Influence of risk factors of cardiovascular diseases upon essential hypertension formation and target organs lesion in adolescents

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Aim: To study the frequency of risk factors (RF) of cardiovascular diseases (CVD) in adolescents with essential arterial hypertension (EAH) at different stages of its formation and to assess their influence upon the target organs lesions.

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 (71.9%) youths and 84 (28.1%) 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). RF study included the assessment of frequency of passive and active smoking, low physical activity, family history of CVD and overweight. Brain MRI was performed using MRI scanner "Magneton-OPEN". Left ventricle (LV) function and central hemodynamics were assessed according to Echo data.

Results: Frequency of active and passive smoking was 15.7% and 36.5%, correspondingly; overweight 22.4%, family history of CVD – 51.2%, out of which family history of idiopathic hypertension (IH) was disclosed in 94.1% of cases. Covariance analysis showed that adolescents with family history of IH in relation to patients without given RF have the possibility of st AH formation higher in 5.5 times than that of WCH (p=0.0048) formation and in 3.5 times - LAH (p=0.012) formation, taking into account age and sex. The analogous data were got in relation to passive smoking and overweight. Family history of IH and active smoking influenced on LV hypertrophy by means of pulse pressure increase, and overweight – by increase of insulin resistance HOMA index. Overweight influenced indirectly upon hypertensive encephalopathy by means of increase of time index of systolic blood pressure at night.

Conclusion: Smoking, overweight and family history of IH favour increase of stable form of disease and target organs lesions formation in adolescents with essential AH. Preventive measures in the given adolescents allow stopping the progression of the disease and favour involution of disease symptoms.

Key words: essential arterial hypertension, adolescents, risk factors, cardiovascular diseases.