content and concentration of leucocytes in peripheral blood: at CAP (r=0,53, p<0,01), COPD (r=0,34, p<0,01), N(I)BA (r=0,56, p<0,01) and CL (r=0,62, p<0,01).

Between the values of serum LF and the showings of absolute count of lymphocytes and T-lymphocytes positive correlation relationships of moderate efficacy are obtained: at CAP (r=0,57, r=0,55 accordingly, p<0,01), N(I)BA (r=0,54, r=0,51 accordingly, p<0,01), CL (r=0,62,r=0,57 accordingly, p<0,01). The same tendencies in correlation relationships are marked between the contents of LF in the serum and the showings of relative count of T-helpers: at CAP (r=0,54, p<0,01), N(I)BA (r=0,58, p<0,01), CL (r=0,60, p<0,01). These results show that at low values of serum LF the showings of absolute count of lymphocytes and T-lymphocytes, relative count of T-helpers in elderly CAP, N(I)BA and CL patients were low as well. The values of LF in blood serum had weak multidirected and unauthentic (p>0,05) correlation relationship or its absence between the other showings of the immunogram at CAP, COPD and CL. The findings allow considering that low values of LF content in blood serum immediately reflect lack of T-cell component of immune system in elderly CAP, N(I)BA and CL patients.

The results got allow recommending studying LF in blood serum as an additional test for immunologic reactivity of elderly patients with different bronchopulmonary pathology, that will widen possibilities of diagnostics. It is especially important for adequate treatment administration (including immunocorrectors) for elderly patients.

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MORPHOQUANTITATIVE INDICANTS OF SPINAL CORD MOTOR NEURON SYNAPTIC APPARATUS CHANGES WHEN EXPOSED TO X-RAY RADIATION (EXPERIMENTAL STUDY)

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The analysis of change dynamics of morphoquantitative indicants reflecting the degree of responsive and destructive changes of anterior horns' motor neuron synapses of experimental animals (guinea-pigs) over a period of 60 days after finishing single general X-ray radiation effect (dosage – 5 Gy).

A significant part of the population of all countries in the world is exposed to X-ray effect when being diagnosed or taking remedial measures in medical and prophylactic institutions during the life (Filyushkin I.V., 1998; Oghiso Y., Yamada Y., 2003). In this respect there is a necessity to study the dynamics of cinerea motor neuron changes in different parts of spinal cord (cervical, thoracic, and lumbar) when exposed to X-rays. That conditioned the demand of carrying out our research.

The research was carried out on 81 multicolored mature guinea-pig males weighing 400-450 g, from which 51 were used in the experiment, and 30 served as the control. Maintenance and work with the experimental animals were carried out in accordance with the rules accepted by the European Convention about the defense of vertebrate animals used for experimental and other scientific purposes (Strassburg, 1986). The guinea-pigs were exposed to single general irradiation (dosage – 5 Gy, filter – 0,5 mm SI, voltage – 180 kV, amperage – 10 mA, focal distance – 40 cm). The

radiological apparatus "RUM-17" was used as a radiation source. The irradiation took place at one and the same time of the day – from 10 to 11 o'clock in autumn-winter period taking into account daily and seasonal radiosensibility (Shcherbova Ye.N., 1984). Before the experiment the guinea-pigs 3-5 times were subject to a "false" effect with the apparatus on, but the irradiation off, to exclude the stress factor. Excluding the animals from the experiment and sampling the materials were done immediately, in 6 hours, on the 1st, 5th, 10th, 25th and 60th days after finishing the exposure. The spinal's fragments were taken from different parts of spinal cord (cervical, thoracic, and lumbar). For submicroscopy the cord portions were fixed in 2,5% glutaraldehyde in 0,2 M cocadylate buffer (pH-7,2) and post-fixed in 1% solution of osmic acid. All the objects were poured with araldite. Sectioning was carried out on an ultratome LKB-III. Semifine sections were stained with toluidine blue, ultrafine ones - contrasted with uranyl acetate and plumbum citrate, observed and photographed through electronic microscope JEM-100 CX-II. Anterior horns' motor neurons were subject to study. Motor neurons differed from neurocytes of posterior horns in larger sizes and were represented by cells of two types - "dark" and "light". On the part of neurocytes the following morphoquantitative indicants were investigated – the general synapse density and the quantity of responsively and destructively changed synapses. Active zones' number and their osmophility increase and thickening of postsynaptic membranes served in particular as the criteria of responsively changed synapses. The synapses changed on the "light" type (quantity reduction and variability in size of the synaptic vesicles, shortening of synaptic ribbons) and on the "dark" type (electron-density of the presynaptic parts, destruction of the vesicles, accumulation of microgranular matrix and chondrisomes' destruction) were considered to be degenerative. (Logvinov S.V., 1998). All the findings of the morphoquantitative research were treated according the rules of parametric statistics. Hematological control (total count of erythrocytes and leucocytes) was carried out during the experiment.

