Initially, the level of OCC for women having menstrual cycle was higher for one patient (12, 5%); for other patients it corresponded to a norm, decrease of OCC level was not observed. In the second group four women (20, 8%) in menopause (duration from 8 to 18 years) showed increase of OCC level and had a lot of injuries of joints (from 12,6 to 16,6; ESR from 16 to 20 mm/h). An average level of OCC in general was – 19,6±5,1 ng/ml; for women with menstrual cycle - 21,26±3,075 ng/ml; for women in postmenopause – 26,4± 6,3 ng/ml, these differences statistically being reliable in comparison with patient's age (according to R. Spirman=0,40; p=0,020). The level of alkaline phsphotasa at the initial stage of observation was normal at 38 (82, 6%) female patients, a slight decrease was noted at 8 (17,4%) cases; increase of alkaline phosphotasa was not observed. Six from 24 female patients with the observed decrease of alkaline phosphotasa were in postmenopause (duration from 6 to 12 years). Comparison of initial level of markers of osseous exchange to clinical and laboratory data characterizing OA was conducted. The level of OCC in general did not correlate with laboratory data for OA.

Thus, according to data collected in the process of research the level of marker of osseous formation – OCC increases in the group of women in postmenopause having OA, reflecting the growth of intensivity of osseous exchange in general. For women in postmenopause, probably, it is initiated because of hormonal disturbances. According to these data the increase in level of marker of osseous formation is associated with the decrease of mineral density of osseous tissue.

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IMMUNE RESPONSE TO BENZO(A)PYRENE IN LUNG CANCER PATIENTS

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In our previous works we studied the presence of antibodies (AB) to fluoro-methyl-benzaanthracene conjugate – bovine serum albumin (FMBA-BSA) in healthy people, breast, gaster, large and straight intestine cancer patients. We managed to detect the antibodies of all the three classes of immunoglobulins and also to find out clear isoallotypic differences in the formation of AB to FMBA-BSA between healthy and sick people; between various organs cancer patients; between one focalization, but various course forms cancer patients.

The purpose of the present work is to study the presence of antibodies to the benzo(a)pyrene – bovine serum albumin (BP-BSA) conjugate in lung cancer patients (LC), to define their isoallotypic features, the ratio of the AB classes at this pathology and to try to define the diagnostic value of these factors.

The blood samples of 110 males – LC patients and 100 healthy males without any lung diseases in the past medical history served as the test material for this research. The serum was separated from the whole blood and frozen at -70^{o} C, then the definition of antibodies to BP-BSA by means of the modified immunoenzyme method developed in our laboratory was carried out. The obtained results were expressed in relative value units (RVU/ml).

The studies were carried out using the reagents of the DakoCytomation firm (Denmark) and the "Humareader" (USA) and "Pikon" (Novosibirsk, Russia) firms' equipment.

As a result of the carried out research it was found out that the blood serum of both LC patients and healthy males contained A, G, M classes' antibodies to the BP-BSA conjugate. Their content in the experimental and control groups authentically differed in all the three classes of immunoglobulins. In the LC patients the IgG antibody level is considerably higher, than that in the control group, a different picture being observed for the IgM antibodies.

At the analysis of the AB formation character in the smoking males it was found out that authentic differences between the control and experimental groups were observed for the IgG and IgM antibodies. In the non-smokers authentic differences retain only for the IgM antibodies. No dependence on the stage of the disease concerning the content of the antibodies to BP-BSA was registered.

On the ground of the obtained results we introduced a relative factor – the ratio of the IgG antibody level to the IgM antibody level. In the result of comparison of the experimental and control groups in this factor it was found out that in case of the lung cancer development its value increases almost by an order in all the groups considered.

References:

1. Every one of the examined people, either sick or healthy, has G, M and A classes' antibodies to BP-BSA in blood.

2. Authentic differences between the lung cancer patients and healthy males are detected in all the three classes in the general group, in IgG and IgM – in the group of smokers, in the IgM – in the group of non-smokers.

