CDDP induced elevation of plasma Cr and BUN levels. When compared with controls, CDDP administration resulted in increased lipid peroxidation and decreased GSH levels in the kidney; L-arginine reversed these effects. In addition, L-arginine was effective in the normalization of daily urine volume and urinary excretion of NO2 + NO3. On the other hand, the administration of L-NAME resulted in no protection aganist CDDP-induced renal damage. The findings of this study suggest that L-arginine can prevent the CDDP-induced renal damage by a mechanism which involves the production of NO.

A-64

The Relationship Between F2α isoprostane, Melatonin Levels and Cognitive State in Patients with MCI and Alzheimer Disease

Şirin FB*, Kumbul Doğuç D**, Vural H**, Eren İ***, İnanlı İ***, Sütçü R**, Delibaş N**

*Zeynep Kamil Women and Child Diseases Education and Research Hospital, **Suleyman Demirel University, Faculty of Medicine, Biochemistry Department, ***Suleyman Demirel University, Faculty of Medicine, Psyhiatry Department

By measuring F2α-isoprostane which is accepted as an oxidative stress indicator and melatonin concentrations which shows neuroprotective effect by its antioxidative and antiamiloidogenic influences in cases diagnosed as MCI and dementia of the Alzheimer type, we have intended to demonstrate whether the measurement of these markers contributed the early diagnosis in MCI stage or not.

In the study, three groups were composed as Alzheimer Disease group, MCI group and control group. Serum melatonin levels were measured by RIA method. Plazma total 8-isoPGF2α levels were measured by EIA.

When melatonin levels were compared between MCI group and Alzheimer group, significant difference was observed statistically ($p < 0.01$). When 8-isoPGF2α levels were compared between Alzheimer group and control group, significant difference was observed statistically ($p < 0.05$). Negative correlation between MMSE scores and 8-isoPGF2α levels was found ($r = -0.459$, $p < 0.01$). Positive correlation between MMSE scores and melatonin levels was found ($r = 0.317$, $p < 0.05$).

Serum melatonin and plasma 8-isoPGF2α levels have no significance that may be used as early diagnostic markers with respect to be an indicator of AD risk in patients with MCI. Although there was a negative correlation between 8-isoPGF2α levels and MMSE scores and 8-isoPGF2α levels in Alzheimer group was found to be higher than control group, 8-isoPGF2α levels have no value as an early diagnostic marker. This result was evaluated to support the opinion about the role of oxidative stress in AD.

A-65

The Levels of Paraoxonase 1 Activity in Diagnosis of Patients with Metabolic Syndrome

Türkoğlu SK* , <u>Gürsu MF*</u> , Gülcü F* , Ozkan Y**, Parmaksız AB*, Kıdır M*

*Fırat University, Medical College, Department of Biochemistry, **Fırat University, Medical College, Internal Medicine

Metabolic syndrome developed depending on insulin resistance related to oxidative stress contributes to the development of complications. Paraoxonase 1 (PON1) is an antioxidant enzyme closely associated with high-density lipoproteins. Low PON1 has been shown to be related with dyslipidemia, diabetes mellitus, advancing age, hypertension, level of low HDL-cholesterol and increased oxidative stres. In this study; the relation between diagnostic criteria of metabolic syndrome and serum PON1 activity is a part of metabolic syndrome or not is investigated.

The serum PON1 activity in subject with metabolic syndrome (n=45) has been found to be significantly lower (p<0.05), and lipid concentrations significantly higher in subjects with the metabolic syndrome compared with unaffected subjects (p<0.05). Serum glucose, total cholesterol, LDL, VLDL, triglyceride, GGT, Uric acid, insulin, C-peptid, BMI, systolic blood pressure and waist circumference have been found to be significantly higher, and HDL-cholesterol to be significantly lower, in subjects with the metabolic syndrome compared with unaffected subjects (p<0.05).

In summary, PON1 enzymatic activity which are lower antioxidant in the subjects with metabolic syndrome, increased lipid levels, low HDL and increased glucose levels discovered significant correlate that PON1 can hold an important place in the medical treatment an early diagnosis of metabolic syndrome.

Key Words: Metabolic syndrome, paraoxonase, arylesterase, phenotypes.

A-66

Antioxidant Effects of Melatonin on Diet Induced Hypercholesterolemic Rats

Bütün İ*, <u>Sönmez H*</u>, Çiftçi Ö*, Caner M**, Altuğ T***, Kökoğlu E*

*Department of Biochemistry, **Department of Surgery, ***Experimental Animal Breeding and Research Laboratory , Cerrahpasa Faculty of Medicine, University of İstanbul

Hyperlipidemia is a major risk factor for the development of atherosclerosis. Recently, because the dietary patterns in many countries have become Westernized after the rapid growth of their economies, numbers of people with hyperlipidemia, cardiovascular disease, and large intestinal cancer have increased. The cholesterol in diet effects the functions and structure of the lipoproteins. Oxidative stres is the damage done by the free radicals in the living organism. Free radicals damage proteins, lipids and DNA. Melatonin is a free radical scavenger molecule and it also prevents their synthesis. The aim of our study was to investigate the effects of melatonin, at two different doses, on antioxidant capacity of rats fed with a high cholesterol diet, composed of %2 cholesterol, %0.5 cholic acid and %0.5 propilthyouracil for 12 weeks. Two

groups of animals fed with hypercholesterolemic diet received daily intraperitoneal enjections of melatonin at low (1 mg/kg/d) and high (10 mg/kg/d) doses while one group received only cholesterol diet. One of the control groups fed with regular diet received i.p. daily enjections of %0.9 NaCl and the other one %4 ethanol. As a result hypercholesterolemic diet induced a reduction in the antioxidant capacity. We also found that melatonin especially at high doses (10 mg/kg/d) significantly reduced TBARS levels at the 12th week of the experiment. In addition, prolonged melatonin administration was found to increase the serum antioxidant capacity of the rats. Our results confirm that melatonin participates in the prevention of oxidative damage. Further studies will explain the role of melatonin in hyperlipidemia and also in atherosclerosis as an antioxidant agent.

A-67

PGE2, COX-2 and NO Levels in Breast Cancer Patients

Çiftçi O*, Bütün İ*, <u>Sönmez H*</u>, Gümüştaş MK*, Çelik V**, Kökoğlu E*

*Department of Biochemistry, **Department of Surgery, Cerrahpasa Faculty of Medicine, University of İstanbul

Angiogenesis is the most important process in tumour growth. NO and COX pathways seem to play role in angiogenesis. In NO pathway; NO is generated by a family of isoenzymes named nitric oxide synthases. Nitric oxide takes role in tumour growth, metastasis and induction of angiogenesis. COX-2 and PGE2 are involved in processes such as cell proliferation, invasion and tuour growth by decreasing angiogenetic factors. We investigated the both pathways' products and their relationship. 20 breast cancer patients were included in this study. Their tumoural and peritumoural tissue specimens were taken during surgery. Also the blood samples were taken both from the patients and 10 healthy subjects. Nitrit + nitrat levels were determined with colorimetric method; PGE2 and COX2 levels were determined with ELISA. Nitrit+nitrat, COX2 and PGE2 levels were significantly higher in tumoural tissues than the peritumoural ones. Also the serum levels of these parameters in patients were significantly higher than the healthy subjects. Angiogenesis process needs the activation of NO and COX pathways in breast cancer, as in other cancer types. Recent studies indicate that COX2 and NO pathways have a sinerjistic effect. We also conclude that these pathways seem to be interrelated. And treatment targetting the inhibition of these two pathways may help to provide better results in breast cancer therapy researchs.

A-68

Effects of Melatonin on Lipid Peroxidation in Diet-Induced Hypercholesterolemic Rats

Bütün İ*, Çiftçi O*, Atukeren P*, Caner M**, <u>Sönmez H*</u>, Altuğ T***, Kökoğlu E*

*Department of Biochemistry, **Department of Surgery, ***Experimental Animal Breeding and Research Laboratory, Cerrahpasa Faculty of Medicine, University of İstanbul, Turkey

Melatonin which is a pineal secretory product and functions in circadian biology, has been suggested as a free radical scavenger and a powerfull antioxidant. The antioxidants and free radical

scavengers have obvious importance in inhibiting LDL (low density lipoprotein) oxidation. It has been suggested that modified lipoproteins play important role rather than the natural ones do. The most frequent modification is the oxidative modification. We investigated the effects of melatonin on oxidative modification of serum lipoproteins of rats fed with a high cholesterol diet (composed of %2 cholesterol, %0,5 cholic acid and %0,5 propilthyouracil for 12 weeks) at two different doses. Two groups of animals fed with hypercholesterolemic diet received daily intraperitoneal enjections of melatonin at low (1 mg/kg/d) and high (10 mg/kg/d) doses while one group received only cholesterol diet. One of the control groups fed with regular diet received i.p. daily enjections of %0,9 NaCl and the other one %4 ethanol. Lipid peroxidation was induced by hypercholesterolemic diet. We found that melatonin especially at high doses (10 mg/kg/d) significantly reduced serum oxidized LDL and LDL/HDL ratio at the 12th week of the experiment. In addition, prolonged melatonin administration was found to increase the serum antioxidant capacity of the rats. Our results confirm that melatonin participates in the prevention of oxidative damage. Further studies will explain the role of melatonin in atherosclerosis as an antioxidant agent.

A-69

Detection of Lipid Peroxidation Level in Coronary Cardiac Patients

Ertaş M, Peker I

Marmara University, Faculty of Engineering,,Department of Bioengineering , Biotecnology Laboratory 315., Göztepe, İstanbul

One of the most frequently coincided post-emergent cardiovascular diseases is coronary artery disease. Coronary artery disease (atherosclerosis) is a deadly disease and causes death of hundered thousands of people every year. Although symptoms of disease appear slowly in years, its effect occurs suddenly. Narrowing or choking of coronary artery vessels, frequently by arteriosclerosis, causes deficient nutrition of heart tissue. This deficient nutrition of heart, according to its degree, causes violent chest ache and spasms (anjina pektoris) or tissue damage in any part of myocardium (myocardial infarction). According to several investigations, it is found that in developed countries approximately a half of total deaths ocur from cardiac diseases.

Free radicals are necessary for life. Their fundamental functions in electron transfer, energy production and many other metabolic reactions, have been proved. In the cases of uncontrolled behaviours of transfer chain reaction, free radicals create big destructions in cells. Scientists, by the help of investigations carried out since 1954, have proved that free radicals cause aging and degenarative diseases.

In recent years, the role of free radicals which can form physiologically in body and carry a free electron has becime an important issue in medicine. The most important mechanism in tissue damage, caused by free radicals, is peroxidation of lipids found in cell membrane. The damage of increased lipid peroksidation in tissues is shown with increase in the end destruction product, malondialdehyde (MDA), level.

With the decision of Siyami Ersek Hospital Cardiology Department Ethic Committee, serum samples were collected from diagnosted coronary artery patients. Malondialdehyde levels of patients serum samples were determined by High Performance Pleasure Liquid Chromatography (HPLC) and compared with those of malondialdehyde levels in healty human serum samples.

In Our study 20 healty person without any clinical complaint constituted the control group of this study. 20 individuals diagnosed as KKH patients after medical

levels before exercise test were found meaningfully high as 3.06±0.81 nmol/ml in control group and 4.77±0.68 nmol/ml in patient group with statistical analysis (p<0.05). Again malondialdehyde levels after exercise test were found meaningfully high from statistical analysis as 3.38 ± 1.36 in control group and 7.78±0.72 nmol/ml in patient group (p<0.05).

At this work some noteworthy differences were found between patients and healty group results .

A-70

Investigation of Nitric Oxide Metabolism in Preeclampsia

Boynuegri B*, Temiz Y*.***, Ayoglu OB*, Ozdemir BG**, Gumustas MK*

*Cerrahpasa Faculty of Medicine, Department of Biochemistry, **Cerrahpasa Faculty of Medicine, Department of Obstetrics and Gynecology, ***Duzen Laboratories Group

The aim of this study was to evaluate the role of NO (Nitric oxide) metabolism and oxidative stress in endothelial cell disfunction which is blamed for the pathogenesis of preeclampsia.

In this study, 34 preeclamptic, 20 healthy pregnants and 20 healthy women from CTF Gynecology and Obstetric clinic were included. Between 28-36 weeks' gestation, maternal blood sampling for NT (Nitrotyrosine), NO, PCO (carbonyl protein), TBARS (Thiobarbituric acid reactive substances) and SOD (Superoxide dismutase) were drawn. These patients followed up for their pregnancy outcomes. Serum concenrations of NO was estimated using colorimetric assay. SOD activity was determined by the method of SUN et al. Serum PCO and plasma TBARS levels were measured by spectrophotometry and plasma NT levels were measured by enzyme-linked immunosorbent assay (ELISA).

All the results of the patients in preeclamptic group and control group both in healthy pregnant and healthy women were compared.

There were no difference in maternel age, parity, gestational week at blood sampling between the preeclamptic group and the healthy pregnant group, but a significant difference in systolic and diastolic blood pressure, in the uric acid levels and platelet counts at the time of hospitalization.

According to the findings from our study; NT, NO, PCO and TBARS levels were significantly increased in the preeclamptic group, while erytrocyte SOD activity levels were decreased (p<0.001). Besides, all the parameters were significantly different between healty pregnants and healty individuals (p<0.001).

Increased NO, NT levels and decreased SOD activity suggest increased peroxynitrite formation. Beside this, increased PCO

and TBARS levels also give support that there is an increased oxidative stress in preeclampsia. We speculate that formation of peroxynitrite and oxidative stress can be the cause of anormal activation of the endothelial cells in preeclamptic women and the endothelial disfunction contributes to the pathogenesis of this pregnancy disorder.

A-71

Effects of the Short and Long Term Oral Garlic Extract Supplementation on Lipid Levels in Healthy Subjects

İşleten F, Köseoğlu M, Atay A, Deveci K

Department of Clinical Biochemistry, Ataturk Training and Research Hospital, Izmir

It was mentioned that garlic has therapeutic effects especially on cardiovascular system beside its anticancerogenic and antimicrobial effects and supports the healthy lives. Results of reports on antilipemic effects of garlic are conflicting. It was performed a prospective study to examine the effects of garlic on blood lipid levels.

It was enrolled 17 healthy subjects (10 men, 7 women) in our hospital. The age range was 23-42 years. Participants of study were questioned about their smoking status. Total cholesterol, HDL cholesterol, LDL cholesterol, triglycerid, apolipoprotein A and B levels were determined usıng turbidimetric method. All subjects have normal range of basal lipid levels. They were supplemented by 4 garlic extract tablets which has 66 mg garlic per tablet. Blood samples were taken at 3rd h after garlic supplementation. All subjects took every day this amount of garlic. Blood samples were also taken at 15 and 30 day after and analysed. Statistical analysis was performed by Wilcoxon test using SPSS/Version 11.0 (SPSS Inc, Chicago) for Windows XP program.

It was observed that total cholesterol levels have no significant changes in short term after garlic supplementation. However there was a statistically unsignificant (p=0.16) slight decrease at 15th and 30th day . It was found no significant changes (p>0.05) of HDL and LDL cholesterol, triglycerid, apolipoprotein A and B after a month.

It was concluded that maybe garlic has different mechanisms of action for those therapeutic effects on cardiovascular system, but has no effect on lipid levels. In this point of view, other investigations which include different mechanism pathways also in hyperlipidemic individuals may be performed.

Key Words: Garlic, lipids.

A-72

The Relationships Between Low Serum Testosterone Levels and Lipid Profile in Men with Coronary Artery Disease

Arslan Şentürk B*, Üstüner F*, Aksu S*, Deveci S**

*Atatürk Training Hospital, Department of Biochemistry and Clinical Biochemistry, **Atatürk Training Hospital, Department of Cardiology

The prevalence of CAD is much higher in men than in women and sex hormones might play a role in these differences through their influence on the lipid profile. However, the role of endogenous sex steroids in the association between male gender and cardiovascular risk remains unclear. The aim of this study was to evaluate the relationships between serum levels of severel sex hormones and lipid profile in the men with CAD.

We determined serum total testosterone (TT), free testosterone (FT), estradiol (E2), total cholesterol, triglyseride, HDL - cholesterol (HDL-C), LDL - cholesterol in 46 male patients with angiographically-defined stable coronary artery disease and in 30 healthy and age -matched controls. Levels TT/E2 ratio were calculated.

The patients with CAD presented significantly increased values of total cholesterol, triglyseride, LDL-cholesterol levels (p=0.01, p=0.001, p=0.022, respectively) and decreased values of HDL-C (p=0.033) and decreased levels of FT and TT/E2 ratio with respect to the control group (p=0.009, p=0.027, respectively). Serum TT levels were also lower in patients group compared with control subjects but the difference was not statistically significant. The correlations between hormones levels and metabolic parameters were also calculated. Serum concentration of TT (p=0.001, r=0.408) and TT/E2 ratio (p=0.036, r=0.241). were associated positively with HDL-C. Additionally TT/E2 ratio values were found to be negatively correlated with triglyseride levels (p=0.019, r=-0.269). The results in the present study suggest that low plasma TT level may be a risk factor for CVD, which may relate to the influence of plasma lipoprotein metabolism.

