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MODERN ASPECTS OF CLINICAL ANATOMY OF THE XXI CENTURY

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Key words: *clinical anatomy, radial anatomy, endoscopic anatomy, microsurgical anatomy*

The lecture reviews the concepts of modern clinical anatomy, its structure and content, the methodological foundations of clinical anatomical investigations and the application value for different sections of clinical medicine. Clinical anatomy (applied anatomy) is a scientific-applied direction of modern anatomy, studying the structure and topography of organs and regions in norm and in pathology in the interests of concrete clinical disciplines. In Russia the founder of clinical or applied anatomy was famous surgeon and anatomist N. I. Pirogov (1810–1881). Clinical anatomy began to develop intensively from the second half of the 22nd century. Modern clinical anatomy is characterized by a wide use of diagnostic methods of intravital imaging as methods of intravital anatomical research. On methods of study they distinguish radial (radiological, computer tomographycal, magnetic resonance tomographycal), ultrasound, and endoscopic anatomy. An important part of clinical anatomy is the modern microsurgical anatomy. The fundamental task of the modern clinical anatomy is the creation of an anatomy of a «living person». Clinical anatomy is the anatomical basis of diagnostic tomography, endoscopy, ultrasound scanning, many concrete clinical disciplines: surgery, neurosurgery, cardiosurgery, ophthalmosurgery, traumatology, obstetrics and gynecology, otorhinolaryngology and others.

SOME REGULARITY OF TOPOGRAPHIC-ANATOMICAL CHANGES AFTER OPERATIONS OF REMOVAL OF LARGE ORGANS

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Key words: *pneumonectomy, nephrectomy, postoperative changes, computed tomography*

Widespread introduction into clinical practice of methods of intravital imaging, especially computed tomography and magnetic resonance imaging, made it possible to investigate, on a new methodological basis, topographic and anatomical changes occurring in body cavities after large organ removal operations. We began to conduct such research since 2012. To present time, computer tomography investigations have been performed or are in the final stage after operations: the esophagus thoracic part resection (P. V. Samoilov, A. E. Rykov), pneumonectomy and lobectomy (M. N. Vasyukov), nephrectomy (Yu. V. Safronova). Already at this stage, the obtained results allow us to establish some general and local regularities of postoperative anatomical and topographic-anatomical changes. An important general regularity is the occurrence of a free cavity or interorgan space with local incidence or disappearance of intracavitary pressure. This circumstance is a decisive factor for postoperative displacements and deformations along the radii to the center of the cavities and spaces that have arisen. For the effects of pneumonectomy, the displacement of mediastinum with a turning of heart toward the free pleural cavity, a significant uplift of the corresponding cupula of diaphragm with underlying organs of superior floor of abdominal cavity, deformation of thoracic wall and spinal column are characteristic. Displacements are not only mobile in norm organs, but also organs that are well fixed (liver after right pneumonectomy and nephrectomy, pancreas after left-sided nephrectomy). Postoperative displacements of organs result in pronounced changes in topographical anatomy of entire thoracic and abdominal cavities, which require special clinical anatomical and functional researches. Revealed regularities make it possible to evaluate the role of known factors of fixation and stabilization of thoracic, abdominal and pelvic organs: a) interorganic anatomical connections and topographic-anatomical interactions, b) fixation of organs to cavity walls, large vessels presence of intracavity pressure. Among these factors the presence of intracavitary pressure has the greatest significance in stabilizing the position of organs located in the cavity.

DEPTH OF THE INVASION AND THE DENSITY OF NEOANGIOGENESIS IN SQUAMOUS CELL CARCINOMA OF LOWER LIP IN PATIENTS WITH AND WITHOUT METASTASIS IN NECK LYMPH NODES

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Key words: *neoangiogenesis, SCC of lower lip, depth of the invasion, CD34*

Background. Invasion of the malign cells and the neoangiogenesis (formation of new blood vessels from the existing capillaries) are processes by which the neoplasms exist, promote nutrition and metastasize.

Aim. Is to determine the progress of the malign process in SCC of lower lip in patients with and

without metastasis, by analysis of the morphological indicators, depth of the invasion and the density of neoangiogenesis.

Material and Methods. The material is consisted of operational materials from 60 patients with SCC of the lower lip from the University Clinics for Plastic and Reconstructive Surgery and Maxillofacial Surgery in Skopje. 45 patients were without metastasis and 15 patients were with metastasis in the neck lymph nodes. The specimens were histopathologically prepared on the Institute of Pathology, Medical Faculty of Skopje. The histological sections were stained with h. e. and immunohistochemically stained with antibodies against CD34. The depth of the invasion was measured with software for histomorphologic morphometry, and the values were expressed in micrometers. The density of the neoangiogenesis was determined by counting the blood vessels in each case separately, in the area with the largest vascular density (hot spots).

Results and Discussion. The statistical data preparation according to Mann-Whitney U-test showed that the patients with metastasis in the neck lymph nodes have statistically larger depth of tumor invasion for p=0.000083 and larger density of neovascularization which is statistically significant for p=0.00019, compared to the patients without metastasis.

Conclusions. The depth of the invasion and the density of the neovascularization in the invasive front of the neoplasm could be considered as good indicators for the tumor progression in the decision making process for further treatment of the patients with SCC of lower lip.

DESCRIPTION OF THE STIMULATED PLEURAL ADHESION FORMATION

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Key words: *stimulation of adhesion formation, pleural empyema, adhesion, pleural cavity*

Aim. To describe the stimulated pleural adhesion formation

Material and Methods. 270 nonlinear rats (males) were modeled by the pleural empyema, followed by the Platelet-Rich Plasma Therapy (PRP Therapy). For this purpose, 1 ml of plasma enriched with platelets was injected into the pleural cavity. The rats were sacrificed on the 30th day after the injection.

Results and Discussion. All rats of the pleural empyema model showed the residual pleural cavities of different size filled with the purulent content. Microscopically, the residual cavities showed the diffuse leukocyte infiltration, focal destruction of mesothelium, and an accumulation of tissue detritus before PRP Therapy. With PRP Therapy, a total obliteration of empyema cavities was detected in 41 (30.4%) of the experimental animals. By the 30th day after plasma injection, the residual cavities were almost completely filled with the collagen fibers with a low number of lymphocytes and capillaries in the formed adhesions.

Conclusions. Stimulation of the pleural adhesion formation by the pleural injection of plasma enriched with platelets is an effective therapy based on the local development of multiple adhesions which fill the residual cavity. An additional advantage is a safety of the biological substrate used in this method of treatment.

MORPHOLOGICAL JUSTIFICATION OF PLEURAL ADHESION STIMULATION

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Key words: *pleural adhesion, adhesion formation, pleural cavity, morphology of adhesions*

Aim. To give the morphological justification of pleural adhesion stimulation.

Material and Methods. The chronic pleural empyema was modeled in 290 nonlinear male rats by pleural injection of 1 billion E. coli suspension into the V intercostal space along the axillary line in a volume of 1 ml per week for 8 weeks. The animals of the experimental group were removed 50 mg of adipose tissue from the subcutaneous abdominal fat, followed by homogenization in physiological saline. The resulting suspension was injected into the empyema cavity. The animals of the control group were injected with 500 μl of physiological saline. The animals of both groups were sacrificed on the 30th day of the postoperative period.

Results and Discussion. The microscopic examination of pleural adhesions showed the loose connective tissue with areas of leukocyte infiltration with few lymphocytes and macrophages. In the animals of the experimental group, the pleural adhesions were mature and characterized by the predominance of collagen fibers (per cent vol. 27.73±1.39%), while the number of reticular and elastic fibers was limited