

**Riabyi S.I.**

**IMPACT OF TISSUE PROTEOLYTIC AND FIBRINOLYTIC ACTIVITIES ON THE MECHANISMS OF INTESTINAL ANASTOMOTIC LEAKAGE**

*Department of Patient Care and Higher Nursing Education  
Bukovinian State Medical University*

In abdominal surgery, intestinal anastomotic leakage (IAL) is still a serious complication. The most often cases of IAL are registered after urgent operations with the range of 3,8-8,1%. The highest mortality rate (up to 22%) caused by IAL is detected after the formation of colorectal anastomosis. Known researches are devoted to the study of such risk factors of IAL as nutrition disturbances, smoking, steroids and chemotherapy, duration of surgical treatment, volume of infusion and blood transfusion etc. It has been proved that tissues ischemia, kind of suture material and technical approach have a significant impact on intestinal anastomosis healing. However, local changes of some biochemical processes in the anastomotic tissues and their role in IAL development aren't quite clear.

The aim of the research is to investigate the impact of specific changes of proteolytic and fibrinolytic activities of intestinal anastomotic area tissues on their regenerative properties under experimental conditions of IAL. The study has been performed on 72 albino nonlinear rats undergoing IAL model application. In 12, 24, 48, 72 hours and 5 days following a surgical procedure the samples of IA tissue have been taken for specific tests. The levels of proteolytic activity by the lysis of azoalbumin (AA), azocollagen (ACg), azocasein (ACs) and the indices of fibrinolytic activity: total (TFA), nonenzymatic (NFA), enzymatic (EFA) have been studied. The character of reparative processes in the anastomotic tissues has been estimated by means of microscopy of the histological sections of the sutured area.

According to the obtained data, a reliable steady activation of tissues proteolysis has been revealed in the animals of the experimental group in comparison with the control one. In 12-24h. following IAL model application a reliably higher activity of lysis of AA, ACs and ACg were detected in the animals of the experimental group ( $p < 0,001$ ). It testifies the increase of proteolytic modification of the low- and high-molecular proteins. At this period of observation in the animals with IAL there occurs a proved rise of TFA into a serous layer of the intestinal wall, both at the expense of NFA and EFA ( $p < 0,001$ ). During the of study the histological sections of the anastomotic area of the experimental group of animals, more intensive neutrophilic infiltration in the submucosal layer of the intestinal wall extending to muscle and serous membranes was revealed and venous plethora and hemorrhages into serous membrane were expressed. On the contrary, the fibrous mesh in the canal of the thread and between the serous membranes was not observed in the animals with IAL model compared with the control one. During a later period (48-72 h.) a tendency to rise of the indices of tissue proteolysis in the submucosal layer of the intestinal wall, especially indices of ACg lysis, which were one and a half-time higher than data of the control group. An elevation of the tissue fibrinolytic activity was detected in the animals with IAL, largely at the expense of EFA which exceeded twice the control data. The histological signs of regeneration defects in this period of observation were significant diastasis between the serous membranes of the intestine touching only in the area of the connected edges of the mucous membrane, also the diffuse inflammatory reaction with expressed neutrophilic and plasmacytic infiltration, edema, plethora and hemorrhages which spread to all layers of the intestinal wall. The constant signs of tissues necrosis with the advantage of disintegrated neutrophilic granulocytes and lymphoid cells over the macrophages and single active fibroblasts were revealed around the canal of the thread.

So, excessive activation of tissue fibrinolysis due to fibrin matrix lysis can lead to insufficient fixation of fibroblasts into the anastomotic area. On the other hand, prolonged intensive degradation of collagen in the submucosal layer of the intestinal wall, which provides the basic strength of anastomosis, may be in the basis of defects of anastomotic healing. Both of them can be considered as mechanisms of IAL formation in the conditions of insufficient blood circulation and require further study.