

## CONCEPTS OF IMMUNITY. PYO-INFLAMMATORY DISEASES. ETIOLOGY, TREATMENT

Iavorska I.

*Academic adviser:* Hospodarsky I., M.D., Ph.D., Professor, State Medical University “Ya. Horbachevsky”, Ternopol, Ukraine

**Introduction:** Surgical infections are one of the most important problems of modern health care. Studies, performed in different countries, showed that wound infection is one of the most frequent complications of surgery. According to literature data in recent years, the total number of patients with complications increased from 35 to 40%. Despite the introduction in clinical practice of new methods of surgical treatment, new types of equipment, the use of modern antibiotics, infectious complications after surgery are still very common. Today it is clear that neither the traditional methods of antiseptics nor antibiotics can fully meet the needs of surgery.

**The aim** of our study was to find out new data about the efficiency of diagnostic, treatment and prevention of infection-purulent complications in patients operated on different surgical pathologies.

**Results:** We gathered the material on the topic of frequency and characteristics of purulent-septic complications after abdominal surgery on a background of immunodeficiency disorders depending on the type and degree. According to our data, the risk ratios of purulent-septic complications for each of the anamnestic, clinical, laboratory, and immunological factors are different. These factors statistically significantly influenced the development of purulent-septic complications. The preoperative risk factors were: age; sex; height; weight; loss of weight exceeding 10% of the patient's ideal weight; the presence of diabetes, cirrhosis, ascites, chronic heart or respiratory failure; liver insufficiency. Other factors influencing healing include corticotherapy, chemotherapy during the last 6 months prior surgery; anticoagulants and antibiotics agents used. The intraoperative risk factors included the following: type of skin antiseptics used, type of abdominal incision; preexistence of a skin infection; opening of the bowel; placement of a suture or anastomosis; intraabdominal or intraparietal drainage and the length of surgery. The postoperative risk factors were: urinary catheterization (indwelling or not), the degree of the surgical procedure's contamination according to the classification Class 4 or “dirty” surgery. It includes patients who have diabetes, cirrhosis etc.

**Conclusions:** We studied the frequency and characteristics of purulent-septic complications after abdominal surgery on a background of immunodeficiency, depending on the type and degree. Based on the studied material we will try to predict the occurrence of postoperative septic complications in patients with immunodeficiencies.

**Key words:** complications, immunodeficiency.

## COMPARATIVE STUDY OF THE ATHEROSCLEROSIS PLAQUE NEOVASCULARISATION OF VARIOUS TYPES OF ARTERY IN PATIENTS WITH METABOLIC SYNDROME

Munteanu Andrei, Munteanu Diana

*Academic adviser:* Zota Ieremia, M.D., Ph.D., Professor, Corresponding Member of the Academy of Sciences of Moldova State Medical and Pharmaceutical University “Nicolae Testemitanu”, Chisinau, Republic of Moldova

**Introduction:** Cardiovascular pathology occupies a dominant place in morbidity structure. The very rapid development of science and technology, that radically changes the level of physical activity by reducing it, the energy value of the food increment and chronic stress have a negative influence on human life. These changes in the society lead to an increase in the number of people with pathological changes in metabolism at different levels, which in turn were distributed into a group of pathologies called “metabolic”, and which originally foster the development of atherosclerosis.

This article reflects aspects of neovascularisation of the atherosclerotic plaque (AP) in patients with metabolic syndrome (MS). Especially in childhood and adolescence these changes are less observed (slight hypertension, increased body weight, dyslipidemia), but afterwards they cause atherosclerotic lesions in organs and systems. Previous studies have shown that expression of CD105 (endoglin) is a sensitive marker both for endothelial cells and for activation/proliferation of microcapillary in aggressive growth of solid tumors and atherosclerotic plaque lesions, because the intimal neovascularisation contributes significantly to the further stability or instability of atherosclerotic plaque, hemorrhage and rupture.

**Material and methods:** We used morphological and immunohistochemical analysis to investigate the expression of CD34, SMA (smooth muscle actin) and CD105-positive in the affected large-caliber (aorta, carotid, mesenteric, iliac), and medium (cerebral, coronary, renal, vertebral arteries) vessels samples taken during the necropsies of patients who died from atherosclerotic complications and/or metabolic syndrome.

**Results:** The most dominant studied vessels were CD34 positive at the intimal level in the atherosclerotic plaque region; in the fibrous plaque – rarely; in adventitia, namely vasa vasorum, CD34 positive (small and medium vessels).

Marker SMA is detected in smooth muscle cells, myoepithelial, myofibroblast cells, and, to a lesser extent, in pericytes. Internal positive control for SMA was featured by the positive reaction in myocytes from the tunica media of arterial vessels of muscular and musculo-elastic types as well as by smooth muscle cells and pericytes of blood vessels. Negative reaction was represented in the newly formed vessels (an explanation is that the newly formed vessels being immature are voided of pericytes).

The CD105-positive vessels density was higher in the plaque in close proximity to the atherosclerotic plaque (at adventitial and intimal level) and significantly decreased aloof from atherosclerotic lesion. Furthermore, noncomplicate plaques (intermediate and fibrous) have shown positive vessels for endoglin, which reflects angiogenic cell proliferation. Endoglin-positive vessels were grouped near the atherosclerotic lesions and had lower density distantly, similarly to the issues identified in complicated plaques (calcified and exulcerated).

An eloquent fact is that expression of neovascularisation at intimal level of fibrous and complicated plaque is highly variable. Some of these newly formed CD105-positive vessels were immature, thin walled; formation of plexuses, seams, and isolated CD105-positive cells and without smooth muscle cell actin expression serves as an argument to consider them new-formed vessels.

To a high degree of atherosclerotic plaques the proliferation of CD105-positive new-formed vessels was varied in most types of arteries, videlicet a significantly increased number of adventitious vessels were associated with plaques regions in affected arteries. Another observed feature is that the neovascularisation process is expressed also from intimal part at plaque level of medium and small caliber vessels.

**Conclusion:** Interpretation and vitality (stability and instability) of the atherosclerotic plaque depends to a large extent on the angiogenesis process of atherosclerotic plaque. Our results show that comparative immunohistochemical method with the application of specific vascular markers demonstrates important pathogenetic aspects in the atherosclerotic plaque formation. CD105 is an useful marker of angiogenesis within the adventitious and intimal vessels and suggests the existence of significant differences in the pathological development of atherosclerosis in separate vascular beds, that can have important consequences when considering the management and actual treatment, and the perspective of this disease.