A-73

Importance of Plasma Homocysteine in Chronic Heart Failure

Bugdayci G* , Serin E*, Ergüzel N**, Arınç H**

*Department of Biochemistry, Izzet Baysal Faculty of Medicine, Abant Izzet Baysal University, Bolu, Turkey, **Department of Cardiology, Izzet Baysal Faculty of Medicine, Abant Izzet Baysal University, Bolu, Turkey

Chronic heart failure (CHF) is a major public health problem causing considerable morbidity and mortality. Plasma homocysteine (Hcy) has been suggested as a newly recognized risk factor. We hypothesized that plasma Hcy is associated with clinical and echocardiographic signs of CHF as well as with N-terminal pro-B type natriuretic peptide (NT-proBNP), suggesting a relationship between Hcy and CHF. In this study, 12 patients (60.25±16.01 years, 50% men) with CHF and 12 healthy controls (50.50±11.02 years, 50% men) were examined. All participants had a physical examination, venous blood sampling, and echocardigraphy were performed. Total Hcy was measured with chemiluminescence enzyme immunoassay in EDTA-plasma of all patients by an Immulite 2000 (Diagnostic Products Corporation). Serum NT-proBNP was measured with chemiluminescence immunoassays on an Elecsys 2010 analyzer (Roche Diagnostics). All patients investigated were classified according to New York Heart Association (NYHA) classification; class I (n= 3), class II (n=2), class III (n=6), and class IV (n=1). The plasma Hcy level of CHF patients (15.5 ± 7.5 μmol/L) was higher than that of the control group (9.9 ± 2.1 μmol/L, p=0.038). The serum NT-proBNP level of CHF patients (1656 ± 1396 ng/L) was significantly higher than that of the control group (38±27 ng/L, p=0.0001) . We observed positive correlations between plasma Hcy and NYHA classification (r=0.657; p=0.016). In addition, we found positive correlation between serum NT-proBNP and NYHA classification

(r=0.614, p=0.034). In our study, we showed the relationship between plasma Hcy, serum NT-proBNP and NYHA in patients with chronic heart failure. Further studies are needed to analyze the relationship of this clinical classification (NYHA) with laboratory results in patients with CHF.

A-74

LDL Sizes in Children

Cihan M*, Tsukamoto H***, Murata M**, Serdar MA*, Erbil MK*

*Gulhane School of Medicine, Department of Biochemistry, **Keio University, Department of Clinical Chemistry

Background: LDL is responsible for atherosclerosis.Also LDL size is important in Coronary Heart Diseases

Objective: To measure LDL sizes in children

Methods: We modified the original Krauss Method (Polyacrylamide Gel Electrophoresis). New method is more quick and more accurate than original Krauss Method.

Results: All over the group the LDL size is 26,3 ± 2,5 nm. In obes group LDL size was 25.2 ± 1.1 nm. and low than normal group: 26.6 ± 0.8 nm.

A-75

A Comparison of Calculated Versus Direct Measurement of LDL-Cholesterol Level

Singer R*, Atalay S**, Kurçenli S**, Yekrek MM**

*Zeynep Kamil Hospital, **Haydarpaşa Numune Train. and Res. Hospital, Department of Clin.Chemistry

Since elevated LDL-cholesterol is identified as the primary target of cholesterol lowering therapy, accurate measurement of LDL-C is very important.. In this study, the analytical performance of two direct homogenous LDL-C assays were evaluated and the LDL-C values obtained from these assays were compared to the Friedewald formula. Calculated LDL-C was derived using the Friedewald formula and direct LDL-C(dLDL-C) was determined by the Vitros and Sentinel dLDL-C asssays. Within-run and total CVs were evaluated accorrding to the NCCLS EP-5A protocol. 122 fresh serum samples were evaluated with the two direct homogenous LDL-C assays. The mean LDL-C values for the Sentinel dLDL-C assay and Vitros dLDL-C assay were 152.44±44.26 mg/dL and 146.67± 45.20 mg/dL, respectively. The mean LDL-C value was 140.81±40.71 mg/dL for the Fridewald formula. The Sentinel dLDL-C method (r=0.934) and the Vitros dLDL-C method (r= 0.936) correlated highly with the Friedewald formula, but there was a statistically significant overestimation of LDL-C values with both homogenous assays (p=0,000). Within-run coefficient of variation (CV) was less than %2 for both homogenous assays. The total CV was less than %2 for the Sentinel assay whereas it varied between 3.69%-4.80% for the Vitros dLDL-C assay. In conclusion, a significant overestimation was found with both dLDL-C assays when compared to the Friedewald formula. Vitros dLDL-C assay has not met the NCEP Adult Treatment Panel (ATP) III requirements for LDL-C testing for precision (<%4).

A-76

Small Dense LDL-Cholesterol Levels Determined by a Simple Precipitation Method

Singer R*, Atalay S**, Kurçenli S**, Yekrek MM**

*Zeynep Kamil Hospital, **Haydarpaşa Numune Train. and Res. Hospital, Department of Clin. Chemistry

Earlier studies have identified small dense LDL to be associated with coronary heart disease. In this study, we aimed to measure small dense LDL-C in samples with varying cholesterol and triglyceride concentrations and to investigate the relationship between small dense LDL-C levels and serum total cholesterol, triglyceride, HDL-C, Apo-AI and Apo-B concentrations. Heparin (150 U/ml) and magnesium chloride (90 mmol/L) were used to precipitate lipoproteins of density <1.044 g/mL and the LDL-C content of the supernatant was determined by the Sentinel homogenous assay in 118 samples. The mean sdLDL-C value was 45.93±23.02 mg/dL. The difference between male and female patients was not statistically significant. Samples were categorized into four groups: Normolipidemia, hyper LDL-C (LDL-C ≥130 mg/dL), hypertriglyceridemia (triglyceride ≥150 mg/dl) and combined hyperlipidemia (LDL-C ≥130 mg/dL, triglyceride ≥150 mg/dL). Combined hyperlipidemia showed the highest small dense LDL-C level. sdLDL-C levels were most significantly correlated with serum LDL-C (r=0.920) and apo B (r=0.903). sdLDL-C levels were also positively correlated with serum total cholesterol (r=0.798), and triglyceride (r=0.542), whereas there was an inverse correlation with HDL-C (r=-0.187) and apoA-I (r=-0.243). These results suggest that measurement of sdLDL-C by this simple precipitation method is useful to evaluate atherogenic risk.

A-77

HDL Subclasses and HDL-Cholesterol in Coronary Artery Disease

Atalay S*, Turhan B*, Yurttagül K*, Gürkan U**, Aksoy Ş**, Özsavcı D*** , Uras F***, Emerk K****

*Haydarpasa Numune Train. and Res. Hospital, Clin. Chemistry Dept, **Dr. Siyami Ersek Train. and Res. Hospital, Cardiology Dept., Marmara University, ***Faculty of Pharmacy, ****Faculty of Medicine, Dept. of Biochemistry

Coronary Artery Disease (CAD) is generally diagnosed at a stage when the organ is affected and thus a total recovery can not be achieved. Currently the treatment, which targets reducing the LDL-C, is being carried out. Whereas, at least one third of the patients who suffer from AMI have LDL-C levels less than 130 mg/dl. So this target level is not sufficient by itself and new targets should be defined. If some markers with high diagnostic power and new specific risk factors are found a total recovery could be achieved with primary treatment.

In this study, total of 291 cases, each were defined as CAD(-) and (+) by angiographic methods are studied. None of them had any antihiperlipidemic treatment at least for the last 3 weeks. CAD(+) cases were divided into two groups: mild and severe according to their severity and extent using Gensini Score. The HDL subclasses were also separated as large (HDL-L), medium (HDL-M) and small (HDL-S) using polyacrylamide gel electrophoresis. The comparison between the female and male with CAD (-), mild CAD(+) and severe CAD(+) showed no significant difference at

the distribution of HDL-C and HDL subclasses. Mean levels in mg/dl at CAD(-) male and female patients were determined to be; HDL-L: 13.7 ± 5.8 and 17.4 ± 5.7, HDL-M: 22.6 ± 4.8 and 25.8 ± 5.3, HDL S: 5.8 ± 2.2 and 6.4 ± 2.4, respectively. Significant reduction at large HDL subclass compared to CAD(-) cases was observed only when no sex distinction were made for CAD (-) and CAD(+) (p=0.038). Mean HDL-C levels at CAD(-) male and female patients were 42±8.1 and 50±10.3 mg/dl, respectively. Apolipoprotein A-I/B ratio was the best diagnostic marker as the lipid parameters for differentiation between the CAD(-) and CAD(+) cases.

A-78

The Role of Homocysteine in Progress of Restenosis after Percutaneous Transluminal Coronary Angioplasty

Erkal FA*, Saydam G**, Yücel M***, Kütük E**

*Kemer State Hospital, Antalya, **Turkish High Specialization Hospital, Ankara, ***Başkent University Hospital, Ankara

Coronary artery disease is one of the most important mortality reasons; its therapy, which has gained worldwide acceptance, is percutaneous transluminal coronary angioplasty (PTCA). Otherwise the most significant obstacle for this successful treatment is performing the restenosis after 3-6 months. There are many risk factors under research to determine the mechanism of restenosis after successful PTCA. Homocysteine is one of these risk factors that are investigated as a reason of restenosis just like for CAD. Hcy is an aminoacid including thiole as a sub product during the metabolism of methionine as one of essential aminoacids. Deficiency of enzymes in the metabolism of Hcy and vitamins as cofactors of these enzymes causes the increase in the level of Hcy. It is reported that this increase is one of the reasons of atherosclerosis and thrombosis. In this study we aimed to determine the importance of total homocysteine levels that had restenosis after successful PTCA. In our study, we included 30 patients who had restenosis that we had determined with angiography after successful PTCA and 37 patients who were in control group with PTCA but no need of angiography and had no restenosis. All of these patients were followed in the Cardiology Clinics of Turkish High Specialization Hospital. We determined total homocysteine concentrations by fluorescent polarization immunoassay (FPIA) in instrument of Abbott IMx. Total homocysteine levels were measured as 17.3 12 μmol/L in restenosis group and 17.3 10 μmol/L in no restenosis group. The difference between restenosis and no restenosis group result was not found statistically significant (p=0.734). If we think that these patients were with CAD, the Hcy levels were higher than the borderline of the upper limits (higher than 15 μmol/L). We emerged from this study, the high levels of Hcy is one of the risk factors of atherosclerosis, but have no effect in the progress of restenosis after successful PTCA.

A-79

Clinical Importance of Lipoprotein (a) Levels in Progress of Restenosis after Percutaneous Transluminal Coronary Angioplasty

Erkal FA*, Saydam G**, Yücel M***, Kütük E**, Topuzoğlu G****

*Kemer State Hospital, Antalya, **Turkish High Specialization Hospital, Ankara, ***Başkent University Hospital, Ankara, ****Aydın State Hospital, Aydın

Coronary artery disease is one of the most important mortality reasons; its therapy, which has gained worldwide acceptance, is percutaneous transluminal coronary angioplasty (PTCA). Otherwise the most significant obstacle for this successful treatment is performing the restenosis. There are many risk factors under research to determine the mechanism of restenosis after successful PTCA. Lipoprotein(a) [Lp(a)] is one of these risk factors that are investigated as a reason of restenosis just like for CAD. Lp(a) resembles Low Density Lipoprotein (LDL) as structure, function and metabolism. It only consists highly glycolized apolipoprotein(a) binds to apolipoprotein B100. In this study we aimed to determine the importance of Lp(a) levels who had restenosis after successful PTCA. In our study, we included 30 patients who had restenosis that we had determined with angiography after successful PTCA and 37 patients who were in control group with PTCA but no need of angiography and had no restenosis. All of these patients were followed in the Cardiology Clinics of Turkish High Specialization Hospital. We determined Lp(a) concentrations by micro ELISA method. Lp(a) concentrations were measured as 48,3 ± 46,8 mg/dl in restenosis group and 32.3 ± 38.8 mg/ dl in no restenosis group. Although the difference between restenosis and no restenosis group results was significant it was not found statistically meaningful (p=0.065). The reason of this statistical result is the insufficient number of patients and nonhomogenized distribution of Lp(a) in each study groups. We emerged from this study, the levels of Lp(a) have no effect in the progress of restenosis after successful PTCA.

A-80

Evaluation of Dyslipidemia, Inflammatory State and Angiotensin-Converting Enzyme I/D Polymorphism in Peripheral Vascular Disease

Salmayenli N*, Başar Y**, Aksoy M**, Seçkin Ş***, Aydın M****, Özkök E****

*Department of Clinical Biochemistry, Istanbul University, Istanbul Faculty of Medicine, **Department of General Surgery, Istanbul University, Istanbul Faculty of Medicine, ***Department of Biochemistry, Istanbul University, Istanbul Faculty of Medicine, ****Istanbul University Institute of Experimental Medicine, Research Department of Neuroscience

Peripheral vascular disease (PVD) that is an atherosclerotic disease is associated with clinical cardiovascular risk factors. Inflammation , the key pathogenic component of atherosclerosis, promotes thrombosis. Dyslipidemia, associated with high levels of triglycerides and low concentrations of high density lipoproteins (HDLs), contributes to a proinflammatory state. Proinflammatory state is recognized clinically by elevations of C-reactive protein (CRP). However, high levels of serum angiotensin-converting enzyme in circulation may cause to vascular wall thickening and atherosclerosis. The development of vascular diseases is associated with the interaction of multiple genetic factors. It is suggested that an insertion/deletion (I/D) polymorphism is related to atherosclerosis. The purpose of our study was to investigate lipid profiles, hs-CRP levels and ACE genotype frequencies in patients with PVD and to show significance of these parameters in diagnosing of vascular disease 78 patients (54.91±10.97 years)) who are admitted to the Depatment of General Surgery, Istanbul University, Istanbul Faculty of

Medicine were included in the study. The control group also consisted of 73 healty adults (48.76±10.63 years). We found higher triglyceride levels in patients than those of the controls.HDL cholesterol levels in patients were significantly lower than the control group. hs-CRP levels were also found to be higher in patients than those of the controls. Serum ACE activities were significantly higherin patients with PVD compared to those of the controls. The frequencies of ACE DD, II and ID genotypes among the patients were 28.2%, 18%, 53.8%, respectively. In addtion, in patients with II genotype than those with ID and DD has lower ACE activity.

In conclusion, lipid levels , a significantly risk factor for atherosclerosis may be useful in determining of PVD. In addition, hs-CRP, a marker of inflammation that is a key pathogenic component of atherosclerosis is an important marker in predicting of PVD. We think that hs-CRP together with lipid profile may be more sinificant in predicting in PVD. On the other hand, our results suggest that ACE I/D polymorphism may be a risk factor for PVD.

A-81

Is the Measurrement of LDL Dimensions Necessaryin Coronary Syndrom and Type II DM Patients?

Murat C*, Muhittin S*, Tsukamoto AH****, Mitsuru M****, Kano T***, Erbil KM**

*Corlu Military Hospital, Laboratory Service, Corlu Tekirdag, **Gulhane Military Medicine Academy, Biochemiestry and Clinical Biohemistry, Etlik, Ankara, Turkey, ***Hamamatsu City University, Japan, ****Keid Universitesi, Laboratory Service, Tokyo, Japan

Intent: The necessity of the measurement of LDL with the intention of investigating risk factors in coronary syndrom and Type II DM patients.

Method: The serums which were obtained from the samples were measured using the Modifiye polyacrilamid gradyent jel electroforezi method .

Result: It was determined that it is necessary to measure LDL dimensions in terms of determinig risk factors in Coronary syndrom and Type II DM patients .

Key Words: LDL Ployacrylamid jel, electroforz, coronary syndrom, Type II DM dimension, cholesterol, gradgent, risk factor, MI.

A-82

Cardiovascular Complication Risk Assessment With LDL-C/Apo B And HDL-C/Apo A-I Ratios in Type 2 Diabetes Mellitus Patients

Gedikbaşı A*, Atalay S**

*The Ministry of Health, Bakırköy Dr.Sadi Konuk Education and Research Hospital, javascript:ZE('education') **The The Ministry of Health Haydarpasa Numune Education and Research Hospital, Dept. of javascript:ZE('education') Medical Biochemistry

Aim: Lipoprotein metabolism abnormalities play an important role for the development of cardiovascular complications, which is the major factor for mortality in Type 2 diabetics. In our study our aim was to investigate the association between lipid metabolism abnormalities and cardiovascular complications in patients with Type 2 diabetes.

Methods: 43 cases diagnosed as CAD (+) constituted the patient group and 30 cases with no CAD diagnosis constituted the control group in accordance with the coronary angiography performed in the last 6 months. The cases with no antihyperlipidemic treatment were type 2 diabetes Mellitus (DM) and mean HbA1c values were % 7.5±0.5 ve %7.6±0.7 respectively and metabolic regulations were correlated. Total cholesterol, triglyceride, LDL-C and HDL-C, apolipoprotein A-I (apo A-I), and apolipoprotein B (apo B) and lipoprotein (a) levels were measured in the fasting serums of all the cases (n=73) using modular system (Roche).

Results: Within the groups, no statistically significant difference were found between the mean values of LDL-C, HDL-C, total cholesterol, lipoprotein (a), triglyceride, Apo A-I ve Apo B (p>0.05). Although not significant, means of the triglyceride levels for the patients with CAD were higher than patients with no CAD. LDL-C/Apo B and HDL-C/ApoA-I ratios were significantly lower in patients with CAD (p<0.05). While the mean values for the first ratio for the CAD and no CAD patients were 1.25 and 1.43 (p=0.045) respectively; the values for the second ratio were 0,31 and 0.33 (p=0.039) with the same order.

Conclusion: LDL-C/ApoB ratio, which could represent small, dense LDL subgroup, was significantly lower in the cardiovascular complications developed group. It is concluded that LDL-C/ApoB and HDL-C/ApoA-I ratios may be used to define CAD risk in patients with no high LDL-C levels and no low HDL-C levels.

A-83

Relationship Between Pro-Bnp Levels and Predictive Infrarct Area in Echocardiography in Acute Coronary Syndrom

Sağlam İ*, Eren N*, Öztekin E**, Turgay F*, Yücel N*, Aslan B*, Ciğerli Ş*, Ayyıldız H*

*Sisli Etfal Training and Research Hospital, Biochemistry and Clinical Biochemistry Department, İstanbul, Turkey, **Sisli Etfal Training and Research Hospital, Biochemistry and Coroner Department

In this study, we examined the relationship between proBNP levels and infarct areas detected by Echocardiography in patients hospitalised with the diagnosis of acute coronary syndrome without previous MI history.

A total of 63 acute coronary syndrome patients (18 STEMI, 33 NSTEMI, 12 USAP) hospitalised incoronary intensive care unit of Şişli Etfal Education and Resarch Hospital, were included in the study. Blood samples were taken 4-12. hours after the beginning of the pain. CK-MB levels of these samples were measured by chemical immunoinhibition method in Roche Modular DP autoanalyzer using Roche reactives. Blood samples for Troponin I measurement were taken at the beginning and 72. hour, Tn I were measured by chemiluminescent method in Access immunoassay analyzers using Beckman coulter reactives. Plazma pro-BNP levels were measured between 12-24. hours after on set of pain. In Roche Elecsys 2010 analyzers electrochemiluminescence immunoassay method with Roche-Diagnostic NT- proBNP reactives. İn the fifth day of the hospitalisation Echocardiography examination with General Electric Vivid 3 Echocardiography device in left lateral decubitis position had been performed in all patients.