Changes from the part of the synaptic apparatus of anterior horns' motor neurons of the guinea-pigs have been marked on the 1st day after finishing the effect already, the reaction inequivalence of the specified structures occurring at the level of different parts of spinal cord. So, in particular, in 6 hours after the irradiation the showings of the total synapse quantity and those of the responsively changed anterior horns' motor neurons' synapses are reduced relative to the control in the majority of the parts making in cervical spine - 93,8% and 96,0%, thoracic – 95,6% and 107,0%, lumbar – 90,4% and 97,6%, accordingly ($p<0,05$). At the same time the quantity of degenerate changed motor neurons' synapses in anterior horns, on the date indicated, exceeded the original one making in cervical spine - 137,9%, thoracic – 192,5%, lumbar – 117,4% ($p<0,05$). On the 1st day the earlier marked tendency to matching low values of total synapse density and the quantity of responsively changed synapses and high values of degenerative changed motor neurons of the guinea-pigs' spinal cord kept retaining. It is also necessary to notice that for the responsively changed anterior horns' motor neurons' synapses of thoracic spine the most evident hyperosmophility of presynaptic parts is definitive. On the 5th day after finishing the X-ray effect a significant number of neurons with degenerative changed synapses with destruction focus in postsynaptic parts in anterior horns of thoracic spine attracts attention. And from the part of the degenerative changed synapses of the structures specified in lumbar spine the full-blown hyperosmophility of presynaptic parts, in which destruction foci occurred. The quantity of degenerative changed anterior horns' motor neurons' synapses was mostly increased in thoracic spine, where it made 238,8%, and at the same time it made in cervical spine - 134,5% and in lumbar spine - 131,2% from the original one ($p< 0,05$). Moreover, on the 5th day after finishing the irradiation effect, the showings of synapse general density and quantity of responsively changed motor neurons' synapses were higher than the original ones only in the specified structures of thoracic part – 1,02 and 1,05 times as much accordingly, and in cervical and lumbar parts – lower than the original ones ($p<0,05$). On the 10th day after finishing the effect, at the height of X-ray sickness, from the part of some axonal terminals swelling events and "light" type changes occurred. It manifested in the fact that a few number of vesicles forming

small clusters, and sometimes their total absence, became apparent in presynaptic terminals; cases of their agglutination being also frequent. In different neuropil regions cases of synapse active zones' protraction and synaptic cleft distention up to 50-70 nm were also marked sometimes. At the same time the availability of separate terminals, where the "dark" type reaction takes place, can't help being noticed. The terminals specified have a high electron-optical density and a great number of synaptic vesicles. Compared to the previous follow-up period, increase of total synapse density values and that of degenerate changed synapse quantity making in cervical spine - 106,1% and 194,0%, thoracic one - 115,7% and 322,8%, lumbar one - 104,8% and 171,0% from the original values, accordingly ($p<0,05$) happens from the part of anterior horns' motor neurons on the 10th day. Alongside with this, responsively changed synapses' motor neurons' value showings keep on decreasing, compared to the previous follow-up periods, making in cervical spine 79,7%, thoracic spine - 89,4%, lumbar spine - 77,1% from the original ones ($p<0,05$). On the 25th day after finishing the effect the beginning of reparative processes' development is marked, that manifests in the ultrasonic level particularly in the fact that in cytoplasm of a considerable part of both "light" and "dark" motor neurons the number of endoplasmic reticulum and Golgi complex cisterns, and also ribosomes, chondriosomes, and lysosomes increases. The specified structures are revealed preferentially in perinuclear zones of a neuron. Compared to the previous follow-up period, on the 25th day after finishing X-ray radiation a combination is noted in anterior horns of all parts of the spinal cord: degenerate changed synapse number decrease and responsively changed motor neurons' synapse number appreciable increase, making in cervical spine - 148,3% and 107,1%, in thoracic one - 288,6% and 122,5%, in lumbar one - 128,3% и 107,3% from the original values accordingly ($p<0,05$). For anterior horns' motor neurons' responsively changed synapses in the specified term the increased osmophility of active zones and also full-blown node of postsynaptic membrane were typical. By the end of the observation period (the 60th day after finishing X-ray radiation), unlike the previous follow-up periods, values both of responsively changed synapse quantity and total motor neuron synapse density exceed the original ones in all parts of spinal cord, making in cervical part - 114,6% and 103,9%, thoracic - 139,9% and 115,1%, lumbar - 111,9% and 101,3%, accordingly ($p<0,05$). Responsively changed synapses of anterior horns' motor neurons of all localization parts were characterized with increased active zones' osmophility and full-blown node of postsynaptic membrane. On the 60th day after X-ray radiation the quantity indexes of degenerate changed synapses of motor neurons of the specified structures are significantly higher than the original ones in all parts of spinal cord, especially thoracic one, where it exceeds the original 2,5 times as much, while in cervical part – 1,3 times, lumbar – 1,2 times as much ($p<0,05$).

Thus, the results of the carried out research demonstrate the fact that at X-ray effect during the whole experiment (60 days) changes of morphoquantitative indicants of responsive and degenerate changes of motor neurons' synapses of spinal cord of guinea-pigs are observed; they reaching maximal manifestation degree from the part of the specified structures in cervical spine.

ULTRASTRUCTURAL CHANGES OF EPITHELIAL CELLS OF SKIN EPIDERMIS AT MICROWAVES EXPOSURE (EXPERIMENTAL STUDY)

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The analysis of the dynamics of ultrastructural changes reflecting the degree of responsive and destructive changes of skin epidermis basal layer epidermal cells of guinea-pigs during 60 days after finishing microwaves exposure (length of wave - 12,6 cm, frequency – 2375 MHz, power flow density (PFD) – 60 mW/cm2, exposure time – 10 min) has been carried out in the research.

With the development of science and technology in everyday life and industry as well as while taking diagnostic remedial measures, sources of SHF radiation (microwaves) get more and more popularity. (Gosalves J. et al., 2002; Dasdag S. et al., 2003; Yao K. et al., 2004). The first organ to be exposed to microwaves is skin that caused the necessity to study the dynamics of ultrastructural changes in epidermal skin cells,