

Vasylchenko Y. V.

Endothelial function status in children with bronchial asthma in exacerbation and remission

Endothelial function status and its participation in the pathological process is of special interest in the course of bronchial asthma.

Objective: to determine the endothelial function status in children suffering from bronchial asthma (BA) in exacerbation and remission.

Materials and methods: 70 children with persistent bronchial asthma in exacerbation and remission period were examined. Among them 30 patients with mild persistent BA (1st group), 29 patients with moderate persistent (2nd group) and 11 patients with severe persistent (3rd group). In addition every group was divided into 2 subgroups such as A (exacerbation) and B (remission). 15 healthy children were served as the controls. The serum levels of soluble Vascular Cell Adhesion Molecule-1 (sVCAM-1) were determined by enzyme-linked immunosorbent assay (ELISA, catalog #BMS232, Austria). The ultrasound assessment of endothelium-dependent flow-mediated dilation of the brachial artery and calculation of percentage *increase in brachial artery diameter* (FMD%) (D.S. Celermajer et al., 1992) were carried out. The serum levels of NO₂ were determined spectrophotometrically. Statistical analysis was performed with StatSoft STATISTICA Version 8 (Tulsa, OK).

Results: The index of FMD% was significantly diminished in the patients of 1A,2A,3A groups compared with controls ($p_{k-1A}=0.0001$, $p_{k-2A}=0.0003$, $p_{k-3A}=0.0000$) and staed lower in the patients of all groups in remission ($p_{k-1B}=0.0012$, $p_{k-2B}=0.0004$, $p_{k-3B}=0.0000$). The serum levels of NO₂ in the patients of all groups was significantly decreased in the exacerbation and remission ($p<0,001$). The serum levels of sVCAM-1 was significantly increased in patients of all groups in exacerbation ($p_{k-1A}=0.0000$, $p_{k-2A}=0.0007$, $p_{k-3A}=0.0002$) and remission ($p_{k-1B}=0.0028$, $p_{k-2B}=0.0011$, $p_{k-3B}=0.0005$) compared with controls. It was proved that levels of sVCAM-1 depend on BA severity in exacerbation ($H=56.11$, $p=0.0001$) and remission ($H=50.68$ $p=0.0000$).

Summary: endothelial dysfunction in children with BA were determined in the exacerbation and remission. Degree of endothelial dysfunction depends on the severity of the disease.