

عنوان مقاله:

Characteristics of Intercalated Discs Responsible for Histological Changes of the Left Ventricle in the Experiment Involving Mechanical Loading on ۳۰-Day-Old White Rats

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خلاصه مقاله:

In our own experiment, we studied microscopic changes in the anterior wall of the left ventricle of young, middle-aged, and old rats on the ۳۰th day after exercising. Plasmorrhagia, edema, stasis, bruising, dystrophic-necrotic changes, and eventually atrophic and sclerotic changes with the proliferation of connective tissue, an expansion of fibroblasts, and collagen synthesis emerge against the backdrop of tissue hyperemia typical of general venous hyperemia. In contrast to the young rats, the middle-aged rats have more severe lesions, while the old rats exhibit lesser alterations than the first two age groups. Compared to the control, an immunohistochemical examination of Desmin expression indicated peculiar morphodynamics. Morphometric analysis revealed that the number of intercalated discs is stable in young rats compared to control groups, rises in middle-aged rats (۲۴.۱۷%), and decreases in older rats (۲۳.۶۷%) compared to control. The intercalated discs in all three cell types mostly undergo disintegration, fragmentation, and shortening with a decrease in size. Compared to older rats, the experiment shows that sustained physical strain initially triggers the onset of adaptive, compensatory hypertrophy processes in striated and smooth muscle tissues. The compensating mechanism is disrupted when there are morphological alterations like acute heart failure and myocardial infarction, risk factors for acute hyperemia, venous and capillary congestion, edema, hemorrhage, and dystrophic and necrotic changes with the destruction and reduction in the size of intercalated discs. These conditions also cause functional weakening, decreased myocardial contractility, and hypoxic damage and are risk factors for acute heart failure and myocardial infarction.

کلمات کلیدی:

Rat, Heart, Desmin, ventricle

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