D-04
PREANALYTICAL PHASE AND INTERFERENCES IN IMMUNOCHEMICAL ANALYSIS

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

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

D-05
THYROID IN ENERGY BALANCE

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

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

D-06
INTRAOPERATIVE BIOMARKERS

Mehmet Ali Kocdar
Dokuz Eylul University School of Medicine, Surgery Breast and Endocrine Surgery Unit, Izmir

As a biomarker, intraoperative parathormon monitoring (IoPTH) is probably unique method to predict operative success during surgical intervention. T3 is the most common indication for parathyroid surgery is primary hyperparathyroidism (PHPT) due to adenoma, hyperplasia, cancer or rare some hereditary co. The most common indication for parathyroid surgery is primary hyperparathyroidism (PHPT) due to adenoma, hyperplasia, cancer or rare some hereditary conditions. The only definitive cure for PHPT is parathyroidectomy of hyperfunctioning or abnormally enlarged parathyroid glands. The aims of the surgery is to achieve normocalcemia as well as to avoid recurrence and persistance of PHPT. Recent developments in the field of imaging techniques and IoPTH assays resulted in remarkable paradigm shift in surgery. Traditional surgical approach (bilateral neck exploration) mostly moved to focused or minimally invasive parathyroidectomy. Three important features of parahormone (PTH) make it an ideal biomarker intraoperatively: It has a short half-life of 4-5 minutes. Gland devascularization effects hormon levels immediately. PTH is produced only by the parathyroid glands. Excessive PTH release from hyperfunctioning gland inhibit PTH secretion from the normal parathyroid glands thus biochemical cure is confirmed after successful parathyroid Surgery. IoPTH monitoring provides three important advantages during parathyroid and thyroid surgery:


“Endocrine and Metabolic Diseases Biomarkers From Diagnostic to Therapy”
Inadequate decrease at blood PTH level after removing abnormal gland indicates presence of additional hyperfunctioning gland/s. Surgery is stopped after the obtaining targeted PTH value. Postoperative hypocalcemia can be predicted after thyroidectomy. PTH level close to zero is the indication for parathyroid auto-implantation. It is useful for distinguishing parathyroid and non-parathyroid tissues during Surgery. Proper application of ioPTH monitoring into minimal invasive parathyroidectomy has been resulted in highly accurate and equal outcomes in comparison with BNE. Several ioPTH monitoring protocols have been suggested for predicting surgical outcomes. Miami criteria is the most common used one: PTH sampling is performed at 4 time points: pre-skin-incision, pre-gland-excision, 5 minutes post-gland-excision, 10 minutes post-gland-excision. When the PTH value at 10 minutes post-gland-excision decreases >50 percent from the baseline level, surgery can be stopped without further neck exploration. Unless, the surgeon can repeat the PTH level at 20 minutes or exploration is continued to other glands. Although, there is no standart protocol, ioPTH monitoring is used for herediter forms of PHPT and renal hyperparathyroidism. However, blood sampling is generally performed 30 mins after complete resection of hyperfunctioning glands.

D-07  INTRAOPERATIVE BIOMARKERS

Dilek Çımın
Dokuz Eylül University, Central Laboratory, Izmir

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

D-08  ENDOCRINE DISRUPTORS

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

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

Nowadays it is possible to access the database at any time and anywhere. The rapid development of interaction between user and computer systems in the technology of communication, reveals the need for intelligent ecosystems. A system that links every person, every work, every service, every tool to each other with sensor networks, intelligent objects, algorithms always in every context: The objects of the Internet (IoT) are transformed into the internet of everything. Equipped with new / next generation technologies, IOIT is an approach that will affect the whole business world and it can be expressed that the intelligent devices and objects are defined one by one in the internet infrastructure and these devices are connected with each other. Such a system in which any data can be retrieved from anywhere at any time, real-time, or in which different data can be collected and analyzed over time, can provide effective solutions in the field of health. Electronic health records, mobile health applications (mHealth etc), data flowing from wearable technologies constitute important inputs of the health data system. USS National Health System, MHRBS Center Physician Appointment System, SSBSS Sportsman Health Information System, KKDS Clinical Decision Support System, EBDS Electronic Document Management System, İKDS Drug Decision Support System, HRMS Human Resources Management System, KHYS Chronic Disease Management System, E-pulse Personal Health System, Teletip (phonemed) System, EGIS Barrier-Free Health Communication System, AHBS Family Medicine Information System, HSBS Public Health Information System are electronic health platforms used today in our country. Information technologies are utilized in many areas such as health policy production and management, hospital management, clinical research, preventive medicine approaches, drug use analysis, frauds for health records and assurance systems, community health analysis, risk management, patient relationship management, health coaching. In addition to management approaches, information-processing technologies and the internet have facilitated the evolution of medicine after the perception of “healer doctor” and with the 1900s microbiology theory of medicine, called the second stage of medicine, and the phase of better health care towards the 3rd stage: the molecular medicine in which medicine bends atoms, molecules and genes period. Biotechnology derives from genomics, tissue engineering, human body shop, stem cell, cloning, gene therapy are no longer considered as science-fiction films. How a human resource, that is, a health worker and a physician of such transformation should be, and what characteristics should be carried out? The study focuses on this issue. D-10  DIABETES MELLITUS AND CANCER

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

Epidemiologic data suggest that T2DM (Type 2 Diabetes Mellitus) is associated with an increased incidence and mortality from many cancers. Obesity and T2DM triggers carcinogenesis via altering endocrine microenvironment. Pro-tumorigenic molecules mediating this process are listed as; insulin, insulin-like growth factor-1 (IGF-1), leptin, adiponectin and inflammation cytokines, IL-6 and TNF alpha. Specifically, insulin and IGF-1 bind to their respective cell surface receptors and activate the PI3K/Akt/mTOR and Ras/Raf/MAPK pathways. Insulin and IGF-1 stimulation promote tumorigenesis via mitogenic, antiapoptotic and proangiogenic effects. Leptin has proliferative and proangiogenic potential in target tissue while adiponectin is a proapoptotic and antiangiogenic molecule. Increase in leptin/adiponectin ratio is critical in neoplastic transformation. Finally,