

**МІНІСТЕРСТВО ОХОРОНИ ЗДОРОВ'Я УКРАЇНИ
БУКОВИНСЬКИЙ ДЕРЖАВНИЙ МЕДИЧНИЙ УНІВЕРСИТЕТ»**



МАТЕРІАЛИ

**105-ї підсумкової науково-практичної конференції
з міжнародною участю
професорсько-викладацького персоналу
БУКОВИНСЬКОГО ДЕРЖАВНОГО МЕДИЧНОГО УНІВЕРСИТЕТУ
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Матеріали підсумкової 105-ї науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) – Чернівці: Медуніверситет, 2024. – 477 с. іл.

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У збірнику представлені матеріали 105-ї підсумкової науково-практичної конференції з міжнародною участю професорсько-викладацького персоналу Буковинського державного медичного університету, присвяченої 80-річчю БДМУ (м. Чернівці, 05, 07, 12 лютого 2024 р.) із стилістикою та орфографією у авторській редакції. Публікації присвячені актуальним проблемам фундаментальної, теоретичної та клінічної медицини.

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material that was used for its manufacturing. To study the biomechanical interactions between the screw and the bone tissue under various applied loads the use of computer modelling is helpful.

The aim was to study biomechanical behaviour between the screws made of different materials (stainless steel and polyamide-12) and the bone tissue. The biomechanical evaluation of the computer models of AO screws and cortical layer were made in Autodesk Fusion 360. The axial loads of 100 N, 500 N, 1000 N were applied to each screw. The bone was modelled as monocortical and bicortical layers with the thickness of 5 mm. The stress differences in a screw and surrounding tissues were determined, as well as displacement of a screw.

Results. For both types of screw material there was the relation between the thickness of cortical layer and the force applied with the displacement of the screw. With the increasing of the applied force to the stainless steel screw in its axial direction from 100 N to 1000 N, the maximum stress in screw increased from 6.8 MPa to 67.5 MPa for monocortical fixation, and from 4.2 MPa to 42.5 MPa for bicortical fixation. For the force applied to polyamide-12 screw on its axial direction from 100 N to 1000 N, the maximum stress in screw increased from 9.5 MPa to 94.5 MPa for monocortical fixation, and from 33.4 MPa to 33.4 MPa for bicortical fixation. The peak stress in the surrounding bone tissue was decreasing when the second cortical layer was additionally modelled for both types of screw material.

Conclusions. The mechanical strength of fixation was related with the number of bone cortical layers and with the material of the screws. The nonlinear adverse correlation between the stress appeared and the number of the cortical layers and the material mechanical properties were found. Though the mechanical parameters of polyamide-12 were lower than of metal screws, but achieved results showed that their fixation strength is enough for internal fracture fixation in non-weight bearing areas.

Fedoruk O.S.

THE ROLE OF REACTIVE STROMA IN THE DEVELOPMENT OF PROSTATE CANCER

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Introduction. Morphologically, cancer of the prostate gland in most cases is represented by adenocarcinoma. In addition to the typical morphological picture of adenocarcinoma, pancreatic cancer has numerous variants of other histological structures. Microscopically, dark and light tumor cells forming shallow-, large-acinar, solid, cribriform or trabecular structures are detected. During the histological examination, the main attention is paid to atypical cells, and the histological conclusion practically does not highlight changes in the stromal component.

The aim of the study. Studies have established that at the initial stages of carcinogenesis in the prostate gland, changes are observed mainly in the stromal component in the form of reorganization of stromal cells, restructuring of the extracellular matrix, increased bioavailability of growth factors, increased protease activity, production of inflammatory factors. These changes were designated by the term "reactive stroma". Morphologically, this process is manifested by a change in the architecture of the extracellular matrix, an increase in the number of fibroblasts, and stromal-vascular changes.