In this study; serum proBNP levels in ACS patients were found significantly higher than the reference values given by the manifacturer (0-150 pg/ml). There was not any significant difference between the beginning pro-BNP values and fifth day LVEF values. There was a positive correlation between pro-BNP levels and DHSI. DHSI is a more sensitive parameter than left ventricule global ejection fraction in detecting the witdh of the infarct area. In conclusion, ın ACS patients the beginning proBNP levels were found related to the witdh of the infarct area. The higher proBNP levels correspond to the wider infarct areas

A-84

Investigation of Paraoxonase and Arylesterase Activities in Coronary Artery Disease

Atalay S*, Uzun H**, Genc H**, Yurttagul K*, Uras F***

*The Ministry of Health, Haydarpasa Numune Training and Research Hospital, Dept. of Clinical Biochemistry; ** Cerrahpasa Faculty of Medicine, University of Istanbul; ***Faculty of Pharmacy, University of Marmara, Dept. of Biochemistry, Istanbul

Between high-density lipoprotein (HDL) cholesterol level and large HDL particles (HDL2, LpA-I) there is an inversely proportional relationship with the progress of coronary artery disease (CAD). On the other hand, between smaller HDL particles (HDL3, Lp A-I/A-II) and progress of CAD there is a directly proportional relationship. Paraoxonase1 (PON1) is a HDL-associated serum enzyme that protects lipoproteins from oxidative modifications. The aim of the study was to investigate PON1 (paraoxonase) and PON1 (arylesterase) activities and oxidative/anti-oxidative status by measuring the malonyldialdehyde (MDA) levels as well as HDL subclasses and their correlation with the extent and severity of CAD. Serum lipid parameters, MDA levels and PON1 activities has been measured for the cases, who had CAD(-) (n=76) (Gensini Score=0) and CAD(+) (n=81) [mild CAD(+) (Gensini Score=0.01–19.99) (n=42) and severe CAD(+) (Gensini Score ≥ 20) (n=39)] which were angiographically classified with Gensini Score. Between serum HDL-C and HDL subclasses [(large (HDL L), intermediate (HDL IM), small (HDL S)] (Lipoprint, Quantimetrix), PON1 (paraoxonase / arylesterase) activity and MDA levels and the level of CAD no significant differences were found. On the other hand, only on women patients statistically significant differences were found between apolipoprotein B (p=0.016), triglyceride (p=0.014) and cholesterol of very low density lipoproteins (VLDL-C) (p=0.009) levels and the severity and extent of CAD. In the literature, contrary to our findings, in cases with CAD (+) compared to the CAD (-), it is reported that there is an increase in lipid peroxidation, a decrease in serum PON1 activity, an increase in the small particle fractions of the HDL subclasses and a decrease in the large particles. However PON1 genotyping was not performed in this study. It is possible that even small differences in PON1 genotype distribution or the differences between the separation procedures for the HDL subclasses could have led to these different results between the studies. Further studies are required to determine whether there is a diagnostic and prognostic value of HDL subclasses, MDA levels or paraxonase activity in patients with CAD.

A-85

Inflammation Markers in Hypertensiv Patients

Balci H*; Uzun H**, Curgunlu A***, Kalender B****, Bolayirli IM*, Gunay C*****, Hacibekiroglu M*; Karter Y***

*Central Research Laboratory, Cerrahpasa Faculty of Medicine, University of Istanbul, Department of Biochemistry**, Department of Internal Medicine***, Department of Public Health*****, Cerrahpasa Faculty of Medicine, University of İstanbul, Department of Internal Medicine****, Faculty of Medicine, University of Kocaeli

Despite evidence of the importance of reducing blood pressure (BP), hypertension continues to be one of the most commonly occurring diseases in humans. Human fetuin-A (alpha-2-Heremans Schmid glycoprotein), a protein produced by the liver and secreted into serum in high concentrations, is a major serum-based inhibitor of vascular calcification. Fetuin-A, 66-kD negative acute phase glycoprotein, the aim of this study was to evaluate serum fetuin-A, interleukin-6 (IL-6), high-sensitivity C-reactive protein (hs-CRP) levels in sustained, white coat and renal hypertensives and compare with normotensives. In order to evaluate the relationship between the inflammation markers and blood pressure, this time, correlations among this parameteres and blood pressure values were investigated. 22 essential hypertensive subjects (EH) (M/F: 4/18) aged 51.59 ± 10.01 years, 22 white coat hypertensive (WCH) subjects (M/F: 4/18) aged 51.4±10.16 years, 22 renal hypertensive (RH) subjects (M/F:7/15) aged 55.45±11.46 years and 22 normotensive control subjects (M/F:4/18) aged 49.6±8.26 years were recruited in this study. Serum fetuin-A, IL-6, hs-CRP, levels were measured by enzyme-linked immunosorbent assays. Systolic and diastolic blood pressure (BP) did not differ between the EHT and RH patient groups. Levels of serum fetuin-A, IL-6 and hs-CRP did not differ between the EH and WCH. Fetuin-A an CRP levels are highest in RH. In contrast, this parameters in normotensives were significantly lower than those in patients. However, no significant relationships were observed between fetuin-A, Il-6, CRP levels and blood pressure in hypertensive subjects. The present study first demonstrates the independent impact of fetuin-A on blood pressure in hypertensive subjects. Further study is needed to clarify the relationship between fetuin-A, IL-6, and CRP levels or cardiovascular damage/inflammation in patients with hypertensive subjects. Fetuin-A and CRP could be a modulator of inflammation in RH.

A-86

The Tests Used in Prenatal and Postnatal Diagnosis of Hemoglobinopathies

Çürük MA

Department of Biochemistry, Faculty of Medicine, Çukurova University, Adana, Turkey

Hemoglobinopathies are the most common genetic diseases in the world. Sickle cell anemia beta thalassemia and constitute the majority of hemoglobin disorders in Turkey. Beta thalassemia is seen throughout the country but sickle cell anemia is prevalent in Çukurova region, Southern Part of Turkey. The overall frequency of beta thalassemia is 2 per cent. Sickle cell anemia is very common in Çukurova and prevalent among Eti-Turks living in the

region. The frequency of sickle cell trait (HbAS) ranges from 0.5 to 44.2 per cent. In additon to HbS, more than 42 hemoglobin variants were seen in Turkey. A couple with beta tahalassemia or sickle cell trait has 25 per cent probability of having an affected baby in each pregnancy. The prevention of hemoglobinopathies can be achieved through screening of carriers and prenatal diagnosis. For this reason, 33 premarital screening centers were settled up in cities, where there is a high incidence of hemoglobinopathies, by the Ministry of Health. The accurate diagnosis of carriers is very important for the prevention of hemoglobinopathies. The tests used in the screening program include red cell parameters and Hb analysis. CBC is best determined using Cell Counter. Recently, High Performance Liquid Chromatography (HPLC) system is commonly used to examine beta thalassemia carries and abnormal hemoglobins. It is optimized to quantitate HbA2, HbF and to detect the common hemoglobin variants including HbS, E, D in the same step. Automated HPLC has proved to be a powerful technique for hemoglobin separation. Screening procedures for beta thalassemia and abnormal hemoglobins should identify all carriers avoiding false negative results. The characterization of the parents' mutations is the second step for performing the prenatal diagnosis of fetuses at risk. For this reason, mutation types of ,-thalassemia must be characterized before pregnancy. Nowadays, in addition to PCR based manuel procedures; Amplification Refractory Mutation System (ARMS), Restriction Fragment Length Polymorphism (RFLP) and DNA sequencing technique, otomatized equipments (PCR based) are commonly used for identification of mutations. More than 42 abnormal hemoglobins and 40 beta thalassemia mutations were characterized in Turkish population. Therefore, it is very important which PCR procedure should be used.

A-87

Changes in Hematological Parameters During Prolonged Intermittent Fasting

Topkaya AE*, Aksungar FB**, Ozakkas F*

*Department of Microbiology, Maltepe University, School of Medicine, İstanbul, Turkey, **Department of Biochemistry, Maltepe University, School of Medicine, İstanbul, Turkey

Ramadan, is a religious month during which all the Muslims refrain from eating and drinking during the daylight hours for a month. Although in recent years several studies were undertaken to reveal the effects of Ramadan fasting on healthy subjects, there are conflicting results and the studies are not always comparable. In the present study we have evaluated the effects of intermittent fasting on the hematological parameters in healthy male and female subjects during Ramadan. Fifty-five healthy volunteers (27 male, 28 female) were included in the study. Blood sampling was done 10 days before Ramadan, at the last week of Ramadan and three weeks after Ramadan. Complete blood counts are performed on anticoagulated venous blood samples. Iron (Fe), total iron binding capacity (TIBC) were measured in serum samples. Red blood cell (RBC), hemoglobin (Hb), hematocrite (Hct), mean corpuscular volume (MCV) levels together with serum iron levels

were lower during the fasting period in both gender. Platelet (PLT) number and mean platalet volume (MPV) were significantly lower during Ramadan and PLT number stayed depleted three weeks after Ramadan while MPV returned to pre-fasting levels, in both gender. During Ramadan fasting, subjects have lower RBC number and Hb levels which may affect the daytime performance of the fasting subjects and fasting population must be encouraged to consume more iron containing foods. However, low MPV levels during Ramadan seems to be an advantage on atherothrombosis.

A-88

Usefulnes of Coagulation Tests in Preeclampsia

Günaydın S*, Peker H**, Arık H***

*Zeynep Kamil Maternity and Child Hospital ,Biochemistry Laboratory, **Gediz Goverment Hospital / Kütahya, Maternity Department, ***Zeynep Kamil Maternity and Child Hospital, Maternity Department

Inquire the conveniency of diagnosis purposed PT, aPTT and fibrinogen examinations to the women who are preeclamptic or who are supposed to have preeclampsia.

Totally 184 events, 83 of which were diagnosed preeclampsia and 101 normal pregnant women were examined. According to the clinic condition and laboratory results in our research, 31 of them were mild 52 of them were severe preeclamptic. In our investigation; PT, aPTT, fibrinogen and platelet levels were compared between mild and severe preeclamptic and control groups.

aPTT levels weren't significantly difference in mild, severe preeclampsia and control group patients ($p>0.05$). PT-INR levels indicated significant difference in mild, severe preeclampsia and control groups in statistic results ($p<0.01$). While PT-INR levels indicated significant difference between mild, severe group and control group ($p >0.05$); PT-INR levels of severe group were found to be significant difference compared to control group ($p<0.01$). There were significant difference between groups of fibrinogen levels as statistically ($p<0.001$). The fibrinogen level of severe group was found low in level $p<0.05$ compared to mild group, and low in level $p<0.001$ compared to control group. There wasn't significant difference between fibrinogen levels of mild and control groups ($p>0.05$). There was significant difference between platelet levels of the groups as statistically ($p<0.001$). The platelet levels of severe group was found significantly decrased compared to mild preeclampsia and control groups ($p<0.001$). There wasn't significant difference between the platelet levels of mild preeclampsia and control groups ($p>0.05$). In the patients which have abnormal aPTT and fibrinogen results, low platelet proportions were significantly decreased as statistically.

Our research shows that making aPTT, PT, fibrinogen tests to the patient who have normal platelet levels, who are supposed or known to be preeclamptic is unneccesary. But in the patients who have low platelet, aPTT and fibrinogen levels may be evaluated.

Key Words: Preeclampsia, PT, aPTT, fibrinogen, platelet.

A-89

Plasminogen Activator System Components in Hypertension

Uzun H*, Kalender B**, Balci H***; Curgunlu A****,
Aydın S*, Şimşek G***** , Karter Y****

*Department of Biochemistry, ***Central Research Laboratory,
****Department of Internal Medicine, *****Department of Physiology,
Cerrahpasa Faculty of Medicine, University of İstanbul, **Department of
Internal Medicine, Faculty of Medicine, University of Kocaeli

Hypertension has long been recognized as one of the principal risk factors for cardiovascular disease. The aim of our study was to assess the impact of hypertension on fibrinolytic balance and endothelial function by measuring plasma levels of plasminogen activator inhibitor-1 (PAI-1), tissue plasminogen activator antigen (tPA), tPA/PAI-1 complex and fibrinogen. Four parameters were determined

22 essential hypertensive subjects (EH) (M/F:4/18) aged 51.59±10.01 years, 22 white coat hypertensive (WCH) subjects (M/F:4/18) aged 51.4±10.16 years, 22 renal hypertensive (RH) subjects (M/F:7/15) aged 55.45±11.46 years and 22 normotensive control subjects (M/F:4/18) aged 49.6±8.26 years. Plasma PAI-1, tPA, tPA/PAI-1 complex levels were measured by enzyme-linked immosorbent assays. Systolic and diastolic blood pressure (BP) did not differ between the EHT and RH patient groups. The four groups were not different with respect to age, gender, smoking habits, BMI. Subjects with EH, RH and WCH were found to have increased plasma levels of PAI-1, tPA tPA/PAI-1 complex and fibrinogen compared to controls. No fibrinolytic variable was associated with blood pressure in hypertensive subjects. A possible impairment of fibrinolysis may act as a cardiovascular risk factor in hypertension. This prospective study shows that PAI-1, tPA, tPA/PAI-1 complex, novel fibrinolytic markers, is independently associated with the development of hypertension. This finding supports the hypothesis that disturbances in fibrinolysis precede a cerebrovascular event. Hypertension may be associated with impaired fibrinolysis.

A-90

Assesment of Paraoxonase Activities in Patients with Iron Deficiency Anaemia

Köycekaş Eşkin T*, Öztürk H**, Orçun A***, Koldaş M**, Nartop
F*, Basınoğlu F**

*Göztepe Research and Education Hospital , Department of Biochemistry,
**Haseki Research and Education Hospital , Department of Biochemistry,
***Kartal Dr Lütfi Kırdar Research and Education Hospital, Department of
Biochemistry

Paraoxonase-1 (PON1) is a high-density lipoprotein (HDL) associated esterase enzyme that has antioxidant characteristic. PON-1 has three enzyme activities which are paraoxonase, arylesterase and dyazoxonase. We aimed to determine serum PON-1 levels in patients with iron deficiency anaemia (IDA) whether there is an association between the development of atherosclerosis and PON-1 activity in patients with IDA. The study included 56 patients with IDA who applied at Goztepe Research and Education Hospital, Department of Internal Medicine between May 2006 and June 2006 and also included 30 non-anaemic

healthy volunteers as control group. Serum PON-1 levels was determined by a spectrophotometric tecnique. SPSS for Windows ver. 11.5 is used for statistical analysis. In comparison to control group, the mean±SD serum PON-1 levels of the patients with IDA were significantly lower (P<0.001). It is known that lipid peroxidation and oxidative stress raise in anaemic patients. Our results show that PON-1 activity which have antiatherogenic capability, are decreased in patients with IDA. Reduced PON-1 activity may play role in pathogenesis of atherosclerosis through increased susceptibility to lipid peroksidation in patients IDA.

A-91

The Effect of Tube Filling Order on Specific Coagulation Parameters

Serin E, Bugdayci G

Abant Izzet Baysal University, Izzet Baysal Faculty of Medicine, Department of
Biochemistry, Bolu, Turkey

Collecting venous blood using evacuated tubes is a routine procedure widely performed in clinical laboratories. In this system, tube filling order is regulated by NCCLS criteria. NCCLS recommends that if specific coagulation parameters (except PT, aPTT and fibrinogen) are to be tested, then a dry evacuated tube has to be filled before the coagulation tube with citrate. To the best of our knowledge, no research on this topic has been performed before. Citrated coagulation tubes were used twice successively for blood collection in 30 patients for whom routine cogulation tests were ordered. Within 30 minutes both tubes were centrifuged at 2000 g for 10 minutes to separate their plasmas The separated plasmas were immediately placed in eppendorf tubes and stored at -70°C until analysis. P values for comparison of PT, aPTT, fibrinogen, protein C, protein S and plasminogen plasma levels in two tubes were 0.354, 0.112, 0.384, 0.004, 0.000 and 0.784, respectively. P values less than or equal to 0.05 were considered statistically significant. There was no statistically significant difference in PT, aPTT, fibrinogen and plasminogen between the two tubes, whereas there was a statistically significant though clinically insignificant difference in protein C and protein S. Further studies involving larger numbers of patients or patient groups with different pathological conditions or analysis of all coagulation parameters are requied to further elucidate the effect of tube filling order on specific coagulation parameters.

A-92

Mineral Content of Different Types of Bee Pollens

Çolak M*, Kural BV*, Bulut V**, Aliyazıcıoğlu R***,
Kopuz M*, Değer O*, Menteşe A*

*Karadeniz Technical University, Department of Biochemistry, **Karadeniz
Technical University, Department of Chemistry

Bee pollen are extremely high in protein, vitamins and minerals. So rich in nutrients, it has been used as a dietary supplement for centuries to protect the body from disease and especially used to slow the process of ageing. In the precent study, minerals content of three types of bee pollen (Trabzon chestnut, Erzurum Arıbahçe region and mixed (Gümüşhane, Bayburt, Erzurum)) were determined by atomic absorbtion spectrometry. Zinc con-

tent of Trabzon chestnut pollen was found to be higher and copper content was lower than the others. In mixed polen, calcium content was lower and lithium content was higher than in other pollen types. All three types of pollen had same level of magnesium. In conclusion, bee pollens' mineral concentrations strongly depended on botanical and geological origin.

