Target organs lesion in adolescents with essential arterial hypertension

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Aim: To assess the state of target organs in adolescents with essential arterial hypertension (EAH) at different stages of its formation.

Methods and materials: 299 adolescents with EAH at the age from 12 to 18 years old (average age 14.9±2.0) were examined: 215 youths and 84 girls. According to 24-hour blood pressure monitoring adolescents with EAH were divided into three study groups: first group – 98 adolescents with “white coat hypertension” (WCH), second group – 108 patients with liable AH (LAH), third group – 93 adolescents with stable AH (st AH). 27 persons were included into the control group. Left ventricle (LV) function were assessed according to Echo data. Brain MRI was performed using MRI scanner "Magneton-OPEN". Endothelial dysfunction was assessed by means of plasma level of Von Willebrand factor (VF).

Results: LV geometry changes were disclosed in 23,1% of examine adolescents with EAH. Concentric hypotrophy was discovered in 2%, concentric remodeling – 6%, eccentric hypotrophy – 15%. Patients with st. AH had the possibility of eccentric hypotrophy formation higher in 3,13 times than in WCH group and in 2,7 times than in LAH group (p=0,0049 and p=0,0076, correspondingly). Hypertensive encephalopathy (HE) manifestations were discovered in 74% of adolescents with EAH. The difference of average sizes of arachnoid cavity (AC) of postcranial fossa in all study groups in relation to control with adjusted sex and age was clinically significant. Increase of average BP by 1 mm Hg per day and increase of time index of systolic BP at night by 1 unit (%) led to increase of AC postcranial fossa by 0,14 mm (CI 0,01:0,46), p=0,032) and 0,09 mm (CI 0,01:0,16), p=0,028), correspondingly. Significant increase of WF concentration was marked in groups of liable and stable AH in relation to control group (p=0,0056 and p=0,0018, correspondingly). Higher differences of average WF and ILVMM activity were marked in patients with EAH and HE than in the group of patients without structural brain disturbances (p=0,025 and p=0,01, correspondingly).

Conclusion: Target organs lesion starts from at earliest stages of EAH formation.
Key words: essential arterial hypertension, adolescents, target organs.