25th day – they were not revealed. Type of ctogram corresponded to regenerative-inflammatory. However, patients of the 2nd group on the 25th day still could have changed forms of neutrophils in their cytogram, content of which was close to 30,7 ± 1,7. Inflammatory stage of wound process of patients of the 1st group transits to reparative one on the 10,4 ± 0,2 day , while patients of the 2nd group – on the 20–27 day. Sizes of wounds become less by means of epithelialization and contraction of scar tissue. Together with regeneration of connective tissue of skin derma and its derivatives: hair follicle, there's regeneration of epithelial layer.

Thus, in case with purulent wounds of different genesis, their biological essence and consequence of the developments is the same. However, wound process in patients with diabetes is followed by a number of peculiarities:

1) reduction of number density of vessels of granulation tissue;

2) significant slowdown and disorder of maturation of granulation tissue, dystrophic disorders of collagen fascicle;

3) appearance of purulence locus of granulation and mature connective tissue.

Morphological pattern of diabetic angiopathies and neuropathies with microcirculation disorder conduces to hypoxia of wound tissues and together with reduction of cell and humoral immunity destroy the wound process, extending periods and stages of wound healing. All above mentioned shows the necessity of complex morphological estimation for effective control of wound process. The described method will allow correctly estimate its extent in order to work out and apply reasonable algorithm of antibacterial, analgetic, antiedemic, anti-inflammatory and stimulating reparative processes of treatment of purulent wounds of soft tissues, that with no doubt will allow improving quality of patient's life without increasing or with minimal operation activity.

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THE IMPACT OF THE EXPERIMENTAL HEART FAILURE UPON THE FUNCTIONAL MYOCARDIUM MORPHOLOGY AND THE CORRECTION OF THE ALTERATIONS WITH BISOPROLOL

Proshina L.G., Fedorova N.P., Antonova L.M.
Novgorod State university of Jaroslav Mudryi,
e-mail: Lidiya.Proshina@novsu.ru

Heart failure is one of the most significant medico-social problems and is followed by alterations on different levels of heart organization. A great number of questions that regard reactive, adaptive, and reparative alterations of cardiomyocytes and stromal elements of heart is controversial and need accurate definition. The need of the studying of the restoration abilities of myocar-

dium and the possibilities of the realization of its compensation-adaptive mechanisms is conditional on the frequent involvement of the heart into the pathological processes. Deeper knowledge of the regenerative abilities and genetically-determined tissue processes is needed for the development and prognosis of the implemented treatment measures and medical preparations effectiveness. The introduced model of this research is the experimental heart failure and its correction with bisoprolol.

The point of the research is the comparative analysis of structure-functional and metabolic peculiarities of myocardium with experimental heart failure, and also the study of the reverse development of the destructively-alternated heart tissue possibility against the background of the bioprolol introduction.

Methods and materials

The research was carried out upon male rats of the Vistar line. The experimental heart failure was provoked by the described methods [1]. The animals weredivided into groups: 1-intact animals, that has been kept in usual vivarium conditions; 2-animals with experimental heart failure; 3-animals with heart failure that has been receiving the medical preparation bisoprolol («Merck», Germany) intraperitoneally, in dose of 0,6 mg/100 g of mass. The histological study of the rats' myocardium was carried out according to the common method, the cuts were coloured with hematoxylin and eosin, hematoxylin-the main fuchsine-picric acid, toluid blue. The glycogen, succinate dehydrogenase (SDG), lactic dehydrogenase (LDG), cytochrome oxidase (COX) activity was analised [2]. Morphometric analysis was carried out with point net of Avtandilov [3]. Electromicroscopical research was taken according to the common method. The tissue filling was done with usage of epoxy resins: epon-araldyte, the cut were contrasted by uranium lycetat and the lead citrate. The experimental research was carried out according to the European convention of the protection of vertebrate animals that are used for experiments and other scientific purposes (ETS N 123), (Strasbourg, 18th of March 1986). The statistic processing was carried out with usage of the application Statistica 6.0.

