AGE-SPECIFIC FEATURES OF CARDIOPROTECTIVE ACTION OF MELDONIUM UNDER THE EXPERIMENTAL SEVERE HYPOOSOMOLAR HYPERHYDRATION

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The aim of our study was the determination of morphological changes in the rat‘s heart of different age under the experimental severe hypoosmolar hyperhydration and attempt to correct the identified changes by means of cardioprotector.

Materials. The experiment was performed on 54 white laboratory rats, which were divided into 2 experimental and 1 control series. The first experimental series included 6 rats in the prereproductive period at the age of 3 months, 6 rats in the reproductive period at the age of 8 months and 6 rats of the elderly age of 22 months. Animals were modeled a severe degree of hypoosmolar hyperhydrylion by introduction of distilled water and a synthetic analogue of ADH (vasopressin) "Minirin" twice a day at a dose of 0.01mg trough the probe.The second experimental group included rats of all age groups (6 in each), which morphofunctional changes were corrected by meldonium. Rats of the control series were injected with "Minirin" twice a day at 0.01 mg, taking into account the potential effects of the drug on the cardiovascular system. Cardiometry and statistical methods were used to assess the effect of hyperhydration on the morphofunctional state of the heart.

Results. In the 3-month-old rats of the first experimental series, the weight of the atria (AW) increases by21.98% ($p<0.0001$), the left ventricular weight (LVW) - by 28.65% ($p<0.0001$), the right ventricular weight (RVW) - by 25.77% ($p<0.0001$), and the area of the endocardial surface of the right ventricle (AESRV) - by 18.05% ($p=0.0099$) as compared with the control series.In the young rats of the secondexperimental series it is noted increasing of LVW by 23.03% ($p<0.0001$), RVW – by 20.1% ($p<0.0001$), AW – by 18.68% ($p=0.0003$) as compared with the control.The area of the endocardial surface of both ventricleschanges insignificantly. In the 8-month-old rats of the first experimental series AW is greater than the control by 25.35% ($p<0.0001$), LVW-by 15.4% ($p=0.0002$), RVW – by 48.13% ($p<0.0001$). The AESLV increases insignificantly, while AESRV increasesby 29.28% ($p<0.0001$). In mature rats of the second experimental series the AW is greater than control by 22.46% ($p<0.0001$), LVW – by 17.22% ($p<0.0001$), RVW – by 23.88% ($p<0.0001$), AESRV increases by 13.63% ($p=0.0499$). In the 22-month-old rats the AW increases by 22.89% ($p=0.0001$), LVW - by 24.48% ($p< 0.0001$), RVW – by 45.88% ($p<0.0001$), AESLV– by 31.35%($p<0.0001$), AESRV – by 35.12% ($p<0.0001$) as compared with the control. In old rats of the second experimental series we observe increasing of LVW by 25.45% ($p<0.0001$), RVW – by 37.28% ($p<0.0001$), AW – by 20.33% ($p=0.0002$), AESLV– by 18.33% ($p=0.0013$), and AESRV – by 22.68% ($p=0.0012$).

Conclusion. Under the influence of hypoosomolar hyperhydration was observed a significant increase ofmassometric indices in both experimental groups. At the same time, the application of meldonium slows growth of the mass of the right ventricle and its dilatationin all age categories.

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