3. In the course of carcinogenesis an IgG antibody level increase and IgM antibody level decrease occur.

4. In the lung cancer patients the IgG/IgM factor value increases almost by an order compared to the control group.

5. We suppose that the IgG/IgM factor can be used at the health status monitoring of the lung cancer risk group persons (coke and by-products process, chemical, mining and heat and power plants' workers).

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AGE-RELATED IMMUNOHISTOCHEMICAL CHANGES OF THE THYROID GLAND DURING EARLY POSTNATAL DEVELOPMENT IN RATS

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Thyroid gland comprises two parts which are different in structure, function and origin, namely follicular and parafollicular compartments with thyrocytes and calcitoninocytes as the main cellular populations in them accordingly. Thyrocytes constitute simple epithelial lining of the follicles and originate from the endodermal epithelial lining of the pharyngeal floor, while calcitoninocytes may either be present interfollicularly or included in the follicular epithelial lining being separated from the colloid by the intertwining processes of the neighboring thyrocytes, they originate from the 4th pharyngeal pouch populated by the neural crest cells and are considered to be APUD-cells (**K.Pacak et al., 2001; J.Seidel et al, 2003; J.Dadan et al., 2004; M.K.Irmak et al., 2004; Y.Kameda et al., 2007**). For a long time calcitoninocytes were thought to have no significance for the calcium metabolism control, but later investigations revealed their important role in stress-related activation of the hypothalamo-hypophyseo-thyroid axis (**N.Pondel et al., 2000; V.Rajkovic et al., 2001; M.A. Titova et al., 2003; V.I.Loginov, 2007).** Recently evidence was provided that close functional interactions between the two cellular types are controlled by the paracrine mechanism (**B.Sawicki et al., 2002; R.L.Zbuckie et al., 2007; M.Gutiérrez-Mariscal et al., 2008)**. After birth thyroid gland undergoes significant structural and functional changes in the follicular compartment (**S.K.Banu et al., 2001; 2002; D.G.Moreira et al., 2005).** The dynamics of the parafollicular cell population and their interaction with the follicular cells after birth was not described before.

The objective of the present study is to evaluate age-related changes in the follicular and parafollicular compartments of the thyroid gland in the growing body.

Thyroid gland of the Spargue-Dawley rats aged 14 days (preweaning period), 21 days (weaning period) and 30 days (infant period) was sampled, fixed in formalin, embedded in paraffin, serially sectioned and stained by hematoxylin-eosin and immunohistochemically for thyroglobulin (marker of thyrocytes) and calcitonin (marker of calcitoninocytes) using biotin-streptavidin-peroxidase complex technology with subsequent image analysis of the immunohistochemically stained sections by the Leica image analyser (Germany) with Leica QWin sofware (Great Britain).

The results obtained demonstrated that during early postnatal ontogenesis in rats both follicular and parafollicular compartments undergo significant morphological and immunohistochemical changes which may be quantitatively evaluated. These changes include morphometric parameters of the follicles and distribution of the calcitoninocytes and thyrocytes in the parenchyma of the thyroid gland. It was shown that in the follicular compartment the developmental changes include an increase of the average thyrocyte height and follicle diameter (difference between the 14-day and 30-day old rats being significant, $p<0,05$), while the numeric density of the follicles was significantly reduced from preweaning to infant period, and changes of the activation index with age did not reach a level of significance. The volume density of the thyrogobulin-immunoreactive cells was slightly higher in the weaning rats compared to the preweaning pups and in the infant rats compared to the weaning one, while in the infant rats it was meaningfully increased ($p<0,05$) compared to the preweaning animals. The volume density of the calcitoninocytes was increasing with age reaching the level of significance by the infant period. Correlation analysis demonstrated that in the preweaning and weaning rats negative correlation between the number of calcitoninocytes and thyrocytes was insignificant, while by the infant period this correlation became strong and significant ($r=-0,71$; $p<0,05$). These observations demonstrate that by the infant period the thyroid gland of the growing rats reaches certain level of functional maturity, which may contribute to the developing adaptational potential of the body in the changing environmental conditions to which thyroid gland is extremely sensitive. This observation should be taken into consideration in evaluation of the adaptational changes of the thyroid gland as a peripheral link of the hypothalamo-hypophyseo-thyroid axis under stress conditions.

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