control group with the disease progression; the deviation from the control being authentic (p<0, 01) at the I stage POAG. Thereafter (II-IV stages) a gradual average blood velocity decrease was registered. it testifies to the importance of this factor in the progression of the process.

At the analysis of the end-diastolic blood velocity changes as the vascular resistance factor, the data were got that a slight V diast. decrease, authentically differing from the norm at the III and IV stages only (p<0, 05), takes place at the II-IV stages of the disease. The peripheral resistance index is in the inverse linear dependence on the end-diastolic velocity value (the lower the velocity – the higher the index value, and vice versa), that is why the RI dynamics in the ophthalmic artery according to the glaucoma stages was inversely as the described above changes of the end-diastolic velocity. The changes found out in the CRA look like this: At the initial stages of glaucoma The V syst. in the CRA decreased 1, 4 times compared to the control group. The Vm. at the OAG initial stage was 1, 5 times as lower. The CRA diastolic blood velocity was decreased beginning with the I stage (p<0, 05) and also decreased with the glaucoma progression. The maximal CRA diastolic velocity fall was registered at the IV stage of glaucoma; the diastolic component being missing in one case. It was found out that the peripheral resistance indexes in OAG patients, beginning with the I stage of the disease, is authentically higher than in the group of control.

Conclusion

Ultrasonic methods of diagnostics using Doppler methods allow evaluating quantitative blood flow indexes in the ophthalmic artery and its branches at various stages of open-angle glaucoma, that affords an opportunity to come around to the diagnostics, treatment and prognostication of its course in a more detailed way.

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ACTIVITY OF SYMPHATO-ADRENAL SYSTEM AT DIFFERENT STAGES OF ONTOGENESIS

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The adaptive process, set as the program of actions by the regulator centres, is accompanied by mobilization of the visceral systems providing the physiological price and result. Research of catecholamines by separate parts discloses local mechanisms of regulation. At the same time functional activity of an organism is achieved owing to integrative processes. From this point of view studying the general metabolism - adrenaline and noradrenaline is justified.

The symphato-adrenal system excreting catecholamines - noradrenaline and adrenaline - is of great importance for the adaptation of a growing organism to conditions of environment. It carries out its regulator influence on functions of an organism through hormonal mediators which, according to L.A. Orbeli, promote a constancy of the internal environment and its adaptation to varied conditions of life.

At present the significant amount of works has been published which discover the dynamics of excretion of catecholamines and their predecessors in children basically of teenage age, including those with academic and physical loadings.

According to our data, excretion of adrenaline and noradrenaline in urine in children in the age of 6-8 years undergoes the wavy dynamics in both sexual groups, with the greatest expressiveness in boys in the age of 6 and 7 years. Judging from excretion of adrenaline and noradrenaline in urine, the character of synthesis and utilization of catecholamines varies essentially. In this age interval, the chronotropic function of heart is appreciably reconstructed. Physiological preconditions of this age form the adequate mechanisms of urgent adaptation influencing behavioral activity.

Our researches have shown that boys adapt more difficultly for conditions of school: within one academic year the exhaustion dependent on a sex and age of the child develops in children. During educational occupations children in the age of 6-8 years show the changes reflecting a functional condition of an organism. The character and intensity of these changes serve a mark of “physiological cost” of academic load.

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MORPHO-TOPOGRAPHICAL FEATURES OF LARGE-SIZED OVARIAN CYSTADENOMAS

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Oothecomas occupy one of leading places among all the neoformations occurring in women. Except for mammary tumors the ovarian newgrowths among all the oncological diseases of woman genital sphere are second only to endometrial and endocervical carcinomas on frequency. About 80% of ovarian tumors are of nonmalignant nature and occur mainly in women aged 20-45 years old (Paltsev M.A., Anichkov N.M., 2001), 90% of all the neoformations make

epithelial neoplasms, the serosal ones among them are registered in 70% of the cases (Petrovic O. et al., 1992). In this group 60% are referred to benign tumors (adenocystoma), 15% - to marginal, 25% - to malignant ones. Serosal tumors, which are referred to the newgrowths from the superficial (coelomic) epithelium, afflict women of all ages, but more often – those aged from 41 to 50 years old (Kolosov A.E., 1996).

