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SCIENTIFIC LETTER

Serum Levels of Monocyte Chemotactic Protein-1 and Nitrogen Oxide Metabolites in Henoch-Schönlein Purpura Indicate the Development of Renal Syndrome

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To the Editor: The dominant clinical features of Henoch-Schönlein purpura (HSP) are non-thrombocytopenic purpura, abdominal pain, and in some cases, gastrointestinal bleeding, arthritis, and renal involvement [1, 2]. For the most part, the first laboratory signs of the development of renal syndrome are detected at 3–4 wk from the onset of the disease [3]. We therefore conducted this study with the aim to predict development of nephritis using biochemical markers.

Sixty patients with Henoch-Schönlein purpura were divided into two groups according to the absence or presence of nephritis. A total of 17 healthy children were enrolled. Renal syndrome was diagnosed as the existence of renal involvement during the first month course of HSP, manifesting as hematuria and/or proteinuria. The concentration of nitric oxide in the blood serum was evaluated on the serum levels of nitrogen oxide metabolites by spectrophotometric method. Determination of monocyte chemoattractant protein 1 (MCP-1) in blood serum was carried out using an enzyme immunoassay. The examination was conducted in the acute period of disease, before the start of medical treatment.

Every third patient had laboratory signs of renal involvement, predominantly beginning a month after the rash appeared [4]. The level of MCP-1 in children with renal syndrome was higher than that in children without renal involvement ($p < 0.05$). High levels of MCP-1 may indicate renal interstitial inflammation and interstitial fibrosis by recruiting monocytes–macrophages into renal interstitium. The levels of nitrogen oxide metabolites in the group with renal injury were significantly lower than those in the patients without renal injury and in the control group ($p < 0.05$). Omar et al. reported that chronic renal failure is a state of NO deficiency [5].

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The concentration of metabolites of nitric oxide and MCP-1 in the beginning of the disease may indicate a risk of developing renal syndrome in patients with HSP. The area under the ROC curve (AUC) for MCP-1 was 0.975, for NO_2 was 0.891, for NO_3 was 0.882 and for S-nitrosotiol was 0.911.

Determination of the serum levels of nitrogen oxide metabolites and MCP-1 in children with HSP allows to prognosticate the occurrence of nephritis. The right choice of therapeutic measures in the debut of the disease reduces the risk of kidney complications.

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Compliance with Ethical Standards

Ethics Approval and Consent to Participate Commission on bioethics in Kharkiv National Medical University (Protocol no. 6 from June 1, 2016) determined that the studies were consistent with the ethical principles of medical research conducted on humans. All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. The Ministry of Health of Ukraine # 523 from 12.07.2012 no. 616 dated 03.08.2012. Study was carried out with minimal psychological loss to patients. Patients were fully informed about the methods and scope of studies. Informed consent was obtained from all individual participants included in the study.

Conflict of Interest None.

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