A-93

Mineral Content of Two Types of Royal Jelly

Çolak M*, Kural BV*, Bulut V**, Aliyazıcıoğlu R***, Kopuz M*, Değer O*, Cengiz S*

*Karadeniz Technical University, Department of Biochemistry, **Karadeniz Technical University, Department of Chemistry, ***Karadeniz Technical University, Trabzon School of Health Sciences

Royal jelly, which is secreted from the salivary glands of worker bees, serves as food for the queen beeand all young larvae in the colony. It shorten the development period of the larvae. Humans have been used to provide buoyant energy, and to have therapeutic properties. In the current study, mineral (copper, zinc, magnesium, calcium and lithium) contents of Russia and Bursa royal jellies were determined by atomic absorbtion spectrometry. Magnesium and copper levels were higher but lithium level was lower in Russia royal jelly than Bursa royal jelley. Zinc and calcium level were not different in significant meaning. In both region' royal jelly copper content was found to be very high with respect to other minerals. In conclusion, mineral contents of royal jelly depended on geological origin

A-94

Mineral Content of Different Types of Propolis

Çolak M*, Kural BV*, Aliyazıcıoğlu R**, Gündoğdu A***, Kopuz M*, Değer O*, Barlak Y

*Karadeniz Technical University, Department of Biochemistry, **Karadeniz Technical University, Trabzon School of Health Sciences, ***Karadeniz Technical University, Department of Chemistry

Propolis is a bee product which consists of resins and bee waxes. It has antibacterial, antiviral, antiinflammatory, antifungal, antimold, local anesthetic, antihistaminic, antioxidant and tumor cytotoxicity activities. In the current study, mineral (zinc, magnesium, copper, calcium and lithium) contents of three types of propolis (Karadeniz region, Bayburt and Soğuksu) were determined by atomic absorbtion spectrometry. All mineral levels of Soğuksu propolis were found to be higher than the others. In addition, copper content of Bayburt propolis was higher than Karadeniz propolis. In conclusion, it was seen that mineral contens of propolis were different according to region and types.

A-95

Sample Preperation For Endocrinology Proficiency Testing

Aslan B*, Eren N*, Yücel N*, Yaral A**, Ciğerli Ş*, Koç Öztürk L**

*Sisli Etfal Training and Research Hospital, Biochemistry Department, Şişli, İstanbul, **University of Marmara, Faculty of Dentistry, Biochemistry Department, Nişantaşı, İstanbul

There are very small number of 'proficiency testing' providers in our country, and actually there is not any proceeding program in endocrinology area. In addition, 'proficiency testing programming and practising' is not included in medical education programs, there are difficulties in obtaining proficiency testing test samples, and in our country's economical conditions, importing these products force laboratories into financial difficulties. In this pilot study, we aimed to contribute to proficiency testing practice in endocrinology area, to train our actual and future clinical biochemistry assistants on the subject of 'proficiency testing', and to put into practice the sample preperation for proficiency testing. To this extend, we assessed thyroxin (T4), free thyroxin (FT4), thyroid stimulant hormone (TSH), triiodothyronin (T3) and free triiodothyronin (FT3) tests.

A serum pool of was obtained from samples consisting of negative HIV, Anti HCV, HBs-Ag results measured in microbiology laboratory of our hospital. The particules that could be formed during preperation were removed by centrifugation of the serum pool. Then, it is filtrated at 0.22 μm pore size filter so that as many of microorganisms as possible could be removed. Following filtration the pool was aliquoted into 2 ml samples. These aliquotes were stored at –70°C until the freeze drying process. After lyophilization all samples were labelled and stored at 2-8°C until they are transferred to the laboratories participating to the program.

Homogenity test was performed by testing concerned parameters in 10 randomly selected samples. With the aid of Cochran's test and one-way analysis of variance (ANOVA) test it was shown that the samples were homogeneous.

By the help of homogenity test, the differences between samples were minimized prior to sending to the participating laboratories so that the results were dependent only on the working conditions of these laboratories.

A-96

Diagnostic Value of Urine Pyridinium Cross Bond Levels in the Diagnosis Bone Metastasis in Breast Cancer Patients

Giniş Z, Güçtekin A, Uncu D, Bingöl S, Kirmit A

Ankara Numune Education and Research Hospital

This study was designed to show if urine Pyr (Pyridinoline), Dpd (Deoxipyridinoline) and sBALP (Serum Bone Spesific ALP) levels could be used to diagnose bone metastases in patients with breast cancer, and also to show if there is a correlation between urine Pyr, Dpd and sBALP levels.

We performed this study with 58 breast cancer patients (12 with bone metastases and 46 without any bone metastases) and with 40 control group without any cancer diagnoses. Urine Pyr, Dpd levels were analysed in spot urine with HPLC method.

There was a significant difference between bone metastatic patients and control group patients about Pyr, Dpd and sALP (serum ALP) levels (p=0.000). We evaluated a significant differ-

ence between nonmetastatic patients and control group about urine Pyr, Dpd, Ca++/Cre ratio and serum BALP, ALP levels (p<0.05). There was also a significant difference between metastatic and nonmetastatic patients about urine Pyr, Dpd levels (p=0.001 p=0.02).

According to the ROC analysis, the area under the ROC courve were found to be Pyr=0.81, Dpd=0.72 and sBALP=0.62. The cut-off value of Pyr was found 57 pmol/mmol Creatinin, Pyr sensitivity was found 83.3% and spesificity 52.2%. The cut-off value of Dpd was found 14.8 pmol/mmol Creatinin. Dpd sensitivity was found to be 66.7% and spesificity was found to be 71.7%.

According to this existing bone metastases diagnose Pyr levels has got more important diagnostic value.

We found that urine Pyr and Dpd levels should be used as a metastatic marker to bone in breast cancer patients and also it was shown that urine Pyr has got a more precious diagnostic value rather than Dpd. More investigations are needed to evaluate if higher levels of Pyr and Dpd in nonmetastatic patients revealed us an undiagnosed metastas or a false positive result.

A-97

Unexpected Association: a Positive Correlation Between Ostase and Cortisol in Postmenopausal Woman

Aksungar FB*, Haliloğlu B**, Temelli F**, İlter E**, Mutlu N***, Özden S**

*Maltepe University, School Of Medicine, Department of Biochemistry, **Maltepe University, School Of Medicine, Department of Obstetrics and Gynecology, ***Yeditepe University, School Of Medicine, Department of Biochemistry*

Although loss of bone mineral density due to the estrogen deficiency during menopause is well known, underlying mechanisms are not completely understood and each new study may present new aspects on this subject. Seventy menopausal and 45 premenopausal women were included to the present study and morning blood samples were collected at 7:00-9:00 a.m. None of the postmenopausal women were using hormone replacement therapy. Serum estradiol, FSH, LH, calcium, cortisol, DHEA-S, ostase (bone specific alkaline phosphatase) and C-telopeptid (CTx) levels were measured in all blood samples. Correlations between the measured parameters and also correlations between the measured parameters and age, years since the beginning of menopause and the body mass index were evaluated. After the statistical regression analyses our results showed a positive correlation between cortisol and ostase levels (r=0.42, p=0.01), but there was no correlation between CTx and cortisol levels (r=0.12) in post menopausal woman. In the premenopausal period there were no correlations between those parameters. Serum ostase and calcium levels were positively correlated with age, meanwhile DHEA-S and years since the beginning of menopause were negatively correlated. As a conclusion, although pharmacologic doses of cortisol is known to cause osteoporosis, in the postmenopausal period physiologic doses of cortisol may have positive effects on bone turn over.

A-98

Anthropometric Formulas and Cystatin C Levels for Estimation of Renal Function

Özdemir AV, Uras AR

Vakıf Gureba Teaching Hospital, Department of Clinical Chemistry, Istanbul Turkey

One of the most important indicator of kidney function is glomerular filtration rate (GFR). 24 hours Creatinine Clearance (CRC) is widely used to estimate GFR. Recently some formulas have been developed to calculate GFR, without urine analysis, using serum creatinine, weight, age, sex and race. In this study, the GFR was calculated by the most accepted formulas; Cockroft-Gault (CG) and MDRD (The Modification of Diet in Renal Disease). It was compared to the cystatin C (cysC) which is known as a good renal function indicator. In this study, 67 cases were chosen randomly from patients admitted to our laboratory for CRC. Significant correlation was detected between CRC and GFR (GFRMDRD) calculated by MDRD, and also between CRC and GFR (GFRCG) calculated by CG. (Respectively r=0.80 and r=0.84) While in the group (n=40) whose Body Mass index (BMI) is less than 30 kg/m^2, a good correlation was found between CRC and GFRMDRD (r=0.89) and also between CRC and GFRCG (r=0.91). In the group whose BMI is more than 30 kg/m^2, mild correlations were found. Correlations between GFRMDRD and GRFCG were good for the both groups, r=0.94 for the group BMI less than 30 kg/m^2 and r=0.91 for the group BMI more than 30 kg/m2. For the patients (n=25) who have CRC less then 70 ml/min/1.73 m^2, significant correlation was found both between CRC and GFRMDRD (r=0.84) and also between CRC and GFRCG (r=0.90). For all patients the average serum creatinine level (Scr) was 1.45 mg/dl and the average CysC level was 0.97 mg/L. Good correlation was found between Scr and CysC (r=0.87). Medium level correlations were found between CysC and CRC or GFRMDRD or GFRCG (respectively, r=-0.66, r= -0.73, r=-0.69). In a group of patients who have CysC levels over 0.915 mg/L, mild correlation was found (r= -0.60). In some studies, the calculation of GFR using the suggested formula GFRCysC=74.835/ CysC$^{1.333}$ were correlated with the calculated CRC results in the CysC>0.915 mg/L group.

In this study, the results indicated that using CG and MDRD formulas gave parallel values with CRC. Especially in the group body mass index less than 30 kg/m^2 or GFR <70 ml/min/1.73 m^2, estimated GFR may be used for monitoring patients. For patients who have higher CysC or Scr levels, CysC and Scr values were found to be parallel, and GFR may be calculated with GFRCysC formula.

A-99

Can NT-proBNP Levels in Serum in Angiographically Evaluated Patients with Acute Coronary Syndrome be Associated with the Number of Occluded Veins

Atalay S*, Ozden RB**, Gedikbası A***, Yekrek MM*, Kurcenli S*, Çam N****

*SB Haydarpaşa Numune Training and Research Hospital, Department of Medical Biochemistry, **SB Ümraniye Training and Research Hospital, Department of Medical Biochemistry, ***SB Dr Sadi Konuk Training and Research Hospital, Department of Medical Biochemistry, ****SB Dr. Siyami Ersek Heart - Vein Surgery Training and Research Hospital, Cardiology Department

Objective: BNP and NT-proBNP, a part of N-terminal of the pioneering hormone of BNP are significant biochemical markers for risk evaluation in patients with acute coronary syndrome (ACS). Increased BNP and NT-proBNP levels in serum are associated with higher levels of death and heart failure risk irrespective of the other biochemical markers such as creatinine kinase-MB (CK-MB), cardiac troponins, and high sensitivity C-reactive protein (hsCRP). The objective of this study is to investigate the relation between NT-proBNP levels and the number of occluded veins in angiographically evaluated cases with ACS.

Method: 62 persons (with a mean age of 57.90±13.88 years) of whom the number of occluded veins were identified angiographically and 23 of which are with STEMI, 15 with NSTEMI, and 24 with USAP comprised the study group whereas 20 individuals (with a mean age of 51,55±8,24 years) who admitted to the emergency unit with chest pain but who did not have any changes in their ECG and biochemical cardiac markers constituted the control group. 12-lead derivational ECGs were taken in the groups and considering the time when the pain started, serum CK-MB activity and troponin I and NT-proBNP determination were conducted on the collected blood samples. Angiograms were conducted to identify the number of occluded veins and all the patients were followed up for an eight-month period. With regards to diagnosis on surviving cases, the sensitivities and specificities of biochemical tests were found and the ROC curves were drawn. The NT-proBNP values were also examined as classified variables (in quarters of groups and sub/above median groups). The averages or the rates of the examined variables were identified for each NT-proBNP quarter.

Conclusion: The sensitivities and specificities of the serum levels of CK-MB (p=0.049), Troponin I (p=0.038), and NT-pro-BNP (p=0.001) were high with regards to discrimination of the three vein diseases. The angiogram result (C2=23.98, standard deviation=6, p=0.001) were more significant in the determination of quarters of groups as compared with serum NT-proBNP levels. Of the patients in the first group, 40% were with one disease of veins and 56% were with two diseases of veins whereas 80% of the patients in the 4 th quarter were with three diseases of veins. Six patients (9.7%) died at the end of eight months. The statistical comparison conducted using the transformed variables of surviving and dead cases showed that the averages of NT-proBNP values constituted a statistically significant difference between these two groups (p=0.034). Therefore, high levels of serum NT-proBNP can provide valuable information on the number of occluded veins in ACS as well as the prognosis of the disease.

Key Words: Acute coronary syndrome, NT-proBNP, number of occluded veins.

A-100

Comparison of Levels of Serum Osteocalcin and Undercarboxylated Osteocalcin with Bone Mineral Density in Women

Elçi A*, Atalay S**, Kurçenli S**, Yekrek MM**, Önder CB***, Aka N****

*Altıntepe, Kızılay Medical Center, Department of Medical Biochemistry, **Haydarpasa Numune Training and Research Hospital, Department of Medical Biochemistry, ***Haydarpasa Numune Training and Research Hospital, Department of Physical Medicine and Rehabilitation, ****Haydarpasa Numune Training and Research Hospital, Department of Obstetrics & Gynaecolog

Although the measurement of Bone Mineral Density (BMD) is a golden standard for the diagnosis and monitoring of osteoporosis, only the changes in the long run can be traced with this method. The researches on the importance of the biochemical bone markers for the diagnosis and treatment during the early stages of the osteoporosis are ongoing. The aim of this study was to relate serum osteocalcin (OC) and undercarboxylated osteocalcin (ucOC) levels for two age groups in the premenopausal (n=40) and postmenopausal (n=42) women to BMD findings. The groups were further divided into subgroups. The subgroups for premenopausal women were 25-34 years of age and 35-45 years of age. The postmenopausal group was also subdivided as early 1-5 years postmenopausal women and as late 5 years and more postmenopausal women. The barium sulfate (BaSO4) adsorption method was used for the discrimination of OC and ucOC. Between the groups, both for the levels of OC (p=0.012) and ucOC (p=0.003) and BMD findings (p=0.011–0.001), significant differences were observed. The comparison between the age groups revealed that the highest OC and ucOC values were in the 1-5 years postmenopausal subgroup. Although no significant differences were found statistically in the %ucOC/OC values, it was interesting to see the values in the early menauposal cases were higher than other groups. An inverse correlation were determined between total BMD (TBMD) and BMD findings in the lumbal 1-4 region (LBMD) and OC as well as between LBMD of the premenopausal group of 25 and 34 years of age and OC (p<0.05). These findings indicate that for the diagnosis and monitoring of the not yet diagnosable changes of osteoporosis with the BMD, the serum OC and ucOC levels can be useful.

Keywords: BMD, osteocalcin, menopause, undercarboxylated osteocalcin

A-101

Effect of Erythropoietin on the Production of Neurotrophic Factors and Inducible Nitric Oxide Synthase in Cytokine-Activated Human Astroglial Cultures

Kuralay F*, Ay E**, Ay Ö**

*Dokuz Eylul University, School of Medicine, Department of Biochemistry, İzmir, Turkey, **Mersin University, School of Medicine, Department of Medical Biology and Genetics, Mersin, Turkey

Growth factors produced by astrocytes, which comprise the large portion of the cells of the central nervous system, help sustain neurons and increase their lifespan. Several of the growth factors also have neurotrophic properties, including NGF, GDNF, and BDNF. Recently, EPO, a hemopoetic growth factor, and the bacterial antigen LPS have been found to increase NGF production in astrocytes and have thus been proposed as potential neuroprotective agents. IL - 1β is an important cytokine which plays an important role in cell differentiation and activation of local immune responses. AMY ß is a protein with neurotoxic and neurodegenerative properties. IFN χ is a cytokine released by T-lymphocytes as an immune response which activates glial cells. Although EPO's in-vitro and in-vivo neuroprotective properties have been clearly demonstrated, the precise mechanism of its protection is not known. Some believe NTF and NO play an important role in EPO's actions. Goals of this study were to: 1) determine the effects of LPS+IFN χ, IL-1β and AMY β on astroglial activation by measuring tissue levels of neurotrophic factors NGF, BDNF, and GDNF. 2) determine NO production by measuring nitrite, nitrate, iNOS and nitrotyrosine levels, 3) determine to what degree varying doses of EPO have on changes brought by LPS+IFN, IL-1β and AMY β in a culture medium. In this experimental laboratory study, 16 groups of three astroglial cultures each were exposed to the following compounds: 1. Control, 2. LPS (10 mg/ml) + IFNγ (100 U/ml), 3. AMY (50 μg/ml),4. IL-1β (10 ng/ml), 5. IL-1β (5 ng/ml), 6. IL-1β (1 ng/ml), 7. IL-1β (0.1 ng/ml),8. EPO (0.1 U/ml)9. EPO (1 U/ml), 10. EPO (5 U/ml)11. LPS (10 mg/ml) + IFNγ (100 U/m)+EPO 0.1 U/ml),12. LPS (10 mg/m) + IFNγ (100 U/m)+EPO (1 IU/ml),13. LPS (10 mg/ml) + IFNγ (100 U/ml)+EPO 5 U/ml),14. AMY (50 μg/ml) + EPO (0.1 U/ml),15. AMY (50 μg/ml) + EPO (1 U/ml),16. AMY (50 μg/ml) + EPO (5 U/ml).Neurotrophic factors, iNOS and nitrotyrosine levels were measured by ELISA testing whereas NO levels were determined using a colorimetric assay kit. In our astroglial culture model, 5 U/ml EPO significantly increased levels of NGF between neurotrophic factors, but did not effect the levels of BDNF nor GDNF. However, EPO had no significant effect on nitrite, total NO, NT, and iNOS. AMY-ß and LPS alone decreased levels of NGF and GDNF, the addition of EPO caused a non-significant rise compared to the control group in these growth factors. AMY and LPS significantly raised the levels of astroglial nitrite, total NO, iNOS. In the LPS and AMY groups, the addition of EPO lowered the levels of astroglial nitrite, total NO, iNOS, and also NTF to

baseline levels. Interestingly, IL-1ß had no effect on levels of NGF, BDNF and GDNF and NO release. Our findings show that: 1) AMY and LPS may have important effects on the release of NGF, GDNF, and NO, which are known to cause inflammation in astroglial cells. Treatment with EPO may assist in aleviating these inflammatory effects.2) In addition to its effects on inflammation, neurotrophic effects of EPO on the CNS are through an NGF-mediated, not an NO-mediated mechanism.