Clinically similar tumors manifest themselves when achieving certain sizes, most often – 5-10 cm in diameter, and by associated with them complications. We submit our own sectional and surgery observations of large-sized ovarian adenocystomas. In the first case the prior disease – is an ovarian adenocystoma with extremely rare daughter cyst unconnected with the mother one anatomically in another cavity of the body, which was not diagnosed pro vita through twenty years long. The second observation appeared a finding of the operating table. The third one – is an intravital diagnostication of a large-sized oothecoma represented in the form of various tumor growths combination in the juvenile age and a successful operative therapy.

The patient R., 75 years old, had been suffering from various forms of "tumor growth" (abdominal cavity organs, lungs) for the last 20 years. At the autopsy investigation there was a cyst up to 150 mm in diameter, 3000 ml volume, with fancifully crooked bulges located between the intestinal loops, found in the abdominal cavity. In other localizations – in the region of spleen, sigma and appendix – there were independent, anatomically unconnected with each other cysts, each one - up to 100-200 ml volume. Round these formations there was a frank adhesive process registered with the deformation of the close round organs (liver, bile cyst, spleen, gaster). There was no gastrointestinal tract obstruction through. There was sclerosis, hyalinosis and petrification of the thickened up to 10-15 mm large-sized cyst with a keen bulge of the navel ring forwards in the umbilical region.

In the right pleural cavity there was a cyst of 140 mm in diameter with a keen edging of the right lung to the back bone, its compression into a slab to 10 mm thick and mediastinal displacement to the left. Its content represented an odorless opacity grayish fluid. Shtiftic, neutral, cubical and mucus secerning cells were detected there cytologically and pathohistologically. Hialinized connective-tissue papillae emerged in the cyst lumen. The wall itself – is dense, fibroid, with petrification regions. All the cysts represented ovarian adenocystomas with connective-tissue papillae and the epithelium without malignant change phenomena.

The patient G., 72 years old, had been suffering from polycystic ovary for the last 25 years. When, 18 years ago, the greatest one from the cysts had achieved the size of a chicken egg, he was offered an operative therapy, which she refused from.

She was operated on incarcerated umbilical hernia. At the abdominal incision a giant round shape Rockitansky's tumor with dimensions of 190x230x250 mm, weighing 7000 g, was found. The intestinal loops were pushed off to the lateral channels of the abdominal cavity. The cyst wall is thick, fibroid, with large regions of hyalinosis and petrification. Branching and plain, low connective-tissue papillae covered with epithelial cubical, nonsecreting cells typical of ovarian adenocystomas were seen on its internal surface.

In the ectatic umbilical ring and hernial sac a fatty tissue at various stages of necrosis and infiltrative hemorrhage into it was found. There were no clinical data concerning the like formations, though of smaller volume, in other localizations.

The patient K., 23 years old, applied to the gynecological hospital with the complaints for volumetric gain of the stomach, pains irradiating to the small of the back in its lower departments for three weeks, infertility.

A faintly mobile formation with clearly-defined boundaries, soft, elastic, coming up to the navel, was determined at palpation. The stomach was increased up to 18-19 weeks of pregnancy. At the ultrasound investigation of the right ovary a large-sized (d = 170 mm) fluid formation coming from the ovary from the small pelvis to the navel was detected.

The right ovary was resected and the operational material was investigated pathohistologically using standard methods.

The macroscopic investigation testified: the oothecoma is d=160 mm; the wall is fibroid, rather hard, its internal and external surfaces are even, smooth, glossy, well vasculated; the vessels are large, tree-like branching. The cystic content is grayish, transparent, fluid, 3000 ml volume. In one cystic segment there was a cavity of 40 mm in diameter with brown content of fluid consistency, with chondral, osseous and hairy inclusions in the wall, and also a fragment of osseous tissue seemingly resembling a tongue bone. In another segment of the cyst there was a yellow body cyst (d=10mm) immured into the fibroid wall. In the third segment, on its internal surface, there was a papillary excrescence in the form of a thin 10 mm long villus (d=1mm), grayish, with a clean surface located.