The discussing of the obtained results. Cardiomycytes (CMC) of the intact animals have regular structure that correspond to its description in literature [4]. The volume density of cardiomycytes was 85,5 ± 5,2%; the intercellular substance (that included the amorphous substance and collagen fibers) – 14,5% ± 0,1%. The correlation of CMC and intercellular substance was 5,9. The myocardium stroma was represented by friable connecting tissue that twined around the cardiomycytes and contained a big number of capillary which volume density was 7,4 ± 0,1%.

The cardiomycytes ultrastructure demonstrates the typical cellular texture. Myofibrillas are situated parallel to the lengthwise cellular axis, while intercalated discs that look like a zigzagg line and cross the myofibrillas at the telophragma level are situated perpendicularly to it. Between the myofibrillas as tension bars the mitochondrions that usually have oval shape are situated. Lysosomes are among the mitochondrions. The lamellar complex is relatively weak. Granolas of glycogen that either lay single or form associations are revealed in retractive cardiomycytes.

Experimental heart failure caused the destruction of the functional muscle «fibers» and showed a distinct heterogeneity of the cardiomycytes population. Among usual heart myocytes the hypertrophied and atrophied ones were found. Contracture damages of cardiomycytes were revealed, a weakening of the discs A anisotropy or the disappearance of the anisotropic structures in separate cardiomycytes were present. The picture of miofibrillas lysis had place. Intercellular alterations were accompanied by the expressed myoplasm edema. The volume density of cardiomycytes within the animal groups with the experimental heart failure decreased of 27% in comparison with the intact. The increase in stroma myocardium component took place at the same time, the raise in the microcircle channel volume, fibroblast cells, collagen fibers, and the major amorphous substance of the connecting tissue took place. The correlation between the CMC and stroma cells was 1,5 that is almost 4 times less than that of intact animals. Within the progress dynamics of the experimental pathology the blood capillaries were altered: the decrease in their diameter that was 4,30 ± 0,04 mkm (against 5,70 ± 0,03 mkm in control) was observed. Swelling endothelial cells jutted out into the capillary clear space. The loosening and edema of the perivascular connecting tissue was also present. The quantity analysis of enzymes demonstrated the decrease in the breathing elements activity. The CDG activity decreased of 23%, COX – of 58%, LDG – of 64%, the glycogen content in cardiomycytes decreased of 64% accordingly, in comparison with the intact animals' myocytes. The ultrastructure analysis showed a significant alterations of the cellular energy apparatus. Among the regular mitochondrions the fragmentation and isolation of crists were observed. The number of destructively-altered mitochondrions prevailed and myoline figures were revealed between them quite often. The

tracts of cardiomycytes miofibrillas were mostly separated, miofillaments were hohmogenated and had indistinct contours.

The introduction of the medical preparation bioprolol modified the morphological characteristic ofcardiomycytes. The kernel hyperchromy phenomenons took place in cellular structures, as well as its displacement to theperiphery, but that had an episodical character. The correlation between CMC and intercellular substance was 4,7. The introduction of the medicine was followed by the decrease in contracture myocardium damages. The heaviness and contracture spread degree was also decreased. The increase in cytochemical elements' activity in comparison to the animal group with experimental heart failure was displayed by their study: SDG – of 12%, COX – of 17%, LDG – of 5%, glycogen level – of 27%. The analysis of the ultrastructure cardiomycytes organization revealed the phenomenons of poorly exposed edema of heart myocytes. Miofibrillas, as a rule, had a usual structure. Mitochondrions were in different condition: most of them were comparable to the intact group, the others were in swelling and edema condition. The qualitative analysis of the electric microphotographies showed the increase in the mitochondrion content (27,3 ± 0,5), in comparison with animals that had experimental heart failure (15,6 ± 0,4). However, their level did not reach that of intact rats (29,1 ± 0,7). The number of lipid inclusions was significantly decreased and some electric microphotographies showed no lipid drops.

Conclusion

Thus, the analysis of the experimental material testifies that the structural myocardium alterations of the Vistar line male rats was functional. The introduction of the medical preparation bisoprolol with the experimental heart failure decreased the cardiomycyte damage degree on cellular and subcellular level of the myocard organization and also boosted the cardiomycytes metabolism. All that shows the positive impact of the medicine that makes the backward development of the destructive alterations that were caused by the experimental heart failure possible

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