Hemorrhagic vasculitis (HV) or Henoch-Schönlein purpura (HSP) is a leader in the structure of systemic vasculitis in children. Endothelial dysfunction is an essential component of the pathogenesis of any cardiovascular, chronic inflammatory and autoimmune diseases. There are many methods of evaluation of endothelial function, which can be divided into 3 main groups: biochemical markers, invasive and non-invasive methods.

The aim of the study was to investigate ultrasonic and biochemical markers of endothelial dysfunction in children with HSP depending on the form and course.

**Material and methods:** 60 children aged 1 to 17 years old (35 males, 25 females) with HSP were examined. The control group included 17 healthy children. The serum levels of NO2, NO3 and S-nitrosothiols were determined spectrophotometrically. Serum MCP-1 was measured at enrollment using a sensitive ELISA assay. The levels of Von Willebrand factor (vWF) were determined in plasma by ahrehometric method. Ultrasonography has been used to investigate the thickness of the intima-media (I-M) complex and percentage increase of flow-mediate dilatation (FMD%). The data were analysed with StatSoft STATISTICA Version 8 (Tulsa, OK). Non-parametric variables are given as median (interquartile range). Statistical significance was derived using non-parametric tests (Mann-Whitney test and Kruskal-Wallis test).

**Results:** 86,6±4,7% (p=0,003) children suffer on the HSP under the age of 12 years, a significant «rejuvenation» of this pathology. Among children of main group 8 (13,3%) patients with skin form, 24 (40%) patients with skin-articular form, 19 patients with mixed form (skin-articular and abdominal syndrome) HSP and 9 (15%) patients had mixed form with renal syndrome and by the severity: 19 (31,6±10,6%) patients with mild HSP, 22 (36,6±10,2%) patients with moderate HSP and 19 (31,6±10,6%) patients with severe HSP.

The results of Kruskal-Wallis test for all parameters depending on severity HSP are significant, namely: NO2 – H=44,2, p=0,0000, NO3 – H=59,1, p=0,0000, S-nitrosothiol – H=59,5, p=0,0000, vWF – H=66,8, p=0,0000, MCP-1 – H=70,6, p=0,0000. The results of Kruskal-Wallis test for all parameters depending on form HSP are significant, namely: NO2 – H=18,7, p=0,0009, NO3 – H=27,3, p=0,0000, S-nitrosothiol – H=29,7, p=0,0000, vWF – H=49,8, p=0,0000, MCP-1 – H=50,1, p=0,0000. As follows, statistical characteristics of indicators of different groups are statistically different, and the levels of parameters which were investigated, depend on form HSP. The serum levels nitric oxide metabolites levels (NO2, NO3, S-nitrosothiol) were significantly diminished in the patients with mixed form with renal syndrome (p<0,0000, p<0,0000, p<0,0000).
syndrome=0.0000, respectively) compared with controls. The serum levels of nitric oxide metabolites were increased in the patients with skin, skin-articular and mixed forms HSP compared with controls. The serum levels of vWF and MCP-1 were higher in the patients of all groups in comparison to the control children. (p_c-skin form=0.0000, p_c-skin-articular form=0.0000, p_c-mixed form=0.0000, p_c-mixed form with renal syndrome=0.0000; p_c-skin form=0.0000, p_c-skin-articular form=0.0000, p_c-mixed form=0.0000, p_c-mixed form with renal syndrome=0.0000, respectively).

The thickness of I-M complex was significantly increased in the patients with severe HSP (0.9(0.9;1.0) mm), compared with children mild HSP (0.60(0.45;0.70) mm, p_mild HSP-severe HSP=0.0005), moderate HSP (0.70 (0.60; 0.80) mm, p_moderate HSP-severe HSP=0.0001) groups and controls (0.62 (0.61; 0.64) mm, p_c-severe HSP=0.0001). The thickness of I-M complex was significantly increased in the patients with mixed form with renal syndrome (1.00(0.90;1.00) mm, p_c-skin form=0.7266, p_c- skin-articular form=0.9788, p_c-mixed form=0.6688, p_c-mixed form with renal syndrome=0.0000). The indexes of FMD% were significantly diminished in the patients with mild, moderate and severe HSP, compared with controls (MW U Test: p_c-mild HSP =0.0000, p_c-moderate HSP=0.0000, p_c-severe HSP=0.0000).

**Conclusion.** The endothelial dysfunction is presence in all children with HSP. Ultrasonic and biochemical markers of endothelial dysfunction in children depend of form and severity HSP. The thickness of I-M complex was increased in children with severe HSP and in children with mixed form with renal syndrome, therefore it can use as a marker of severity of the pathological process of HSP. The reduced levels nitric oxide metabolites levels in children with HSP may be early marker of kidney injury.