The microscopic investigation testified: the ovary capsule is desmogenous, fibroid. In separate departments it is more rich in fibrous structures, in others – vice versa – in cellular fibrocyte- and fibroblast-, tissular lymphocyte- and histiocyte-type elements, with commonly defined, but faintly manifested phenomena of their atypism. In some visual fields on the fibroid capsule there were lipocytes with the coarsened stroma and extensive network of blood channels.

The ovary tissue is rather compact and vasculated, with a greater number of maturating follicles and starting forming white bodies. Fine serosal and

mucic cysts inlayed with one-row cubical and pavement epithelium were noticed. In the cytoplasm of the last cellular formations fine vacuoles, mainly in their apical departments, were seen. Blood vessels are thin-walled, filled with blood unevenly. The overgrown yellow body vaguely divided from the cortical layer of the organ consisted of loosely disposed polygonal cells with foamed and honeycombed cytoplasm rich in glycolipoproteids. The cores – are large, roundish, rich in chromatin. The central region of the yellow body – is ectatic and filled with bloody masses with haemolysis occurrences and without it.

On the internal surface of the serous retention cyst fibroid capsule there was a middlenoded fibromatous formation up to 20 mm in diameter – a dense, hard fibroma rich in fiber structures, with dystrophic changes up to sclerosis and hyalinosis, with a decreased content of cellular elements and vessels. The atypism of the above listed cellular-fiber structures was manifested insignificantly.

In the other segments of the cyst wall there were elements of secerning cilioepithelial cyst (adenocystoma) represented by a papillary excrescence with a soft, faintly fibrous stroma. On its basic membrane there was a one-row cubical epithelium with small apically disposed vacuoles filled with serous fluid. In separate regions the epithelial coating had a two-row structure; the papillary stroma contained a rather developed blood supply. The perivascular fiber structures – are expanded, with ajar venules and arterioles.

In separate high-power fields there were small, so-called "chocolate cysts" of incomplete genesis – organizing and being organized hemorrhages into the serous daughter cyst, and also structural elements of dermo-affinity: osteoid, chondroid tissues and skin derivatives' anlages – hair follicles.

Thus, the time protracted ovarian cystadenomas can reach more than considerable sizes and become very rare findings of operating and sectional tables. The epithelial cells of even encapsulated forms of these space-occupying lesions are able to penetrate with the thoracic cavity by hematogenous and lymphogenous ways, implant there and develop to the sizes analogous to the mother formation. The only analogous to the mentioned one case is described by one of us earlier (Razin P.S., Razin A.P., 2000). In the comprehensible literature about the possibility of serous oothecomas spread there were single mentions in the context: "Non-encapsulated variants of serous tumors are able to spread through the peritoneum" (Paltsev M.A., Anichkov N.M., 2001). Clinically, such multilocular ovarian cystadenomas without malignant change occurrence are able to simulate a large variety of diseases, the inclusive of cancerous ones.

The last of the observations represented by us differs by the combination of a large-sized serous cyst and with the regions of adenocystoma and teratoma – a dermoid tumor including various kinds of tissues (osteoid, chondroid and skin derivatives), being a congenital abnormality. The neoformation is defined by us as a mixed ovarian benign neoplasm, one component of which is represented by a cyst with neoplasm growth from the germinal epithelium (a cystadenoma), another one – by a benign neoplasm of the connective tissue (a fibroma), a third one is of herminogenous genesis (a teratoma in the form of a dermoid cyst containing three tissue types). Taking into account the patient's syndactylia, which is a congenital malformation as well, there are good reasons to speak about the syndrome of multiple defects, which includes the congenital abnormality of ovaries and bony frame.

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ANTITUMOUR EFFECT OF PLANT PEPTIDE EXTRACT PE-PM: PRELIMINARY *IN VIVO* TESTINGS IN MOUSE MODELS OF BREAST CANCER

