Pankratenko T.E., Moskalec O.V., Abaseeva T.Yu.
Cell adhesion molecules in children with diarrhea-associated hemolytic uremic syndrome

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Abstract

The level of soluble adhesion molecules sICAM-1 and sVCAM-1 were studied in blood of children with diarrhea-associated hemolytic uremic syndrome (D+HUS) and in blood of children who had previously had D+HUS (control group). We compared these markers with some laboratory characteristics of thrombotic microangiopathy activity, inflammation and severity of acute kidney injury. We revealed that serum concentrations of sICAM-1 were lower and sVCAM-1 were higher in children with acute D+HUS than in controls. But the prognostic value of these markers still remains unclear.

Key words: hemolytic-uremic syndrome, adhesion molecules, sICAM-1, sVCAM-1

Introduction.

Hemolytic uremic syndrome (HUS) is the most common cause of acute renal failure in children and the reason for chronic renal replacement therapy [1]. It leads to significant morbidity and mortality during the acute phase. Additionally, long-term renal and extra-renal complications may occur in a substantial number of children years after the acute episode of HUS [4]. D+HUS is an acute disease characterized by prodromal diarrhea followed by acute renal failure, thrombocytopenia and non-immune hemolytic anemia. The most common cause of D+HUS is enterohemorrhagic *Escherichia coli* producing Shiga toxin [1,4]. Endothelial dysfunction induced by effects of Shiga toxin has been recognized as the trigger event in the development of D+HUS [5]. Hence, adhesion molecules as biomarkers of endothelial activation/dysfunction may be useful for assessment of risk of complications and poor outcomes [2,3].

Patients and methods. 17 children (9 boys, 8 girls) aged 6–128 months (median 33 months) on 2nd–4th day after onset of D+HUS were included in the basic group and 10 children (5 boys, 5 girls) of 20–78 months (median 42 months) who recovered from HUS 6 months up to 5 years before study were included in the control group. The diagnosis of D+HUS was confirmed by the development of acute renal injury, low platelet counts and hemolytic anemia after prodromal hemocolitis. 3 patients with acute D+HUS had oliguria, 14 were anuric. All patients with the history of D+HUS (control group) were apparently healthy, without any symptoms of intercurrent infections. Serum concentrations of soluble intracellular adhesion molecule-1 (sICAM-1) and vascular cell adhesion molecule (sVCAM-1) were measured by enzyme-linked immunosorbent assay. Leucocyte and thrombocyte counts, hemoglobin, creatinine, urea, LDG levels and estimated glomerular filtration rate were determined as well.

Results. The level of sICAM-1 was significantly lower and the level of sVCAM-1 was significantly higher in basic group than in control group (285 (227–297) vs 335 (308–408) ng/ml, $p=0.003$ and 705 (505–1230) vs 355 (325–450) ng/ml, $p=0.003$, respectively). Serum concentrations of sVCAM-1 varied widely from 360 to 5200 ng/ml in basic group. But we didn't find significant differences in initial hemoglobin, LDG, levels, leucocyte and platelet counts as well as in the duration of anuria and dialysis, in serum urea and creatinine levels at the day of discharge when 8 patients with normal sVCAM-1 levels (median 482, 372–565 ng/ml) were compared with 9 patients with high sVCAM-1 levels (median 1230, 1085–1825 ng/ml). We also didn't find any significant correlation of above-mentioned data with serum concentrations of sICAM-1 and sVCAM-1, but we revealed a

significant positive correlation of sICAM-1 concentration with the terms of platelet normalization ($r=0,63$, $p<0,05$).

Conclusion. Children with acute D+HUS had lower levels of sICAM-1 and higher levels of VCAM-1 than children with a history of D+HUS. This pattern of altered adhesion molecules suggests that different endothelial regulation factors are at play. However, the prognostic value of these markers still remains unclear. Further studies are required to determine the clinical benefit of these biomarkers in D+HUS.

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Vecherkina Zh. V., Chirkova N.V., Morozov A.N., Smolina A.A., Konchakova V.V.
The efficiency of therapeutic antiseptic oral liquid application

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Abstract

Comprehensive daily oral hygiene is considered a key factor for periodontal diseases prevention [4]. It is based on the use of main and auxiliary oral hygiene products [1]. Even in the event that today's most popular antiseptic dental solutions are used, there seems to be a dilemma: antibacterial effects are not the same as anti-inflammatory ones [2,3].

Key words: periodontal diseases, prevention, oral rinses.

Objective: to evaluate the clinical efficiency of antiseptic oral liquid application.

Research methods:

As a therapeutic dental rinse for the oral cavity, the antiseptic liquid Dentaseptin (OOO «Celit», Voronezh) was used and studied at the Propedeutic Dentistry Department of Voronezh State Medical University. The study involved 55 patients at the age of 20 to 55 complaining of inflammatory periodontal disorders. The patients were recommended to rinse the oral cavity with Dentaseptin for one minute twice a day after tooth brushing, before and after check-up examinations, during 3 weeks.

Research results:

The patients experienced an improvement in the state of the oral mucosa, which included the elimination of tension, itching and burning. The objective data is that the gums became thicker, the swelling disappeared, the bleeding and tension of soft tissues reduced. The initial examinations showed that 70% of patients had an unsatisfactory level of oral hygiene. However, three-week regular application of Dentaseptin resulted in a true ($p<0,001$) reduction in the mean value of the oral hygiene index. According to the survey data, Dentaseptin possesses good organoleptic and cleansing properties, has a permanent refreshing effect; it is easy to use. Over the research period, the check-up examinations did not reveal any cases of Dentaseptin locally irritative and allergizing effects on the oral mucosa.