Key Words: Astroglia, nerve growth factor (NGF), erythropoetin (EPO), cytokine, nitric oxide (NO), lipopolysaccharide (LPS).

A-102

Relationship Between Microalbuminuria and Homocysteine, TAFIa, D-Dimer in Patients with Type II Diabetes Mellitus

Demirel E*, Eren N*, Aslan B*, Turgay F*, Ciğerli Ş*, Özdemir B*, Altuntaş Y**

*Şişli Etfal Research and Training Hospital, Biochemistry and Clinical Biochemistry Department, **Şişli Etfal Research and Training Hospital, 2cd Internal Medicine Clinic

The aim of this study is to investigate the relationship between microvascular complications of diabetes mellitus and TAFIa, D-Dimer and homocysteine levels by comparing the TAFIa, D-Dimer and homocysteine levels of type II diabetic patients with and without microalbuminuria with that of healthy control subjects.

We studied on the 66 patients who were consulted in Şişli Etfal Research and Training Hospital Endocrinology and Diabetes Outpatients Clinic, between February 2007 and April 2007. 51 of the patients had microalbuminuria (Group 1) and 15 of them did not have (Group 2).

We analyzed homocysteine levels with Immulite 2000 analyzer by chemiluminescent method. TAFIa levels were measured by using ELISA method (Actichorome TAFI Activity, (American Diagnostica). Fibrinogen and D-dimer levels were determined with ACL TOP analyzer (instrumentation laboratory), using Claus and latex agglutination methods respectively.

We found TAFIa (μg/ml) levels of the Group 1, Group 2 and Control Group 16±6.7, 14.9±3.7, 14.9±6.5, respectively. There were not any statistically significant difference between groups (p>0.05). Fibrinogen (mg/dl) levels of the three groups (Group 1, Group 2 and Control Group) were 356±60, 360±60, 351±50, respectively and D-dimer (ng/ml) levels were 148±76, 171±155, 124±79, respectively. Homocysteine levels (μmol/L) of the groups were 7.7±2.3, 7.8±3.3, 7.1±2.2, respectively. There were not any dichotomy between TAFIa, fibrinogen, D-dimer and homocysteine levels of the groups (p>0.05 for all parameters).

In this study, we could not show any difference between TAFIa and homocysteine levels of patient groups involving diabetics and control group. This finding may depend on the fact that our patients had controlled diabetes and were on diet and/or oral

anti diabetic drugs treatment and the duration of diabetes were less than 5 years. In addition, patients with microalbuminuria have not shown serious diabetic nephropathy and not suffered from cerebrovascular, cardiovascular and peripheral vascular diseases. To clarify the results of this study, it would be better to study further on the patients with diabetes longer than 5 years, diabetic vascular complications and uncontrolled diabetes.

A-103

Separation of Myocardial Proteins by Two Dimensional Gel Electrophoresis

Çelikkaya S, Özel Demiralp FD, Boşgelmez İİ, Öztürk A, Nejat Akar, Turay Yardımcı, Fikriye Uras

*Marmara University, Faculty of Pharmacy, Biochemistry Department, Istanbul Turkey, **Ankara University, Biotechnology Institute, Ankara, Turkey*

Two Dimensional gel electrophoresis is one of the most effective techniques used in the separation and characterization of coplex protein mixtures. The purpose of the study is to obtain a protein map of normal cardiac tissue by two dimensional gel electrophoresis. In this study, the papillary smooth muscle tissue samples were obtained from two patients who have valvular illness. Thecardiac tissue was washed with physiological saline and preserved in -80 °C for one week. Proteins were separated by isoelectric focusing in the first dimension of a wide pH gradient (pH 3-10). Later they were separated by SDS-PAGE as a second dimension using the concentration of 12% resolving gel and 4% stacking gel. Protein spots were made visible by staining with Sypro Ruby. The spots in the gels were examined with PDQUEST which is software of a photographic analysis method. The molecular weights of the proteins were 10-70 kDa and the isoelectric points are 5-10. 998 spots in the first sample gel, 980 spots in the second sample gel were observed. When the spots of two different samplescompared to each other, 236 spots were same in both of the gels; one spot which was seen in the first gel was absent in the second gel. It is hard to say that all these spots are significant protein spots. The differences between two gels may be due to some reasons which are the amount of protein applied to the gel, biological variations and the incomplete washing for removing blood proteins after surgery. It will be useful for interpretation of the spots by further studies such as MALDI- and SELDI-TOF. The protein map of normal heart tissue will provide us reference data to compare with data in some pathological conditions. These findings compared with the corresponding findings in heart diseases might be helpful to illuminate the secrets behind cardiac diseases.

Key Words: Two dimensional gel electrophoresis, isoelectric focusing, heart diseases, myocardium, proteomics.

A-104

The Study of Mutasion Distribution of Beta- Globin in our Region

Kaymak B, Yolcu İ, Yıldız Ö, Üçerler T, Çolak A, Çoker I

Tallasemia is a group of disease that characterizes by the fact that one or more of globin chains forming the hemoglobin molekule can not be made or be made in a small amount and that indicates an autozomal recessive transmission.

İn a normal adult, there are two alpha and two beta chains in the structure of a HbA accounting for %96 of hemoglobin. Of these two beta genes, if only one carries beta-tallasemia mutation, it is called beta-tallasemia carrier (tallasemia minor), but if both carries mutation, they are called homozigot beta tallasemia (tallasemia major) . in about %10 of homozigot beta-tallasemia , clinical coursse is lighter than tallasemia major and heavior than tallasemia carriers and tallasemia is named as intermedia.

As a result the reduction of hemoglobin synthesis, hipokrom, mikrositoz, anemia, hemolitic anemia, ineffective eritropoez data, hemosiderosis, and hepotosplenomegali are observed in the clinic. In the patients with anemia, heart failure, liver failure and splenomegali, septisemi are the most common reasons for death.

Beta- tallasemia are one of the most common ones among the diseases that indicate autozomal recessive transmisssion. They are observed in the mediterranean region at most. With the scan studies mack in our country, the incidence of carrying beta- tallasemia is reported to be %2. Beta-tallasemia is caused by the mutations in beta-globin gene with the length of approximately 1600 base pairs composed of 3 ekson and 2 intron on the short arm of 11th cromozome. Most of them are point mutations. The most observed one of these mutation in Turks is IVS 1.110 (G-A) and is followed by IVS 1.6(T-C), IVS 2.1(G-A) and codon 8(AA)

In order to examine the distribution of beta-tallasemia gene mutations in our region, the results of 151 patients whose beta-globin mutations were investigated with the diagnosisof beta- tallasemia in December 2003- April 2007 in the tissue type and moleculer diagnosis laboratory of our hospital were evaluated restrospectively.

As a result, interms of diagnosisand the prenatal diagnosis, the study of beta-tallasemia gene mutations have an important place for beta-tallasemia patients.

A-105

The Effect of Hemin and Deferoxamine on Iron Levels of K562 Cells

Turkcu UO*, Kucukkaya B**, Afrasyap L*

*Mugla University, School of Health Sciences, Mugla, Turkey, **Department of Biophysics, Faculty of Medicine, Maltepe University, İstanbul, Turkey*

Iron is important element for maintaining metabolism and growth of all cells and it has a role both oxidant and reductant. Iron homeostasis is require for during the process of maturation of erythroid cells and hemoglobinization. K562 cell line is a

human erythroleukemic cell line and present in pregranulosytic phase. K562 cells were induced to erythroid differentiation with hemin and it has acquire the capability to synthesize hemoglobin. However deferoxamine (DFO) is known a chemical agent as an iron chelator. In this study we investigated the effect of hemin and deferoxamine on iron levels of K562 cells. Cells were treated with 20 μM hemin and 50 μM deferoxamine from firsth day to sixth day. Then K562 cells were collected by low speed (300g) centrifugation and washed two times with phosphate buffered saline (PBS), pH 7.4. The cell pellets were stored at – 70˚C. Total cell iron was measured in triplicate samples of $2.5x10^6$ cells suspended in 1 mL HBS buffer (150 mM NaCl, 20 mM HEPES). The cells were mixed with 1 mL acid mixture and incubated for 2 hours at 37°C, cooled. This mixture was centrifuged at 800g for 30 minutes. Iron levels in supernatants were measured by inductively coupled plasma optical emission spectrometry (ICP–OES) (Optima 2000, Perkin–Elmer). Iron levels were given as $μM/1x10^9$ cell. Results were expressed as mean ± standard error . Statistics was performed using SPSS for Windows version 11.5.

We observed differenceses iron levels of hemin and DFO treated cells also control cells every day. Changes in intracellular iron levels were found during differentiation of K562 cells. In this state, hemin induction and also DFO inhibition are verified similar manner.

Key Words: Iron, deferoxamine, hemin, K562 cells.

A-106

The Changes in the VEGF Levels Before and after Coronary Artery Bypass Surgery

Görmüş U*, Ergen A*, Tekeli A*, Zeybek Ü*, Bozkurt N*, İsbir S**

*Istanbul University, The Experimental Medicine, Department of Molecular Medicine, Istanbul, Turkey, **Marmara University, Medical School, Department of Cardiovascular Surgery, Istanbul, Turkey*

Objectives: It is thought that hypoxia inducing factor (HIF) is induced by hypoxia and the genes related to angiogenesis are activated by this way such as VEGF and erythropoeitin. It is known that hypoxic preconditioning can decrease stunning caused by coronary artery occlusions. It was demonstrated that when VEGF mRNA expression was increased, the infarct size was reduced and the capillary angiogenesis was induced, so VEGF had a direct cardioprotective effect. We compared the serum VEGF levels of coronary artery disease patients before and 4th hours after coronary artery bypass grafting (CABG) that was performed by using saphenous vein.

Methods: 18 patients underwent elective CABG procedure with cardiopulmonary bypass were enrolled in the study. Measurement was performed using a commercially available enzyme immunoassay kit(human VEGF Biosource;CA;USA). The assay recognized hVEGF165. statistical analysis was done using paired samples T-test to compare the means before and after surgery.

Results: Before the operation the mean±standart deviation of VEGF levels was 68,70±42,01 and 4 hours after the operation the values changed as 55,69±22,59. And as a result of statistic evaluation, the VEGF levels before CABG procedure were not significantly different from the ones 4 hours after the surgery (p=0.234).

Conclusions: VEGF is a highly specific growth factor for vascular endothelial cells by both stimulating endothelial cell growth and enhancing vascular permeability. Previously it was found that repetetive cycles of coronary artery occlusions followed by short durations of reperfusion was triggering the myocardial angiogenesis. Hearts obtained from rats after hypoxia followed by 24-hour period of reoxygenation were shown to have increased stainings of VEGF around the capillary areas with increased durations of hypoxia. So we arranged our study to find whether there was a change in VEGF levels early after the CABG. Although there was a decrement in serum VEGF levels after surgery, it was not statistically significant. As VEGF is a growth factor that can be affected by hypoxic conditions and can stimulate endothelial cell growth, it is important to investigate the changes in its expression in early postoperative conditions. But in conclusion, the study group must be larger and investigation must be enlarged containing the hour-to-hour changes after CABG surgery.

A-107

Protein Oxidation: Basic View on Characterization, Detection and Consequences

Tetik S, Uras F, Yardimci T

Department of Biochemistry, Faculty of Pharmacy, Marmara University, Haydarpasa, İstanbul, Turkey

Protein oxidation is defined as the covalent modification of a protein induced either directly by reactive oxygene species (ROS) or indirectly by reactions with secondary by products of oxidative stress. Proteins have many specific functions. Oxidative modification of a protein leads to biochemical consequences. Different forms of oxidative modification have different functional consequences.

ROS play a major role in the generation of acute and chronic inflammatory diseases. Collectively, these reactive oxygene species (ROS) can lead to oxidation of amino acid residue side chains, formation of protein-protein cross-linkages, and oxidation of the protein backbone resulting in protein fragmentation. Oxidative modification of a protein lead to biochemical consequences.

• Loss or gain enzyme activity

• Loss of protein function

• Loss of protease inhibitor activity, etc.

There is no single universal marker for protein oxidation. Identical markers of oxidative reactions have been found enriched in plasma of patients, examplified by an increase in carbonyls, dithiotyrosine, disulfides and the other reaction products

of reactive LPO products with biological compounds. These markers are useful to study detection of oxidative protein modifications of biological samples.

Key Words: Oxidized protein, markers of oxidized proteins, oxidized proteins in diseases.

A-108

Comparison of Strip Test, Hydrometer and Total Solid Refractometer in Evaluation of Specific Gravity of Urine

Akın OK*, Serdar M**, Çizmeci Z*, Genç Ö*

*Keçiören Training and Research Hospital, **Gülhane Military School of Medicine*

Specific Gravity (SG) is evaluation of dissociated substance in urine. Specific Gravity gives very valuable informations about concentration and dilution capacity and the patient's hydration.

Evaluating osmolarity is the golden standart for evaluation of urine concantration. But because of it's not practical ,the laboratories don't use it for rutine analysis. For this reason, the urine concentration evaluates with SG and gives us approximate information about osmolarity.

Today; simple, fast and trustworthy methods are used for evaluation of urine specific gravity. Gravitymeter evaluate SG directly but refractometer and strip test do undirectly. Usually urine strips are used for SG evaluations.

The study is about 546 urine samples, that each one is more than 60 cc, taken from patients that applied to Ankara Keçiören Training and Research Hospital and finished their first examination.

In the study, IQ 200 (Iris Diagnostic, Chatsworth, CA) urine analyzer is used for evaluation SG refractometric method. (SG indication interval 1000-1050). LabStrip U11 plus (Analyticon Biotechnologies AG, Lichtenfels, Germany) and Labumat (77 electronica, Budapest, Hungary) are used for evaluation with urine strip analyzer.   (SG indication interval 1000-1030). Hydrometer device (Superior, Germany) is used for evaluation of SG with hydrometric method. (SG indication interval 1000-1100).

SPSS For Windows 15.0 is used for statistical analysis. Corelation of methods are shown with Pearson test.

Results which taken from hydrometer and refractometer show high meaningful correlation (r=0.962, p<0.001) but strip and hydrometer not. (r=0.664, p<0.001).

As a conclusion, urine SG analysis with strip is not adequate analytic and clinically. It can't read the exact amount, only the indicated interval. IQ 2000, which evaluate refractometric, indicates more accurate result and clinically more useful.

Key Words: Refractometer, hydrometer, urine density evaluation, density evaluation with strip.

A-109

Antioxydant and Antiinflammation Effects of Raloxifen Treatment in Postmenopausal Women

Akçay Y*, Eyigör S**, İlanbey B***, Kirazlı Y**, Yıldırım Sözmen E*

*Ege University, Faculty of Medicine, Biochemistry Department, İzmir, **Ege University, Faculty of Medicine, Physiotherapy and Rehabilitation Department, İzmir, ***Yozgat Government Hospital, Yozgat*

In manopause, because of estrogen insufficiency, supporting documents indicates risk of atherosclerosis increased. Raloxifen is selective estrogen receptor modulator and effects bones like estrogen. Raloksifen is shown that prevent postmenopausal osteoporosis and treatment.

Goal of this study is research on antioxydant and antiiflamation effects of reloxifen at postmenopausal women. 14 women (58.8 ±7.6 years) incorporated to this study and applied raloxifen treatment 6 months. Before and after treatment blood samples are taken and evaluate TBARS in erytrocytis, catalase activities, dien, TBARS levels, total antioxydant activity in serum (with FRAP, TEAC and DPPH method), TNF-α and IL-18.

There isn't observed meaningful statistical changes at TBARS in erytrocytis and catalase activities, serum paraoxonase levels. Comparison of serum dien levels before (231 micromol/mL) and after (122 micromol/mL) the treatment is indicates that after the treatment is lower. IL-18 and TNF-α levels decreases after the treatment but is not statistical meaningful. This study is supports antiinflamation effect of raloxifen and first study about antioxydant effects.

Key Words: Anti inflamatory, antioxydant, postmanopause, raloxifen.

A-110

Importance of Spectrophotometric Xanthocromia Analysis in Subarachnoid Hemorrhage

Tuğ E*, Yücel D*, Yılmaz A**, Bayar A**, Şeneş M*, Saydam G*

*SB Ankara Training and Research Hospital, Clinic Biochemistry Lab, Ankara, **SB Ankara Training and Research Hospital Neurosurgery Clinic, Ankara*

Subarachnoid hemorrhage is diagnoses mostly with CT. But in small vasculer hemorrhage or the patients applied lately, SAH can't be diagnose with CT. Especially xanthocromia analysis in cerebrospinal fluid is useful like this situations. In our study, during 10 days, visual and spectrophotometric xanthocromia analysis, cell counting, glycose and protein levels evacuation made in cerebrospinal fluid with 19 patients (9 men, 10 women) and a control group (9 men, 10 women). Spectrometric analysis of xanthocromia is made as scanning samples betwwen 350-600 nm. In spectrum, between ˜360 nm – ˜530 nm baselines marked up, at 415 nm for oxyhemoglobine and at 440 nm for bilirubin determined corrected absorbtion value. Net bilirubin absorbtion

is calculated with datas. NBA showed very good performance for SAH. Sensitivity, specifity, positive and negative prescience of test in first day is in turn %94.4, %100, %100 and %95. Spectrophotometer's diagnostic performance is more succesful than other cerebrospinal fluid parameters. In conclusion spectrometric xanthocromia analysis must take visual analysis' place. Spectrophotometry is especially very useful for CT (-) SAH.

Key Words: Bilirubin, hemoglobin, xanthocromia, spectrophotometry, subarachnoid hemorrhage.

A-111

Paraoxonase 1 and Arilesterase Activity Levels in Smoking and Non-smoking Student Sportsmen

Çalışkan E*, Yıldırım A**, Şirinkan A*, Turhan H**, Kara F**, Bakan E**

Ataturk University, Physical Education and Sport College Erzurum, Turkey,
**Ataturk University, Faculty of Medicine, Biochemistry Department, Erzurum, Türkiye*

At last years, health problems and death because of smoking is intensed attention to this article. Especially, all over its carcinogen and toxic substances bring health problems. Specially sportsmen smokers increase the consequence of it. In this study, paraoxonase 1 and arilesterase activity levels of smokers and non smokers physical education and sport college students researched.