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Breast cancer (BC) is mostly common among female malignancies. Multistage mechanisms of aetiology and pathogenesis of this disease comprise numerous molecular interactions. Thus, combined therapies are expected more effective against BC. Complementary phytotherapy after radical mastectomy is currently under clinical trial. Moreover, plants are well known resources of new chemotherapeutics. For instance, many currently used drugs were obtained from plants, at least initially (taxol, oncovin *etc.*). Recently discovered anti-cancer properties of plant cyclotides challenged us to search for new potent plant peptides against BC. Therefore, we created data base and analyzed information (including in Russian) about plants with anti-cancer properties used in folk medicine. We isolated a peptide extract – plant mixture (PE-PM) from the mixture of the plants: Chelidonium majus L., Inula helenium L., Equisetum arvense L., and Inonotus obliquus. The extraction was performed according to the method described earlier; peptide fractions were characterized by Ion exchange -HPLC, Matrix-Assisted Laser Desorption / Ionization spectrometry (MALDI) and amino acid analysis. No data were available concerning the influence of PE-PM on mammary adenocarcinoma (MAC) growth *in vitro.*

The aim of this study was to reveal local and/or systemic anti-cancer effect of PE-PM *in vivo* using original panel of mouse models that reproduced a number of morphological forms of mammary cancer in human and veterinary patients (especially MAC in cat). Four tests called “point” experiments (5-6 mice of the same sex and similar age *per* group) were performed using transplanted and spontaneous mouse models and local application of the peptide. The mouse models differed in (1) time of drug application in relation to a tumour growth stage (in start model – next day after tumour transplantation or spontaneous tumour detection, and in therapeutic model – application to advanced tumour burden); (2) site of tumour transplantation (sub cutaneous, s.c. or intra peritoneal, i.p. models); (3) an extent of transplanted tumour lethality for the untreated control group (lethal and sublethal models); (4) rate of palpable tumour appearance before their visible manifestation (lag^+ models with at least two week lasted latent palpable period and lag^- models with the absence of a palpable period); and (5) tumour growth rate after visible tumour manifestation (standard and fast growth). PE-PM (10 mg in 1 ml of physiologic solution) was applied locally (s.c. around a tumour burden in s.c. model and i.p. in i.p. model). Tumours in control mice were injected with physiologic solution alone at the same time and manner. Tumour growth delay and improved survival of treated mice in comparison to the parameters in the control mice showed local and systemic anti-cancer effects, respectively.

A local effect of a single PE-PM injection was firstly probed in a lethal transplanted s.c. start model of slowly appearing lag^+ MAC of the CBRB females. Earlier this model was shown to reproduce invasive lobular adenocarcinoma in human and veterinary patients. We propose a start mouse model to replicate the situation after radical mastectomy in patient: massive tumour burden removed but residual tumour cells may persist leading to local and/or systemic recurrence later. Need of an additional local treatment is evident as a distinct proportion of BC patients with local relapses require secondary operations. A long lasting palpable tumour growth period in lag^+ MAC allows revealing even a weak local effect of the testing drug on tumour growth. Moreover, local application of the drug provides detecting both direct and indirect (via immune system) anti-cancer effects. Here, on day 0 CBRB females were s.c. injected to right axillary fat pad with 10^6 tumour cells obtained from spontaneous slowly growing syngeneic MAC. On day 1 mice were locally treated with 0.1ml PE-PM solution *per* mouse. The local PE-PM effect was monitored for four weeks *post* transplantation (*pt*) by delay in palpable tumour appearance and growth rate in treated mice comparing with those parameters in control mice. As a result, only 67% of treated mice demonstrated tumour palpable nodules at the second week *pt* versus 100% of females in the control group. Significant tumour growth delay was observed on the forth week *pt* as treated animals demonstrated smaller nodules (25% on average) than ones in control mice. Finally, we showed that even a single local PE-PM application to slowly appearing lag^+ palpable CBRB MAC resulted in prolong local anti-cancer effect.

As a next step, sublethal i.p. transplanted slowly growing BLRB MAC was used as a model to test anti-cancer effect of a single i.p. PE-PM application. This *in vivo* model is a prototype of in *vitro* test as both drug and tumour cells are interacting at the same location during a long period of time. Moreover, presence of immune components (lymphocytes, macrophages, neutrophils, and mast cells) in peritoneal cavity of tumour bearing host may facilitate indirect drug effect manifestation/s. Furthermore, highly expressed direct and/or indirect anti-cancer effect may cause tumour grafting and growth prevention in treated animals as solid i.p. MAC growth is normally observed in only about half of untreated animals in sublethal model. Here we obtained TC from slowly