Material and methods. Fibroblasts and smooth myocytes are the main cells in the stroma of the prostate gland. Their main function is the synthesis of structural and regulatory components of the extracellular matrix. The extracellular matrix is a plexus of fibrillar proteins, adhesive glycoproteins and proteoglycans, as well as the source of active and latent growth factors. Together stromal cells and the extracellular matrix form an environment that regulates the growth and differentiation of neighboring cells.

In pancreatic cancer, the stromal cell type is characterized by the presence of myofibroblasts, which are formed from fibroblasts located next to atypical cells. Proteolytic destruction of the basement membrane is an important step in the process of tumor invasion. In the

case of increased invasiveness and metastasis, a high concentration of metalloproteinase is observed.

Results. In normal the prostate gland, the stromal mesh of collagen threads is loosely coiled, the fabric is smooth and even. In contrast, with adenocarcinoma of the prostate gland, the collagen threads are increased in diameter and there is no regularity in the spatial connections of the threads. The areas of collagen destruction are also observed. These data demonstrate that extracellular matrix remodeling is a key feature of reactive stroma in pancreatic cancer. Fibronectin, which promotes cell adhesion and migration, also plays an important role in pancreatic cancer. The level of fibronectin increases sharply with breast cancer.

At this time, there are several established ways of participation of the stromal component of the prostate gland in carcinogenesis. The primary focus of atypical cells is formed in stromal fibroblasts, which stimulate the proliferation of epithelial cells through growth factors. The primary focus of atypical cells is localized in the prostatic epithelium, which makes it more sensitive to the action of stromal growth factors. The primary focus of atypical cells is localized in epithelial cells, which begin to respond by proliferation to the direct stimulating effect of androgens.

Conclusion. Diagnosis of oncological pathology at the initial stages of development is a priority area of modern oncurology. Further research into the role of reactive stroma in the development of pancreatic cancer will help to improve early diagnosis.

Knut R.P.

**MORPHOLOGICAL CHANGES OF HERNIA SAC
AND HERNIA-SURROUNDING TISSUES IN ELDERLY PATIENTS
SUFFERING FROM INGUINAL HERNIAS**

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Introduction. During last years the incidence of inguinal hernias in elderly people has grown significantly. The complications development in these patients after inguinal hernioplasty reached 6-18%. It can be explained by the fact that during surgery and postoperative period surgeons don't take into consideration all the aspects of complications pathogenesis in these patients.

The aim of the study. The purpose of the study was to evaluate the morphological changes of hernia sac and hernia-surrounding tissues in elderly patients with inguinal hernias.

Material and methods. For the research purpose we used biopsy specimens of hernia tissues of 24 patients (aged 60-83, on average 67.47 ± 2.54 yrs), obtained during the inguinal hernioplasty. We paid special attention to evaluation of the muscular tissue atrophy and development of cicatrize and inflammatory changes. For investigation we assessed such tissues as hernia sac, subcutaneous cellular and muscular tissues, and, in some cases, preperitoneal cellular fat. Fragments of tissues were fixed and processed in accordance to histological standards.

Results. We determined principal signs of chronic inflammation of the hernia sac in all 24 patients. In 8 (33.3%) patients we established isolated inflammation of hernia sac tissues, and in 10 (41.6%) patients it combined with chronic inflammatory changes of hernia-surrounding tissues. In 6 (25.0%) patients with the recurrent inguinal hernias the inflammatory changes of hernia sac and hernia-surrounding tissues were very pronounced and combined with their cicatrize changes. In all the patients we also established expressed atrophic changes of muscular tissue. The last can witness about the fact that the suture methods of hernioplasty can cause the further development of ischemia, atrophy and cicatrize changes in muscles of the anterior abdominal wall, leading to hernioplasty insufficiency. The use of "suture-free" techniques in elderly patients may greatly reduce inflammatory changes impact on healing, though they cannot provide a full protection.

Conclusions. The chronic inflammatory changes of hernia sac and hernia-surrounding tissues are the causes of complications development in post-hernioplasty period in elderly patients. The employment of antibacterial and anti-inflammatory remedies can be important component for postoperative complications prophylaxis in these subjects. Inflammatory and cicatrize changes after