56 non smoker sportsmen students (27 girls and 29 boys) and 44 smoker sportsmen students (16 girls and 28 boys) attended to this study. In the end, levels of arilesterase are decreased meaningful (p<0.05), levels of paraoxonase aren't decreased meaningful (p>0.05) in both sex. Levels of arilesterase are decreased meaningful in smokers (n=44) (p<0.05), Levels of arilesterase aren't decreased meaningful in non smokers (n=56)(p>0.05).

As a conclusion, smoking is risky for health of acitve sportsmen. It is seen that paraoxonoase and arilesterase enzyms are inhibated in smokers. It can be explained as toxic elements in cigarettes are inhibates enzyme activities. Health precautions must be taken for sportsmen that exposed to considerable risk.

Key Words: Paraoxonase, arylesterase, sportsmen, cigarette (smoking).

A-112

MEFV Gene Mutation in Patients with Familyal Mediterranean Fever Prediagnose

Genç Ö*, Çizmeci Z*, Akın OK*, Ağras PI**

*Ankara Kecioren Training and Research Hospital, Center Lab, **Ankara Keçiören Training and Research Hospital, Clinics of Pediatrics*

Familyal mediterranean fever (FMF) is autosomal recessive disease, observed as pyretic serousal inflamation in peritoneum, synovia and/or pleura and recurrent attacks. The gene (MEFV) that causes of this disease is determined in 16th kromozones short branch. (16p13.3)

In this study, we research presence of mutations in MEFV mostly apprised (E148Q, P369S, F479L, M680I (G/C), M680I (G/A), I692del, M694V, M694I, K695R, V726A, A744S ve R761H).

70 patients are included in this study (29 men, 41 women). The blood samples are anticoagulaned (EDTA) and their DNAs are purified. Then, relevant zone amplified with PCR. Amplified products are hydrilised with test strips included oligonucleotid probs and 12 mutation zone analyzed. In 21 (9 men, 12 women) of patients are observed MEFV gene mutation (30%). 5 of them are homozygote about mutation and 16 of them are heterozygote about mutation. 3 of heterozygote mutations are determined compound heterozygote zones. Mutations that patients have homozygote mutation are M694V (n: 3), M680I (G/C) (n: 1) ve V726A (n: 1). Modal mutation in heterozygotes is M680I (G/C) (n: 5), subsequently M694V (n: 4) and E148Q (n: 4), then according to frequency V726A (n: 3), R761H (n: 2), ve P369S (n: 1). None of patients has F479L, M680I (G/A), I692 del, M694I, K6695R ve A744S mutations. Clinically determination of mutation in MEFV is strengthen the diagnosis. These tests also help to start the treatment without losing time. None the less due to large number of the carriers in our country, relatives of the patients have to be tested as the matter of the mutation of the disease.

A-113

The Effect of the Lowering of the TSH Referans Gap to the 2.5 UI/ML Level on the Distribution of the Thyroid Hormone

Cevlik T, Bekdemir T, Emerk K

Marmara University, Faculty of Medicine

TSH Referans gap has been continually decreased over the years while Immun-assay and the TSH measurements have been widely used. Lastly, 4.2 UI/ml has been determined to be the upper limit of TSH. There are studies which suggest that it is more suitable to reduce this value down to 2.5 uI/ml level. We tried to determine how this decrease in TSH referans opening to 2.5 UI/ml level is going to affect the distribution of throid hormones in this study. Serum thyroid hormone levels were measured by DPC Immulite 2000 kemilüminans hormon analyzers.Results were received from 12 different equipment in 10 different cities in Turkey.The results were transfered to Microsoft Acces database .The number of people ,whose TSH level was between 0,4 and 4.0 uI/ml , was 17.057.These people were separated from the databae .The fT3 11.275, fT4 11.091, T4 4.240, T3 4.124 test result of these people was obtained from the database .The number of people ,who have aTSH value between 2,5 and 4,0 uI/ml, is 2001. The fT3 1428, fT4 1458 , T4 1330, T3 558 test result was obtained from the database. Non-parametric 95 percentile distribution analysis has been implemented for distributions which are not in accordance with Gaussien distribution. The average TSH value of people whose TSH value is between 0.4-4.0 uI/ml is 1.4 uI/ml The average value for fT3, fT4, T3 and T4 was determined to be 3.03, 1.2, 104, 7.9, respectively. The averege TSH value of the people , whose TSH value is between 2.5-4.0 uI/ml is 3.09 uI/ml. The average value for fT3, fT4, T3, T4 is discovered to be 3.04, 1.2, 108.8,

12 respectively. Distribution was determinel to be normal by the use of Kolmogorov-Smirnov test. In conclusion, the average fT3, fT4, T3 and T4 values of people whose TSH value is between 0.4 and 4.0 uI/ml and 0.4 and 2.5 uI/ml and distribution of data were found to be in accord, but T3 and T4 distribution gap of people whose TSH value was between 2.5 and 4.0 uI/ml was determined to be wider and the average values were more different. It has been determined that reduction of the TSH referans gap to 2.5 uI/ml level does not affect the distribution of other thyroid hormones.

Key Words: TSH , thyroid hormones, referans values.

A-114

IQ2000, The Comparison of Urised Totally Automatic Urine Sediment Analyzers with Manual Urine Sediment Analysis

Akın OK, Serdar M, Çizmeci Z, Genç Ö

Ankara Kecioren Training and Research Hospital, Gulhane Military Academy of Medicine, Ankara

Manual microscobic urine analysis is a system which reguires high volume and a lot of time. The most important disadvantage of this method is its low repeatability due to prepar tion of sediments, counting techniques and availability of gualified technical personell who can count. These problems are noticeably increasing, because of the increase in testing capacity. The increase in the patient load at the hospitals has increased the need for automatic urine sediment analyzers. In this study of ours, we tried to evaluate the analytical and clinical correctness of IQ200, which measures area and Urised totally automatic urine analyzers by comparing them with manual microscobic analysis.

600 fresh urine samples were used in this study. These samples were taken from patients who came to the urine laboratory of the Ankara Keçiören Education and Research Hospital.In the manual urine sediment study KOVA system (Hycor biomedical) was used. The same technical personel used the same microscope to minimize the differences due to the user in the manual method in implementing the analysis.

IQ2000 (Iris diagnostic,chatsworth CA) is a urine analyzer which classifies the contens of a urine in 12 categories by using digital visualization and automatic particle definition prin ciple.Urised (77 electronica, Budapest, Hungary) urine analyzer is a machine which studies the urine sample microscobically and evaluates the pictures of cells by the use of Picture evaluation software. SPSS for Windows 15.0 was used for statistical analysis. The correlation of the methods were shown by gamma statistics and the differences were shown by Mc Nemar test. In terms of the WBC,RBC and epitel cells which were studied using all 3 methds ,statistically meaningful correlation was found (gamma^ 0-950) On the other hand, all 3 methods were found to be statistically meaning fuly different from one another (Mc Nemar-X2.p^0.00) .When the results are evaluated, even when all 3 methods showed high cor-

relation with one another, it is observed that urine microscobic analysis should be evaluated along with the strip and the confirmation of borderline cases by use of manual microscobic analysis will increase clinical correctness. Additionally ,these test results show, that manual urine analysis, which is continually losing its value and whose education is considered unimportant due to the increase in automation techniques, must be given a qlace in education programs.

Key Words : Manual microscobic urine analysis, I Q 200 Urised.

A-115

The Study of Homosistein Levels in Mothers of Premature Babies

Dülger H, Reşber H, Şekeroğlu MR,Yılmaz C, Özcan S

Yuzuncu Yil University, Faculty of Medicine, Department of Biochemistry, Van Medical Yuzuncu Yil University, Faculty of Medicine, Department of Pediatrics, Van, Turkey

In this study, the intention was to compare the serum total homosistein and related vitamin levels along with lipid parameters of women who delivered prematurely and those who delivered on time. The women, who were taken into the study, and who delivered prematurely were divided into two groups; Premature I (25-30 weeks) and premature II (31-36 weeks), Additionaly, 30 women, who gave birth to health, babies on time were used as the control group. Total homocystein B12 vitamin, falic acid Kregtinin, trigliserit total colestrol HDL LDL and VLDL cholesterol levels in both premature and control group women were measured. No meaningful difference between the groups ,in terms of homosistein, B12 vitamin, folic acid and other lipid parameters was determined (p^0.05) However, a negative correlation was determined between the homosistein levels and the folic acid levels of Premature I and II groups and between the homosistein and HDL cholesteral levels of the control group. (p^0.05), At the same time, positive correlation was determined amongst all lipid parameters except for homo sistein and HDL cholesteral in the premature groups. In conclusion, it is thought that factors other than homosistein, folic acid and B12 vitamin, play a more important role in the premature births in our area.

Key Words: Falic acid, homosistein, lipid, premature birth.

A-116

The Sensitivity of Eritrocytes Toward in vitro Oxdation in Hemodialysis Patients who Smoke and don't Smoke

Şekeroğlu MR, Emerk K, Dülger H, Erkoç R, Balahoroğlu R

Yüzüncü Yıl University, Faculty of Medicine, Department of Biochemistry, Van, Yüzüncü Yıl University, Faculty of Medicine, Department of Internal Medicine, Van Birth and Child Care Center Hospital, Biochemistry Laboratory, Bingöl

Hemodialysis, which is applied to people whit chronic kidney insufficiency, compensates for insufficient kidney function as

well as influence the oxdative metabolisms of blood cell such as leucocytes and eritrocytes. Additionally, cigarette smoke increases the oxdative stress which causes tissue damage. In this study, we intended to investigate oxidative stress in eritrocytes and the sensitivitiy of eritrocytes towards the in vitro oxidation in hemodialysis patients who smoke and don't smoke. Fort his reason, THe subjects were divited into 3 groups (control, hemodialysis patients who smoke and hemodialysis patients who don't). In all 3 groups,eritrocyte lipid peroxidation superoxid dismutaz (SOD) and glutatyaon peroksidaz (GSH-Px) levels were measured. Additronally, the sensitivity of eritrocytes towords in vitro oxidation was determined. Eritrocyte malon dialdehit (MDA) levels of those who smoked and didn't smoke were found to be higher than those of the control group (p^0.01) . While eritrocyte SOD activation levels in both groups were lessened in relation to the level of the control group (p^0.01) the GSH-Px activities of only the smoking group was low when compared with the control group (p^0.01). The sensitivity of eritrocytes towards the in vitro oxidation in both groups was higher than the sensitivity in control group (p^0.001).While no meaningful difference was found between the eritrocyte SOD, GSH-Px and MDA levels in both hemodialysis patient groups the sensitivity of eritrocytes towarrds in vitra axidation was higher in the smoking group (p^0.05). Our results show that the axidativen stres in eritrocytes increases in hemodialysis patients who smoke or don't smoke and the fact that the smoking increases this affect even more.

Key Words: Antioxidant, hemodialysis, oxidative stres, cigarette.

A-117

The Eating Habits Overweight and Prevalence of Obesity in the 6-15 Age Group School Children Who Live in the Villages of Mugla (Center)

Süzek H, Arı Z

Mugla University, Mugla Health College, Mugla, Celal Bayar University, Faculty of Medicine, Department of Biochemistry, Manisa, Turkey

Obesity is a public health problem which is encountered in all race and ethnic groups and iln all age groups:

As it is in other developing nations obesity is a notion which is related closely whit urbanization the income of the family education and other socioeconomic situation indicators in this country.

The object of the is study is to determine the eating habits ,overweight and abesity prevalences in the 6-15 age group school children who attend primary school in the villages of Mugla (Center) and compare it with studies done in other countries. This study has the characteristic of being the first study of its kind to have been implemented this way in the village primary schools of Mugla (Center).

In this study, eating habits and obesity prevalence in 1170 (564 girl, 606 boy) children who are of 6-15 age group and who live in

the villages of Mugla (Center) were investigated.With this intention, the weight, height, age, sex and eating habits of 1170 (78.2% of the whole group)out of 1497 students who were attending 9 village primary schools, were determined .

Results showed that of all the students, 17.1% were overweight and that 7.1% were obese.It was determined that 18.1% of all girl students were overweight , 6.6% of all girl students were obese of the boy students, 16.0%were over weight and 7.6% were obese An important relation was observed between watching TV and snacking (p<0.001). The obesity proportion in boys when compared with that of girls was not statistically meaningful (p>0.05). The highest obesity propor tion in boy students was observed in 10 year-old group (proportion 26.1%) The highest obesity proportion in girl students was observed in 11 year –old group (proportion 24.3%). In terms of eating habits, statistically important difference was found between those who ate bread, honey and toast both at lunch and diner and those who didn't (p<0.05, p<0.05 and p<0.01 respectively).

Key Words: Eating, obesity, school children, prevalence.

A-118

Serum Lipid Profile and Obesity Scanning for Primary School Students in Central Villages of Mugla Province

Süzek H, Arı Z

Mugla University, Mugla Health College, Mugla, Celal Bayar University, Faculty of Medicine, Department of Biochemistry, Manisa, Turkey

Obesity is referred to excessive increase in lipid tissue of body. Obesity is a common health problem, which may be observed in all age groups, races or ethnical groups, and it is revelaed as an important health problem in 20th century in children as much as in adults.

This study was aimed to determine lipid profile and obesity-related condition of primary school students aged between 7 and 15 years in central villages of Muğla Province.

In the present study, age, sex, height and weight demographics of totally 231 student (112 girl, 119 boy) were gathered, who were attending primary schools located in 9 central villages of Muğla Province, their body mass indexes (BMI) were calculated and Total Cholesterol (TC), Triglyceride (TG), HDL-, LDL-, and VLDL-Cholesterol (in order of HDL, LDL and VLDL) levels were measured by obtaining fasting blood samples.

Final results were indicated that of all students, 6.5% were lean (BMI<=5), 69.3 % were normal (BMI=5-85), 11.2% were overweighed (BMI=85-95) and 13% were obese (BMI>=95). There was no significant difference between girls and boys with regards the BMI (p>0.05). No statistically significant difference could be found between groups of girls and boys in whole lipid parameter (TC,TG,HDL,LDL,VLDL) calculations (p>0.05). In serum lipid parameter comparison with respect to BMI, it was

found that TG and VLDL values were relatively low in lean group, however TC and LDL values were lower in normal group in comparison with that of other groups (for both p<0.05). Further, there was no significant difference between groups concerning HDL (p>0.05). Moreover, whereas TC levels of children, who snacks while watching T.V., were found to be higher than that of children who does not snack (p<0.05), difference between other parameters was statistically insignificant (p>0.05).

Key Words: Lipids, obesity, school-age children, body mass index.

A-119

Effect of High Temperature Stress on Enzyme Activities Associated with Glutathion and Erytrocyte Glutathion Concentration

Gümüşlü S, Öztürk O

Department of Biochemistry, School of Medicine, Akdeniz University, Antalya Turkey

Temperature may affect the organism in various means. Deaths may occur particularly during summer due to increase in air temperature. This study was conducted in order to investigate effects of high temperature stress on glutathione system and enzyme activities associated with glutathione. Control and high temperature stress groups were established by three-month old Male Wistar rats. High temperature stress group was further divided into two subgroups. In first subgroup, rats were subjected to 40°C temperature stress for 3 days, whereas in second group, rats were exposed to 40°C temperature stress for 7 days. However, rats in control group were maintained at 22°C.

At the end of trial period, blood samples for fasting glucose level were obtained from all animals and erythrocytes were separated. Activities of glucose-6-phosphate dehydrogenase (G-6-PD), selenium-dependent glutathione peroxidase (Se-GSH-Px) and glutathione-S-transferase (G-S-T) activities as well as concentrations of reduced glutathione (GSH) and oxidized glutathione (GSSG) were measured in erythrocytes.

When obtained results were compared, it was observed that 40°C-temperature stress applied for 3 days did not affect G-6-PD activity whereas 40°C-temperature stress applied for 7 days increased activity level of the enzyme. Three- and 7-day high temperature stress increased Se-GSH-Px activity in rat erythrocytes, but decreased G-S-T activities. While 3- and 7-day high temperature stress conditions decreased GSH concentration, it increased GSSG concentration.

In conclusion, when effects obtained by 3- and 7-day stress applications were compared, it was found that high temperature stress applied for 7 days was relatively more effective on glutathione system and enzyme activities in erythrocytes of 3 months old rats.

Key Words: Erytrocyte, glucose-6-phosphate dehydrogenase, glutathione, glutathione peroxidase, glutathione-S-transferase, high temperature stress.

A-120

Examining Distribution of Beta-Globin Gen Mutations in Our Region

Kaymak B, Yolcu İ, Yıldız Ö, Üçerler T, Aydoğdu Çolak A, Çoker I

Department of Clinical Biochemistry, State Tepecik Training and Research Hospital, Izmir, Turkey

Thalassemia is a group of diseases which are characterized with lack of synthesis or insufficient synthesis of one or more of globin chains forming hemoglobin molecule and which is inherited by autosomal recessive route.

There are two alpha and two beta chains in structure of Hb A, which forms 96 % of hemoglobin in normal adults. If only one of those two beta gene carries beta-thalassemia mutation, it is referred as beta-thalassemia carrier (Thalassemia minor) or if both genes carry mutation, it is referred as homozygote beta-thalassemia (Talasemi major). In approximately 10 % of homozygote beta thalassemia, clinical prognosis is mild in comparison with thalassemia major, but it is heavier than that of thalassemia carriers and it is referred as Thalassemia Intermedia.

In clinical picture, hipochrome, microcytic anemia due to decrease in hemoglobin synthesis, hemolytic anemia, ineffective eyrtropoesis findings, hemosiderosis and hepatosplenomegali are observed. Most frequent reasons of death in this disorder are anemia, cardiac failure, hepatic failure as wel as septicemia in patients with splenectomy.

Beta-thalassemias are among world-wide most common autosomal-recessive inherited diseases. They are observed most commonly in Mediterranean Region. According to scanning studies conducted in our country, incidence of beta-thalassemia carrier is reported to be 2 percent. Beta-thalassemia is caused by mutations in beta-globin gene, which is 1600 base pair long and consisted of 3 exons and 2 introns (Intervening Sequence, IVS) located in short arm of Chromosome 11. Most of those are point mutations. Amogn them, IVS 1.110 (G>A) is most frequently seen in Turkish Population followed by IVS 1.6 (T>C), IVS 2.1 (G>A) and codon 8 (-AA).

