STUDY OF PLASMATIC AND URINARY OSMOLARITY UNDER HYPOXIC-HYPOBARIC CONDITIONS

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SUMMARY

Objective: To evaluate the dynamics of human body's water and electrolyte balance under exposure at hypoxic-hypobaric conditions from the view of osmotic phenomenon. The osmolarity test consists in an indirect measurement of number of dissolved particles in a solution, regardless electrical charge. In order to calculate the plasmatic osmolarity it is necessary the testing of sodium first, while protein waste, such as urea and creatinine are measured from random urine samples in order to calculate urinary osmolarity.

Materials and Methods: The study was realised on a lot of 36 students from Military Aviation Academy, 4 female and 32 male, aged between 19 and 23 years. The subjects were tested in hypobaric chamber of INMAS. They were exposed to hypoxic-hypobaric stress, and the blood and urine samples were collected before and after exposure.

Results: We noticed that the plasmatic osmolarity has decreased at 69% from the subjects after hypoxic exposure, mainly as a result of glycemia and natremia decreasing at 67%, respectively 53% from the subjects. In the same time, the urinary osmolarity has decreased at half of subjects, especially due to urea decreasing. We also observed that 67% of subjects produced a more diluted urine after hypoxic exposure and this may be explained by a reduced excretion of large and heavy molecules in urine, such as glucose, urea or creatinine.

Conclusions: In this study we have showed that exposure of human subjects at hypoxic-hypobaric conditions results in decreasing of plasmatic and urinary osmolarity.

Key-words: plasmatic osmolarity, urinary osmolarity, water and electrolyte balance, hypoxia.

MOLECULAR MECHANISMS OF THE APOPTOSIS AND ITS SIGNIFICANCE IN BIOLOGICAL SYSTEMS

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SUMMARY

Apoptosis triggered by exogenous and endogenous stimuli such as ultraviolet radiation, oxidative stress, and genotoxic chemicals is a crucial phenomenon within biological systems. DNA damage activates and stabilizes p53 in nucleus and cytoplasm and regulates other proteins that stimulate intrinsic and extrinsic apoptotic pathways. Apoptosis is morphologically distinct from that of necrosis and both the phenomena depend on the types, developmental stages, physiological environment of tissues and the nature of death signal. Malfunctioning of apoptotic pathway may cause human diseases like cancer, neurodegenerative and autoimmune disorders. Recently, potent apoptosis-inducing compounds associated with human health have been recorded that prevent tumor promotion, progression, and the occurrence of cellular inflammatory responses. Certain photosensitizing drugs are being employed in photodynamic therapy to induce apoptosis for the treatment of cancer and non-cancerous cells. This review emphasizes the molecular mechanisms of apoptosis, associated diseases and certain therapeutic agents implicated in the elimination of malignant cells.

Keywords: apoptosis, apoptosis-inducing drugs, caspase, necrosis, pathogenesis, photodynamic therapy, ultraviolet radiation

KINESIOTHERAPY, THE MAIN "TOOL" FOR FIGHTING AGAINST OSTEOPOROSIS. THE CASE OF AERONAUTICAL PERSONNEL

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SUMMARY

Kinesiotherapy is the major means of intervention in the proper treatment of osteoporosis, aiming to either prevent, or cure it. As it has already been scientifically demonstrated, immobilization induces loss of bone mass and this process becomes more serious for longer periods of immobilization. Recovery of bone mass depends on the duration of the immobilization period. It is obvious that regular exercise during childhood and adolescence produces an optimal peak bone mass, which represents a future acquisition of health capital. Regular moderate exercise will maintain bone mass and these benefits translate to a considerably reduced risk of osteoporosis in later life.

Keywords: kinesiotherapy, osteoporosis, aeronautical personnel

CHANGES OF KERATINOCYTES OCCURRING DURING THE REEPITHELIALIZATION PROCESS IN DIABETIC PATIENTS

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SUMMARY

Changes of keratinocytes occurring during the reepithelialization process in diabetic patients have been showing by performing biopsies, taken from chronic and fibrotic ulcers and normal skin obtained from patients diagnosed with diabetes. Biopsy pieces were fixed in 10% formalin and processed for inclusion in paraffin. Imunostaning was performed using avidin-biotin-peroxidase complex and immunofluorescence techniques. It was found that the migration of keratinocytes in wound healing is based on α6β4 integrin interaction with basement membrane proteins, including laminin 5. The main changes occurring in keratinocytes during the reepithelisation phase in diabetic patients are the increased expression of integrin β6 on their surface, being able to raise the assumption of its protective role during healing. It can be said that the laminin 5 causes a weak migration of keratinocytes and an inability to form matrix, activation of this protein being transient and limited in surface.

Keywords: diabetes mellitus, keratinocytes, integrin β6, laminin 5.

AN INDICATOR OF CRITICAL INTERPERSONAL RELATIONSHIPS. THE SIGNATURE AS REBELLION - CASE STUDY -

Mihaela Oancea, psychologist

SUMMARY

A signature is the graphic element which represents you in the other eyes. According to the supposition that its interpretation could revealed some unknown aspects of your personality or character, the experts of such a domain of study are all agree with the idea that such a method would be much revealing than graphology. There are few studies on signature content. The present paper shows a case of signature used, in official documents, as a single rebellion act (hidden for a while) toward a society and a system whose constrains were neither fully understood nor totally assumed.

Key-words: signature, interpersonal adaptation, relationships, psychological counseling.

THE 59th INTERNATIONAL CONGRESS OF AVIATION AND SPACE MEDICINE WAS HELD IN BUCHAREST, ROMANIA

The 59th International Congress of Aviation and Space Medicine was held in Bucharest, Romania, in a beautiful venue provided by Radisson Blu Hotel, from 11th to 15th of September.

LETTER FROM IAASM PRESIDENT