and III group was reduced (to 0,036±0,004 and to 0,094±0,007 nmol/s mg protein ($p \leq 0,001$)). The activity of AMF in the spleen of animals in III group was increased more than in 1,6 times ($p \leq 0,05$). I combined action of radiation and dust in the immune-responsible organs decreasing of 5'-NT activity occurred, which caused accumulation of adenosine with following changes of adaptive mechanisms. There are changes in purine metabolism in the thymus. The activity of 5'-NT of III group animals reduces to 0,102±0,007 nmol/s mg protein, the activity of AMF-asae in the III-d group of animals reduces to 0,310±0,009 nmol/s mg protein ($p \leq 0,05$). Results of research showed combined influence of chrysotile dust and ionizing radiation in the remote period causes increasing the activity of 5'-NT, ADA, AMF-asae in the liver. In combine action the activity of 5'-NT, ADA, AMF-asae increases in 1,6; in 2,5 and in 6,0 times ($p \leq 0,01$) accordingly. The activity of 5'-NT, AMF-desaminasae in adrenal medulla and lymphocytes of peripheral blood in the animals of III group reliable increased. The activity of ADA did not change. On the base of obtaining results we can say, that adrenal medulla tissues and lymphocytes of blood in combined action of radiation and dust responses considerable intensification of the processes of anabolism and catabolism in the remote period, which marked on the secondary character of changes.

Therefore, the combined action of radiation and asbest dust causes considerable interruption of enzymes of purine metabolism, which characterized the strain of adaptive-compensate mechanisms of an organism on influence of dust-radiactive factor. The relative activation of catabolic processes occurs, that allows to assume opportunity of reparation of metabolic processes of an organism in the remote period at the expense of compensate possibilities of an organism.

The work was submitted to the International Scientific Conference «Diagnostics, therapy, prevention of socially significant diseases rights». Turkey (Antalya), August, 16-23, 2008, came to the editorial office on 08.07.2008.

IMMUNOMODULATORY CHANGES IN THE LYMPH NODES MEDIATED BY STRESS DURING EARLY POSTNATAL DEVELOPMENT

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Stress is thought to be immunosuppressive but paradoxically exacerbates inflammatory and autoimmune diseases (K.Viswanathan et al., 2005). Many aspects of the stress-induced immunomodulation remain controversial especially in terms of the age-related aspects of the problem. Growing body in known to be particularly vulnerable to the stress exposure but the details of the stress-mediated immunosuppression are mainly investigated at the level of the central lymphoid organs which is described as an accidental thymic involutation, while the involvement of the peripheral immune organs remains underestimated (Q.Li et al., 2005; R.G.Tseng et al., 2005).

The links among the stress-associated increased level of plasma glucocorticoids, catecholamines and immunity were examined in a number of studies. As peripheral blood is generally the only "window" available through which the human immune response can be studied, it is difficult to assess the mechanisms by which neuroendocrine responses affect either the inductive or effector phases of immunity, as both generally occur in tissues and not in the blood, hence immunohistochemical methods of the tissue-specific changes evaluation are invaluable in getting information regarding the stress-associated immunomodulation at the level of the peripheral lymphoid organs (J.K. Kiecolt-Glaser et al., 1995; D.A. Padgett et al., 2003; J.Diao et al., 2006; M.E. Truckenmiller et al., 2006).

The objective of the present investigation was to reveal the stress-induced immunomodulatory changes in the growing body evaluated at the level of the secondary lymphoid organs (lymph nodes).

Prepubertal Sprague-Dawley rats aged 21 and 30 days corresponding to the weaning and infant periods accordingly, were exposed to the severe chronic (restraint) stress (R.Kvetnansky et al., 1970) with 7 daily 5-hour sessions. Each age group of the experimental animals contained 8 rats with another 8 rats serving as an age-matched control, with total number of the animals equal to 32 species.

After the last session of stress the animals were sacrificed, their thymus, spleen and inguinal lymph nodes were sampled, weighed, fixed in formalin and embedded in paraffin. Histological sections of the lymph nodes were stained with hematoxylin-eosin for routine histological examination and immunohistochemically proceessed for CD8 (T-suppressor/cytotoxic lymphocytes) and CD20 (B-lymphocytes) markers using streptavidin-biotin-peroxidase method with subsequent quantitative evaluation of the volume density and the numeric density of the immunopositive cells using NIKON image analyzer with Image Pro Plus 4.5 software.

It was demonstrated that chronic stress induced prominent immunosuppressive changes in the lymph nodes of the prepubertal rats of both age groups. They included considerable reduction of both T- and B-zones in the lymph nodes with increased number of apoptotic cells mainly in the B-zones. The diameter of the primary and secondary lymphoid nodules and the number of the secondary lymphoid nodules was reduced in the senior age group of the experimental animals while the width and the volume density of the

paracortical zone decreased in both experimental groups.