In order to examine distribution of beta-thalassemia gene mutations in our region, results of 151 patients were retrospectively evaluated, who were assessed for beta-globin mutation with beta-thalassemia diagnosis in Tissue Type and Molecular Diagnosis Laboratory of our hospital between December 2003 and April 2007.

In conclusion, mutation most frequently observed in our region is found to be IVS 1.110(G>A) by 45.9%, followed by IVS 2.1 (G>A) by 10.4%, IVS 1.6 (T>C) by 7.8%, IVS 1.1 (G>A) and codon 39 (C>T) by 7.3% and IVS 2.745(C>G) by 6.1 percent.

In conclusion, it is of importance to investigate beta-thalassemia gen mutations for diagnosis and prenatal diagnosis in beta-thalassemia patients.

Key Words: Beta-globin, beta-thalassemia, mutation.

A-121

Establishing Median Values of Free b-Hcg and Papp-A in Turkish Population using Siemens Brand Immulite 2000 Device

Ozer P*, Emerk K**

*BİODPC Company, **Department of Biochemistry, Faculty of Medicine, Marmara University, İstanbul, Turkey

Combining measurement of nuchal translucency (NT) in ultra-sonography with biochemical markers such as Free b-HCG and PAPP-A enabled risk assessment of fetal chromosome abnormalities to be conducted during first trimester and increased diagnostic yield to 85 percent. In this study, median values of NT measurements combined with biochemical markers defined in maternal serum were compared with results of manufacturer company in order to estimate trisomy 21 and trisomy 18 risk between 10-13+6th gastational weeks in health centers where IMMULITE 2000 and Prisca software are concomitantly used.

Study was conducted by IMMULITE systems operated in 8 centers in different provinces of Turkey and demographic data, free b-HCG and PAPP-A results of 16750 cases were obtained from Prisca (Typolog) software and transferred to Microsoft Excel, SPSS database. Overweighed, older, diabetic individuals, smokers as well as individuals with NT MoM value is over 3, twin pregnancies and individuals with combined risk over 1/250 were excluded. Additionally, cases left out the normalized distribution ± 3SD according to logarithmic transformation were also eliminated. For remaining 13.729 cases, Gaussian distributions were obtained weekly for each parameter. Inclinations and cut-off points of elimination curves were compared and estimated new median values were communicated to users. No complaint could be found due to using new trimester median values.

Median values were separately calculated for 3600 patients aged between 30 years and 37 years and differences between all median values were examined.

Differences between manufacturer company values and Turkish population values during 10,11,12,13rd gestational weeks were respectively %11.8, %7.2, %2.5, %-2.7 for Free beta HCG and respectively %18.5, %16.2, %18. 5, %21.3 for PAPP-A. Nine hundred sixty six cases among 16756 were found to be under risk according to median values of Manufacturer Company.

In this study, Free b-HCG and PAPP-A median values were estimated separately for 4 gestational weeks and they were compared with median values recommended by manufacturer company. Thirty two of randomly selected 1000 patients were under risk due to biochemical measurement according to values of Manufacturer Company, but number of under-risk patients decreased to 15 individuals by recently calculated median values. Moreover, among 100 patients, 12 were found to carry combined risk according to values of Manufacturer Company, but the number decreased to 8 individuals by recently estimated median values.

Key Words: Prenatal diagnosis, Turkish medians, f-beta hcg, papp-a

A-122

Effect of Midazolame and Propofol on Nitrosative Markers in Rabbit Extremity Ischemia Reperfusion Model

Kuralay F*, Altekin E*, Çapar E**

*Department of Biochemistry, Faculty of Medicine, Dokuz Eylül University, Izmir, **Department of Anesthesiology and Reanimation, Faculty of Medicine, Dokuz Eylul University, Izmir

Ischemia-reperfusion (IR) is a process which may cause disseminated damage by local and systemic inflammatory response due to deterioration in microvascular functions. Most frequently involved distant organsa re lungs and cardiovascular systems. Tourniquet application is used in extremity surgeries for disrupting distal blood flow and for better surgical view. However, IR damage due tourniquet application occurs and free radical oxygen release deteriorates balance between pro-oxidant and anti-oxidant systems. Effects of anesthetic agents on IR damage are still under investigation and it is a significant issue which may be beneficial for clinical applications. In our study, we investigated effect of propofoe and midazolam at sedation dose on lung damage due to IR established by extremity tourniquet in rabbits concerning nitrosative markers such as nitrite, nitrate, 3-nitrotyrsine (3-NT) levels. Twenty one NEW Zeland rabbit, weighed between 1400 grams and 2600 grams, were enrolled and all rabbits were administered epidural anesthetics. Epidural catheter was inserted through scaral canal in order to eliminate tourniquette pain and one day following this procedure, rabbits were divided into three as to include 7 rabbits in each group. Control group was subjected to 4 hours ischemia +4 hours reperfusion (4-hour IR); midazolam group is subjected to sedation by IV midazolam infusion + 4-hour IR; propofol group is subjected to sedation by IV propofol infusion +4-hour IR. Bilateral lower extremity ischemia is established by applying tourniquet from distal part of trochanter major and reperfusion is established by opening flow after 4 hours. Following reperfusion, deep anesthesia is maintained by IV thiopental and tissue samples were obtained by sternotomy. Nitrite and nitrate levels in lung homogenates were determined by colorimetric kit (Assay Designs, USA) and 3- NT levels were determined by ELISA kit (HYCult, Netherlands). It was found that 3-NT (respectively p=0.015, p=0.002) and nitrate levels (respectively p=0.003, p=0.034) of midazolam and propol sedation groups are significantly lower than that of control group. No inter-parameter differences could be observed between midazolam and propofol groups. In conclusion, it may be speculated that propofol and midazolam at sedation dose applied in distant organ damage caused by peripheral IR damage decreases

nitrosative markers such as nitro tyrosine and nitrate thus contribute to antioxidant and anti-inflammatory mechanisms.

Key Words: Lung, ischemia-reperfusion, midazolam, nitric oxide, nitro tyrosine, propofol.

A-123

Effect of Reducing TSH Reference Range to 2,5 UI/ML on Distribution of Other Thyroid Hormones

Çevlik T, Bekdemir T, Emerk K

Department of Clinical Biochemistry, State Tepecik Training and Research Hospital, Izmir, Turkey

Together with wide-spread TSH measurement by courtesy of immuno-assay technique, TSH reference ranges were lowered by time. Recently, 4.2 uI/ ml is determined as higher limit of TSH, but there are many studies speculating that it would be more suitable to reduce this level to 2.5 uI/mL. In this study, we attempted to determine that how can reducing TSH reference range to 2.5 uI/mL affect distribution of other thyroid hormones.

Serum thyroid hormone levels were measured by DPC Immulite 2000 chemo-luminescence hormone analyzers. Results of 12 device operating in 10 different provinces of Turkey were obtained. The results were transferred to Microsoft Access database. There were 17.057 individuals with selected TSH level of 0.4-4.0 uI/mL. Among them, 12.680 test results for fT3, 12.587 for fT4, 4.833 for T4 and 4.786 for T3 were obtained from database. There were 15.077 individuals with selected TSH level of 0.4-2.5 uI/mL. Among them, 11.275 test results for fT3, 11.091 for fT4, 4.240 for T4 and 4.124 for T3 were obtained from database. There were 2001 individuals with selected TSH level of 2,5-4,0 uI/mL. Among them, 1428 test result for fT3, 1458 for fT4, 1330 for T4 and 558 for T3 were obtained from database. For distributions not suitable for Gaussian distribution, non-parametric 95 percentile distribution analysis was made.

For individuals with TSH level between 0.4-4.0 uI/mL, mean value is 1.4 uI/mL. Mean values of fT3, fT4,T3, T4 are determined as 3.03, 1.2, 103, 7.9, respectively. For individuals with TSH level between 0.4-2.5 uI/mL, mean value is 1.19 uI/mL. Mean values of fT3, fT4,T3, T4 are determined as 3.03, 1.2, 104, 7.9, respectively. For individuals with TSH level between 2.5-4.0 uI/mL, mean value is 3,09. Mean vaues of fT3, fT4,T3, T4 are determined as 3,04 1.2, 108, 8,12, respectively. Distribution according to Kolmogorow – Smirnow Test is found to be within normal ranges in all of three groups.

In conclusion, for individual with TSH level ranged between 0.4-4.0 uI/mL or 0.4-2.5 uI/mL, mean values and data distribution of fT3, fT4, T3, T4 found to be normal, but for individuals with TSH level ranged between 2.5-4.0, it was found that T3 and T4 distribution range was wider and mean values were different than that of groups mentioned above. It was found that reducing TSH reference level to 2,5 uI/mL does not affect distributions of other thyroid hormones.

Key Words: TSH, thyroid hormones, reference values.

A-124

Coronary Syndrome and Is LDL Measurement Necessary in Type II DM Patients?

Murat C*, Muhittin S*, Tsukamoto AH****, Mitsuru M****, Kano T***, Erbil KM**

*Corlu Military Hospital, Laboratory Service Corlu Tekirdag, **Gulhane Military Academy of Medicine, Biochemiestry and Clinical Biohemistry, Etlik, Ankara, Turkey, ***Hamamatsu City University, Japan, ****Keid University, Laboratory Service, Tokyo, Japan

Aim: Necessity of LDL measurement for risk factor assessment in Coronary Syndrome and Type II DM patients

Method: Serums obtained from samples were measured by Modified polyacrylamide gradient gel electrophoresis.

Conclusion: It was revealed that measurement of LDL level is necessary for risk factor assessment in Coronary Syndrome and Type II DM patients.

Key Words: LDL, Poliacrylamide gel, electrophoresis, Coronary Syndrome, Type II DM, level, cholesterol, gradient, risk factor, MI.

A-125

Effect of Rosiglitazon on Adinopectin Levels in Type 2 Diabetes Mellitus Patients

Özdemirkıran F*, Bozkaya G**, Önman T**, Gümüş T*, Çoban Ş*, Sop G*, Karaca B**

*Trhird General Medicine Clinic, Izmir Training and Research Hospital, Izmir, Turkey, **Biochemistry Clinic, Izmir Training and Research Hospital, Izmir, Turkey

Type 2 Diabetes Mellitus patients are encountered with lipid metabolism disorders in addition to carbonhydrate meteabolism disorders. With regards preventing or delaying further complications, those conditions should be under control. Adiponectin is a protein which is produced by adipose tissue and which reduces negative effects of inflammatory mediatos in vessel walls in additon to reducing plasma glucose, triglyceride and free fatty acids. Rosiglitazon increase sensitivity of body against insulin thus decreases blood glucose levels. Concomitantly, the drug is suggested to be effective on lipid levels. In this study, it was aimed to reveal effects of rosiglitazon on glicemia, blood lipid and adinopectin levels of Type 2 diabetic patients. Besides routine biochemical parameters, HbA1c and adiponectin levels were determined in 39 Type 2 Diabetes Mellitus patients aged between 41 to 74 years who were administered only sulphonyl urea. These patients were administered rosiglitazon in addition to anti-diabetic drug. Blood sampling was repeated three months after first blood sampling and effect of rosiglitazon on Type 2 Diabetes Mellitus patients was investigated. Blood lipid levels were determined by routine biochemistry methods, however HbA1 is defined by HPLC and adinopectin levels were defined by Elisa method. Paired samples t test was used for statistical analysis of final results. It was determined that although rosiglitazon is effective on cholesterol, HDL and LDL levels, but this effect is statistically insignificant and on the contrary, statistically significant on triglyceride levels ($p < 0.05$). While HbA1c levels reduced from 8.2% to 6.9%, but it was also found that basal level of adinopectin increased from 22.7±2.1ng/mL to 36.2±3.1ng/mL and this change was statistically significant.

It was concluded that Rosiglitazon has beneficial effects on Type 2 Diabetes Mellitus patients and that it may contribute to anti-atherogenic effect by increasing adinopectin levels, but researches are required to be conducted in long term and with wider samples in order to make a final decision.

Key Words: Adiponectin, Diabetes Mellitus, Rosiglitazon

A-126

Comparison of Three Serological Screening Test Used in Diagnosis of Celiac Disease

Çizmeci Z*, Genç Ö*, Hızlı Ş**, Akın OK*, Serdar M***

*Central Laboratory, Ankara Kecioren Training and Research Hospital, **Pediatry and Gastroenterology Clinics, Ankara Kecioren Training and Research Hospital, ***Department of Biochemistry, Gulhane Military Academy of Medicine

Celiac disease is an enteropathy which is triggered by starting to consume gluten-involving foods. Due to highly wide clinical spectrum, it is difficult to determine incidence and to diagnose. Although small intestine biopsies are of diagnostic value, they may cause discomfort in diagnosis and follow-up as they are invasive procedures. Consequently, serological tests are used in selecting patients for biopsy, particularly in atypical and asymptomatic cases.

In our study, three serological tests in routine use were compared in order to determine best indicator to be used in patient selection for biopsy procedure due to suspected celiac disease.

Ninety six pediatric patients (45 girls, 51 boys, ages ranged 8 months to 15 months, mean age 5.8 months) were included in the study. Anti-gliadin (AGA), anti-tissue transglutaminase (dTG) Ig A and IgG, anti-endomysial antibody (EmA) tests were measured in serum samples by ELISA method.

All serological tests were found to be negative in 76 patients (79 percent) As a result of biopsy taken from 20 patient (21%) with one or more positive serological test results, 7 patients (7%) were found to be congruent for celiac disease.

Although AGA IgG and dTG IgG test results were found to be positive in all of 7 patients with celiac diagnosis, among them 6 patients had positive results with high titrations for EmA IgA, 5 patients for dTG IgA and 3 patients for AGA IgA. While AGA IgA, dTG IgA and EmA IgA test results were all negative in biopsy-negative patients, 12 biopsy-negative patients were AGA IGG positive and 4 were dTG IgG positive.

In our study, EmA IgA was determined as serological test with best correlation with small intestine biopsy together with 86 % sensitivity and 100 percent specifity. As AGA IgA had lower sensitivity and high specifity as well as AGA IgG had high sensitivity and low specifity, they should be preferred to use in combination with other test instead of alone in order to prevent unnecessary biopsy procedures and errors. It was determined that particularly in asymptomatic and atypical patients, endomysial and tissue transglutaminase antibodies should be used in combination as initial tests in diagnosis of celiac disease and it would be the correct way to obtain biopsy samples in case that results of these tests are positive.

Key Words: Anti-gliadin antibody, celiac disease, tissue transglutaminase antibody, endomysial antibody.

A-127

Determining Median Values of Triple Screening Test Indicators in Our Region

Arıkan S, Akalın N

Department of Biochemistry, Baskent University, Ankara, Turkey

Aim: The aim of this study is to determine median values of triple screening test indicators used in pregnancy screening in our region and re-evaluate positive pregnancies determined median values of used triple screening test program according to new median values.

Method: Median values of triple test biochemical indicators measured in 1360 pregnant women between 16-19th gestational weeks were retrospectively examined, who referred to Biochemistry Laboratory of Alanya Training and Research Centre, Başkent University for triple test screening between 2003 and 2206. Differences were evaluated with regards median values registered by used software. Screening test-positive pregnancies were re-evaluated according to new median values.

Results: Median values relevant to 16-19th gestational weeks for each determinant were defined for totally 1130 pregnant women after data that may affect calculations is excluded. Our resultant alpha-fetoprotein median values were found to be significantly lower between 16-19th gestational weeks in comparison with previously used median values ($p < 0.05$). Although a significant reduction was found in 17th gestational week in Human Chorionic Gonadotropin Beta median values ($p < 0.05$), a significant increase was found during 16,18 and 19th gestational weeks ($p < 0.05$). Median values of un-conjugated estriol were found to be low during 16, 17 and 19th gestational weeks, but significantly low in 18th gestational weeks ($p < 0.05$).

Conclusion: By using median values determined according to regions instead of data registered to software used during prenatal risk assessment, we believe that unnecessary invasive procedures can be avoided which may bear risk both for mother and fetus.

Key Words: Down syndrome, median, prenatal diagnosis, triple screening.

A-128

Evaluating Relation of Homocystein and CRP Values Among Cardiovascular Risk Factors with HDL-Cholesterol and LDL-Cholesterol

Uncu D, Kirmit A, Güçtekin A, Efesoy A

Ankara Numune Training and Research Hospital, Ankara, Turkey

High blood levels of Homocystein(hcy) and CRP are considered as risk factor for atherosclerosis. Risk of atherosclerosis further increases in combination of these factors with LDL-cholesterol, another risk factor. In this study, we aimed to demonstrate relation between homocystein and CRP with LDL-cholesterol and HDL-cholesterol.

We enrolled 118 patients who referred to Ankara Numune Training and Research Hospital. With regards two study group, first group included patients with T.cholesterol levels above 200 mg/dl and second group included 6 patients with T.cholesterol level below 200 mg/dl. No patients were using cholesterol-lowering medication or taking vitamin supplementation. There were no statistically significant differences in both group with regards the hcy and CRP levels. There were no correlation between LDL-cholesterol and hcy values in first group with high cholesterol levels, whereas there was a negative correlation between hcy and HDL-cholesterol levels ($p < 0.01$). In second group, there was positive correlation between LDL-cholesterol and hcy levels ($p < 0.01$) and also there was negative correlation between HDL-cholesterol and hcy levels ($p < 0.01$). İIn both first and second group, there were no correlations beween CRP and LDL-cholesterol or CRP and HDL-cholesterol.

In conclusion, relation of HDL-cholesterol with hcy, one of several cardiac risk factor, was found to be stronger than with CRP, the other cardiac risk factor. It was observed that CRP does not correlate with cholesterol levels, however it was correlated with hcy in both groups. As determined by Framingham Study Group, highest risk for atherosclerosis is associated with combination of high LDL-cholesterol level and low HDL-cholesterol level. Although high LDL-cholesterol level is a risk factor for atherosclerosis, high HDL-cholesterol is preventive against atherosclerosis.

