Abstract: P90

Features of the BNP and beta-endorphin expression in hypertension in different models

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Topic(s):
Cardiac Biology and Physiology, Other

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Background. The blood pressure regulation involves a complex integration of different systems comprised of 2 domains – the peripheral and the central ones. One of the main linkage structures of them is hypothalamus. This effect implements via local synthesis or provision to the regulatory niclei the complex of neurohormones which mediate pressor and depressor effects. It is considered, the pathogenesis of hypertension (HT) includes the high activity of peripheral pressor neuropeptides and/or low activity of depressor ones, but the data according to the central domain is lacking. One of the key intrahypothalamic coordinator is arcuate nucleus (Arc). We postulate that violation of the depressor neuropeptides’ level in it leads to HT.

The purpose of our study was to find out the features of brain natriuretic peptide (BNP) and ß-endorphin expression in models of primary and secondary hypertension in rats.

Materials and methods. Study was conducted in 3 groups of mature male rats (of 7-8 month of age and 220-270 grams of weight): 1) control group – 10 Wistar rats (mean blood pressure (mBP) 83,8±0,96 mm Hg); 2) 10 SHR (mBP 125,8±1,12 mm Hg); 3) 10 Wistar rats with endocrine-saline model (30-day intraperitoneal administration of prednisolone at 7 o’clock in dose of 2 mg/kg and at 20 o’clock in dose of 4 mg/kg with simultaneous force watering with 5 ml of 2,3% saline, mBP 125,8±1,12 mm Hg). We studied the ß-endorphine and BNP in 14 um paraffin-embedded slices of hypothalamus using immunofluorescence assays. The image analysis was done in ImageJ. Statistical analysis was done with one-way ANOVA with post hoc Bonferroni correction. Significant difference was consider when p<0.05

Conclusions. Development of HT leads to decrease of level and allocation both of studied depressor neuropeptides in the structure of Arc. Their balance change depends on etiology of hypertension. The most distinct difference was observed in SHR group. We believe it is due to the exhaustion of depressor system as a result of extended blood pressure elevation.
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