The immunohistochemical staining for the CD8 demonstrated that the immunoreactive cells were concentrated in the paracortical zone of the lymph nodes and were scanty in the mantle zone of the lymphoid nodules and in the medullary cords. After stress exposure the number of immunopositive cells in the paracortical zone decreased while single immunoreactive cells were present in the medullary cords and in the cortex of the lymph nodes.

The immunohistochemical staining for CD20 exhibited accumulation of the immunopositive cells in the lymphatic follicles being less densely distributed in the medullary cords of the lymph nodes.

Image analysis demonstrated that the volume density of the CD8+ immunoreactive cells was significantly reduced in the weaning and infant ($p<0,01$) age groups of the experimental animals compared to the age-matched control rats, while the volume density of the CD20+ immunoreactive cells was significantly reduced in the weaning ($p<0,001$) and infant ($p<0,05$) age groups accordingly with a different level of significance.

All these changes were accompanied by a significant reduction of the body ($p<0,05$), thymus ($p<0,001$ and $p<0,01$) and spleen ($p<0,01$ and $p<0,05$) mass in weaning and infant experimental animals accordingly.

The results of the investigation revealed considerable immunosuppressive changes in the lymphoid organs of the growing rats demonstrating prominent immunomodulation in the T-zones of the inguinal lymph nodes of both age groups of experimental animals and more severe changes in the B-zones of the lymph nodes of the junior animals of the present study. These findings allow to develop age-related strategies for the prophylaxis of the stress-associated immunosuppressive changes in the growing body.

The work is submitted to the IV Scientific International Conference "Basic research", Italy (Neapolitan Riviera), October, 11-18, 2008, came to the editorial office on 21.08.2008.

HEMATOLOGIC STATE OF ELDERLY DIABETES PATIENTS AGAINST METABOLIC DISORDERS

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The purpose of the work is to study the hematologic state and geometrical profile of blood cells against the background of metabolic disorders in elderly diabetes patients.

The blood of 68 II type diabetes (D-2) patients with concomitant metabolic disorders (Sland E., 2005) served as the subject of the investigation; among them 37 women and 31 men having got insulin; the average age - 63±0,7, the disease duration - 15±1,0 years. The control group was made up of 44 donors matching in sex and age without carbohydrate metabolism disorders.

The number of erythrocytes and leukocytes was calculated in blood, the concentration of hemoglobin, glucose, total protein and lipidic spectrum were defined by the unified methods accepted in the clinical hematology. The number of activated lymphocytes (Frolov A.K. and coauthors, 1990) as predictors of the pancreatic gland beta-cells destruction and diabetic angiopathies and negative disease course manifestation (Zhuk Ye.A., Galenok V.A., 1999) was defined in blood films; the white blood differential was derived. The video-registration and computer analysis of blood cells was carried out with the help of an image analyzer with the “Video-Test” software support. The mean corpuscular volume, membrane surface area and also nucleocytoplasmic index, leukocytic intoxication index (LII) and allergization index (AI) were calculated.

The basic hematologic factors (number of erythrocytes, leukocytes and total hemoglobin concentration) in all the examinees stayed within the physiological standard, but within the formed groups the number of erythrocytes and leukocytes in men is higher than that in women. In the D-2 patients there are fewer erythrocytes and more leukocytes than in the control group persons.

Hyperglycemia was detected in all the patients under the insulin therapy pressure. The glucose concentration in men’s blood made 10,4±0,4, in women - 9,9±0,3 $mmol \cdot l^{-1}$, that is authentically higher than in the donors of the control group. Under the conditions of glycemia decompensation the geometrical profile of erythrocytes and lymphocytes was characterized by an authentic increase of the mean diameter, membrane surface area and mean corpuscular volume. The specific surface area of erythrocytes (S/V) in men is higher than that in women; this dependence remained unchanged in D-2 patients. On the evidence of scientific literature the specific surface area increase is in close correlation relationship with the ability of erythrocytes to aggregation: it intensifies with the increase of lipids in blood (Katyukhin L.N., 2003). As our research showed, the red blood cells’ geometrical profile changes were in close relationship with the concentration of glucose and atherogenic lipids in blood: the increase of cholesterol, triacylglycerols and low-density lipoproteins made 77 and 75; 44 and 34; 26 and 39% in men and women accordingly.

In the persons with metabolic disorders an authentic decrease of lymphocytic activated forms percentage was found out, maybe owing to cells' receptor apparatus disturbance (Kurayeva T. L. and coauthors, 2003). The increase of AI and LII reflect the presence of an allergic process and endogenous intoxication of mean severity.