Key Words: homocystein, atherosclerosis, CRP, HDL-cholesterol, LDL-cholesterol

A-129

Comparison of Techniques used in Pre-process of Glycosylated Hemoglobin Measurement

Serin E, Buğdaycı G, Çağlayan M, Özcan F

Department of Biochemistry, Faculty of Medicine, Abant Izzet Baysal University

Immunoassay-based methods are frequently used in follow-up procedures of diabetes mellitus. This method could not be fully automated as it involves pre-process which depend on principle of rupturing erythrocytes by particular amount of hemolysate. This is a preliminary work conducted before the pre-process and it is sensitive to user errors. In this study, we attempted to answer the question that how deep should the whole-blood aspirated pipet be immersed into hemolysate solution. Totally, 115 patients were enrolled in our study, who had 65 pathologic glycoslylated hemoglobin (HbA1c) and 50 HbA1c within reference ranges. Three technicians were instructed to examine HbA1c levels sequentially among total of 115 EDTA blood tube. Yellow pipet tips to be used in the study were marked half centimeter above bottom point of pipet tip. Technicians immersed pipette tips for half centimeter at designated mark into blood contained in tube in order to pipet 10 μL whole blood into pipettor. Later, one technician did not immerse pipet tip into lysate solution by pouring directly from air (A-technique), other technician immersed pipet tip into lysate solution after cleaning blood residue on pipet tip by paper towel (B-tecnique) and last technician immersed pipet tip until mark level is reached and cleaned pipettor by pull-push method (C-technique), when

technicians emptied pipet prefilled with blood into godet containing 400 mL hemolysate solution. Blood of each patient was studied by all three preliminary work method and results were compared using ANOVA Post Hoc Tukey statistical analysis method and $p < 0.05$ considered to be significant. Although no difference could be found between three techniques considering HbA1c levels and % HbA1c both in pathological group and normal group (for group with HbA1c>6, p=0.217 and p=0.051 respectively and for group with HbA1c<6, p=0.637 and p=0.645, respectively), there were significant differences in both groups with regards hemoglobin (Hb) levels between three methods (p=0.000). In conclusion, although there were differences between Hb levels, we observed that no differences appeared between % HbA1c levels as measurement technique is not very effective in changing power of Hb in the formula used for calculating % HbA1c and we believe that it is possible to study by immersing pipet tip up to half centimeter into hemolysate.

Key Words: Glicosylated hemoglobin, pre-process differences.

A-130

Serum Cystatin-C Levels of Children Gymnast aged Between 10 years and 13 years subjected to Maximal Exercise

Serin E*, Çoknaz H**, Şemşek Ö**

*Department of Biochemistry, Faculty of Medicine, Abant Izzet Baysal University, **Department of Coaching Education, Exercise and Sports Vocational High School, Abant İzzet Baysal University*

Recently, a new criteria was added to evaluation of renal functions in addition to blood-urine creatinine measurements, urine albumin-protein measurements; this new criteria is serum cystatin C measurement. Renal blood flow decrease due water loss resulting from long-term physical exercises, especially during marathon run or long-period muscle exercises or due to blood flow concentrated through muscles, myoglobinurea originating from muscle destruction and resultant tubular dysfunctions establish renal damages known to be related with exercise. In this study, we attempted to demonstrate the extent maximal exercise applied by gymnast children aged between 10-13 years affect renal function by serum cystatin C measurements. Twenty national gymnast children aged between 10-13 years (mean±SD= 11.45±1.10 years) participated to our study. Sportive ages of these children were ranging between 3 years to 8 years. Children were instructed to run on 400-meter running track until they got tired (maximal). Running period was mean±SD 39.55±13.22 minutes ranging from shortest period of 18 minutes to longest period of 61 minutes. Blood samples were obtained before run (1st measurement – basal), at then end of run (2nd measurement - test) and 2 hours following run (3rd measurement- resting). Serums were separated from blood samples and cystaitn C levels were studied by immunoturbidimetric method in Dade Behring BN-Prospec equipment. Results obtained after measurement studies were compared statistically by ANOVA Post Hoc Tukey test and $p < 0.05$ level considered to be significant. In conclusion, while a significant difference was found between cystain C levels obtained by all measurements p=0.000,

differences between 1st and 2nd measurements and 1st and 3rd measurements were also found to be significant (p=0.000 and p=0.021, respectively), but difference between 2nd and 3rd measurement was found to be insignificant (p=0.301). Although our study could not clearly revealed that whether difference in serum cystatin c levels due to maximal exercise originates from relative serum concentration found following unmeasured body fluid loss or deterioration of renal function caused by maximal exercise, this is first study conducted in a children gymnasts group, who exercise in a routine manner, and it may be preliminary work for future studies.

Key Words: Cystatin C, maximal exercise, renal damage.

A-131

Serum Paraoxonase Levels in patients with Lung Cancer

Saruhan E*, İnal S**, Kushan O***, Akman Ş****, Erbil MK****

*Military Hospital, Canakkale, **Military Hospital, Eskisehir, ***Department of Medical Oncology, Gulhane Military Academy of Medicine, Ankara, Turkey, ****Department of Biochemistry and Medical Biochemistry, Gulhane Military Academy of Medicine, Ankara, Turkey

Aim: Lung cancer is most common type of cancer in our country as it is all over the world. Oxidative DNA damage is one of mechanisms involved in occurrence of cancer. Paraoxonase (PON) enzyme is calcium-dependent esterase which is found in serum with HDL and it has a role in preventing oxidation of lipoproteins due to antioxidant features. It was observed in several studies that PON activity reduces in hipercholesterolemia, diaetes mellitus, chronic renal failure and cardiac failure. However, studies conducted with cancer patients are extremely limited. In this study, we aimed to determine relation DNA damage found in cancer patients and serum PON levels by comparing serum PON levels of healthy individuals with that of cancer patients.

Methods: Serum PON and cholesterol levels of 63 patients with lung cancer and of 63 healthy control individuals were measured. PON activity is determined by spectrophotometric determination of 4-nitrophenol, used as substrate and formed by enzymatic hydrolysis of paraoxone, in 405 nm by ELISA reader.

Conclusion: Serum PON values were determined to be low in cancer cases in comparison with that of healthy control group. There was no significant difference found between cholesterol levels.

Key Words: Paraoxonase, lung cancer, Oxidative DNA damage.

A-132

Length of Telomere and Derivatives in Endothelial Cell Cultures

Emerk K*, Tekeli Ö*, Aral C**, Özer A**

*Department of Medical Biology, School of Medicine, Marmara University, **Department of Biochemistry, School of Medicine, Marmara University

Endothelial cells are produced in cell culture environment by sequential passages in order to make them age until they mate population for forty times. Telomeric lengths of cells were meas-

ured almost in all passages. Besides, nitric oxide and derivatives of nitric oxide derivatives were measured in endothelial cells via eNOs.

Our results demonstrated that length of telomere shortens in each population mating in endothelial cells under cell culture conditions and that NOX concentrations remain same. After 16-19th population mating, telomere lengths increased as well as a temporary and concomitant increase was observed in NOX concentrations. While NOX levels return to normal, telomere lengths continued to increase and it reached to a closer length closer to initial lengths that indicates an "everlasting" cell.

Increase in telomeric length indicates telomerase activities, whereas increase in NOX concentrations implies eNOs activation.

Key Words: Endothel, nitric oxide, telomere.

A-133

Evaluating Measurement Uncertainties for Glucose Parameter in Clinical Biochemistry Laboratory

Arslan İnce FD, Arslan ŞB, Üstüner F, Akgöl E

I. Biochemistry and Clinical Biochemistry Laboratory, Ataturk Training and Research Hospital, Izmir, Turkey

Aim: Measurement uncertainty is a parameter related to measurement result which characterizes distribution of results that may be reasonably attributed to measured parameter. In other words, it implies the extent measured value represents exact level. In general, measurement uncertainty involves many components. Aim of this study is to determine type A and type B uncertainty in glucose analysis using glucose hexokinase method and to evidence its usefulness in laboratory studies.

Materials and Methods: Repeatability, kit uncertainty and uncertainty related to deviation of calibration were determined for glucose parameter. After all those standard uncertainty values were determined, combined standard uncertainty was defined. Enlarged uncertainty was derived by multiplying combined standard uncertainty with scope factor. K equals to approximately to 2 for 95% Confidence interval.

Results: According to unknown test (X) result formula, measurement uncertainty for glucose is defined as X±0,03X (%95,k=2). For example, uncertainty level is ±3,9 mg/dl for glucose concentration of 126 mg/dl.

Conclusions: All accredited centers should estimate measurement uncertainty for each parameter. Measurement uncertainty represent confidence of results. All sources of errors, which may affect result of test, should be determined at pre-analytical, analytical and post-analytical steps and the should be defined as uncertainty value. Part of those components can be estimated by assessing statistical distribution of results related to measurement series and they can be characterized thanks to experimental standard deviation. However, estimation of other components can depend only to experience and other professional knowledge. According to this study, clinicians should evaluate border-line test results considering measurement uncertainties.

Key Words: Glucose, measurement uncertainties.

A-134

Relation Between Severity of Coronary Artery Disease and Apo-lipoprotein E and B-100 Gene Polymorphism

Arslan İnce FD*, Köseoğlu M*, Yeşil M**, Deveci E**

*II. Laboratory of Biochemistry and Clinical Biochemistry, Ataturk Training and Research Hospital, Izmir, Turkey, **I. Cardiology Clinic, Ataturk Training and Research Hospital, Izmir, Turkey*

Aim: Lipid metabolism and relevant lipoproteins play significant role in Coronary Artery Disease (CAD). Apo-lipoprotein E (Apo E) and B-100 Arg3500Gln (ApoB 100) gene polymorphism relates to atherosclerosis. Aim of our study is to evaluate effect of Apo E and B-100 Arg3500Gln gene polymorphism on severity and involvement of CAD.

Materials and Methods: 53 patients, aged between 54±11 and previous myocardial infarction history (MI), were enrolled to the study. According to coronary angiography results of patients, coronary artery scores were determined as introduced by Reardon et al, in order to assess coverage and severity of atherosclerosis.

Results: Genotypic distribution of patients was as 7.5% for Apo E2/E3, 77.4% for Apo E3/E3 and 15.1% for Apo E3/E4. No Apo-B100 Arg3500Gln mutation could be detected in any patients. According to the results of coronary angiography, there were no significant differences between involvement score means (26(21-51), 41(4-115) and 32(4-80), respectively) in patients with E2/E3, E3/E3 and E3/E4 genotypes.

Conclusions: There are many studies evidencing presence of relation between Apo E and B-100 gene mutation and CAD. In our study, we assessed extent of this relation. No relation could be found between Apo E gene polymorphism and severity and coverage of CAD. It would be more definitive to conduct studies with larger populations and to examine other gene mutations for Apo-B100 and Apo E genes.

Key Words: Apo-lipoprotein E, Apo-lipoprotein B-100, coronary artery disease, polymorphism.

A-135

Can NO and GH Values be Used As Early Predictive Marker for Prognosis and Risk Determination in Diabetes Mellitus (Type II)?

Yiğitbaşı T, Baskın Y, Afacan G

RSHMB İzmir District Office [Hygienic Affairs District Office]; İzmir, Turkey

Aim: Glicemic control (GC) is of importance for Cardiovascular Disease Risk determination in Diabetes Mellitus (type II). In this study, ability to use NO (Nitric Oxide) and GH (Growth Hormone) measurement results as a predictive marker at diagnosis according to glicemic control was attempted to be determined.

Method: Twenty Seven patients with good GC (HbA1C<7), 32 diabetic patients with poor GC (HbA1C>7) and 17 healthy control were included in the study. Both in patient and control groups, serum fasting blood glucose, cholesterol, triglyceride (TG), HDL-cholesterol, LDL-cholesterol and NO were determined by colorimetric methods, whereas HbA1c determined by HPLC and GH levels were determined by chemo-luminescence method.

Results: When control group and patients with good GC were compared, only LDL-cholesterol values were found to be significantly high and GH values were found to be significantly low. In group with poor GC, levels of fasting blood glucose, triglyceride, HbA1c and NO were found to be significantly high as well as HDL-cholesterol and GH levels were found to be significantly low. When compared with group having good GC, group with poor GC was found to have significantly low fasting blood glucose, HbA1c and NO and GH levels were significantly low. HbA1C,TG(p<0.05) and NO(p<0.01) levels were correlated in all series and in male patients in diabetic group. For women, there was a negative correlation with GH(p<0.05). HbA1c, age, GH, No and fasting blood glucose levels were detrmined as GC and cardiovascular risk determinants.

Discussion: In this stdy, GC levels, GH and No correlates in Diabetes Mellitus (type II). High No values determined in patients with poor GC may be used in early diagnosis of vascular dysfunction just as present lipid parameters. We believe that using NO and GH as routine control parameters would be beneficial in following prognosis.

Key Words: Diabetes mellitus, GH, NO.

A-136

A New Clinical Application of Multiple Test Methods: Using Multiplex in Diagnosis of Systemic Autoimmune Diseases and Performance of Method

Baskın Y, Afacan G, Yiğitbaşı T

Department of Clinical Biochemistry, State Tepecik Training and Research Hospital, Izmir, Turkey

Aim: Autoimmune diseases refer to immune response triggered against own antigens by body due to non-clarified reasons and relevant damages. In order to diagnose them, these auto-antibodies should be detected. Test technologies, which enable to determine the auto-antibodies, had advanced from microscopic cell preparations examined subjectively to quantitative assessment of specific proteins through 70-year period. In this study, we aimed to investigate laboratory validity and method performance of recently developed multiple test system (Multiplex), developed to measure auto-immune antibodies, in an independent sample group.

Method: Study sample included data related to laboratory quality studies conducted between December 2005 and August 2007 at Auto-immunity Laboratory of İzmir Hygienic Affairs District Office and they had provided a source for laboratory validities and method performance in this laboratory. For data of independent sample group, serum samples of 1136 cases were used, which were referred to this laboratory for preliminary diagnosis of systemic auto-immune diagnosis. Data analysis and Statistical analysis were conducted by westgard quality applications and SPSS software. Laboratory studies: Among 1136 sample, 10 separate auto-antibodies were concomitantly studied by multiplex method. Positive serums were subjected to confirmation by IFA metod, which is approved as gold standard. Studies conducted with quality control serums included one negative, three separate positive serums.

Results: According to auto-antibody distribution of patient group, ANA positivity was found to be % .... And dsDNA positivity to be % .. IFA patterns correlated with multiplex measurements. For multiplex measurements, accuracies of the method were found to be 17.2 %, 22.1 %, 8.2 %, 9.8 %, 16.8 %, 11.9 %, 6.1 %, 24.9 %, 16.0 % and 27.8 % for Scl-2, dsDNA, Jo-1, Sentromer, RNP, SS-A, SS-B, Histon, Sm and ANA, respectively.

Conlusion and Discussion: We conclude that multiplex method can be used routinely in diagnosis of auto-immune diseases due to both possibility of concomitant measurement and repeatability and as number of parameters can be defined in accordance with laboratory requirements.

Key Words: Multiplex, method performance.

A-137

Bisalbuminemia: Review of an Interesting Electrophoretic Abnormality Because of a Case

Güçtekin A, Uncu D, Şahin A

Ankara Numune Training and Research Hospital, Ankara, Turkey

Bisalbuminemia is characterized by the presence of two albumin components (in equal or unequal amounts) on serum protein electrophoresis . Bisalbuminemia may be inherited or acquired. The cumulative frequency of inherited bisalbuminemia is typically 1:10 000 to 1:1000 , with inheritance showing an autosomal codominant pattern . Inherited bisalbuminemia has no pathologic or therapeutic consequences, but it is of interest for investigations of the evolution of functional differences in the protein, including altered affinity for steroid hormones, thyroxine, and several dyes. An acquired or transient form has been described that usually has a faster mobility . The faster form may be seen in patients who receive large amounts of ß-lactam antibiotics or have pancreatic diseases, usually complicated by a ruptured false cyst. Acquired bisalbuminemia has been reported as a rare occurrence in patients with myeloma or in nephrotic syndrome. The

importance of this rare condition in the pathophysiology of established diseases is uncertain. Bisalbuminemia was noted as an incidental finding on serum protein electrophoresis, a 72 - year-old patient who presented with cough symptom to our hospital. He has been evaluated generally with physical, radiologic and laboratory examinations. We found high serum creatinine and urea concentrations. USG examination revealed grade 2-3 paranchimal kidney disease.Serum protein electrophoresis was performed. Routine protein electrophoresis was performed. The mobility of the albumin variant relative to the normal albumin was determined. The samples that showed a double albumin band were also analyzed by Hydragel Protein reagent set (SEBIA)]. Although the possibility that some physiologic or pharmacologic substances may not bind to abnormal albumin variants as well as they bind to normal albumin should not be discounted..The genetic origin was not investigated in this study since the finding of bisalbuminemia did not influence the diagnosis, management, course, or prognosis of chronic kidney disease . The role of persistent bisalbuminemia in renal disease is uncertain.

Key Words: Bisalbuminemia, albumin variant, chronic kidney disease, electrophoresis.

A-138

Significance of Anti-CA II Antibodies in Metabolic Syndrome

Menteşe A*, Alver A*, Keha EE*, Değer O*, Karahan SC*, Erem C**, Hoşver I*, Hacıhasanoğlu A**, Çolak M*

*Biochemistry, Faculty of Medicine, Karadeniz Technical University, Trabzon, Turkey, **Internal Medicine, Faculty of Medicine, Karadeniz Technical University, Trabzon, Turkey

Carbonic anhydrase II isoenzyme (CA II) is abundantly synthesized at the epithelial cells of biliary, pancreatic, renal tubulary and salivary gland channels. For this reason, as a widely seen target antigen, CA II secreted by the epithelial cells of various exocrine glands has been suggested to play an important role in the pathogenesis of some autoimmune diseases. Here, we investigated the presence of anti-CA II antibodies in the sera of the patients with metabolic syndrome. 49 patients with metabolic syndrome and 43 healthy persons were studied. The presence of anti-CA II antibodies were determined by an ELISA method developed in our laboratory. The presence of anti-CA II antibody in the sera of 6 of 49 patients with metabolic syndrome (12.2%) have been established. Despite to lower percent of autoantibody with respect to other autoimmune diseases where anti-CA II antibody is positive in order to be able to attribute a probable role for CA II antibodies in the pathology of metabolic syndrome, the need of further investigations was concluded.