

## The effect of colloidal silver on the immunological parameters in acute intestinal infections

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Relevance. At this stage, due to the expansion of the spectrum of bacterial resistance to antibiotics, in infectology is used colloidal silver with a particle size of 25 nm as an alternative to the traditional treatment of acute intestinal infections.

The purpose of the study. To study the effect of colloidal silver on the immunological parameters in acute intestinal infection caused by opportunistic pathogens.

Materials and methods. The study involved 50 patients with moderate course of acute intestinal infections hospitalized at  $(1,34 \pm 0,08)$  days from the onset of the disease, mean age  $(37,48 \pm 2,76)$  years. Depending on the regimen, patients were divided into two groups of 25 people each. Persons in group 1-st received standard treatment – gastric lavage and / or bowel, diet, rehydration, enzymes and sorbents, 2-nd – in addition to the basic therapy – colloidal silver 10 mg/L to 100 ml three times daily for 5 days. Gender, etiology, clinical forms groups were comparable. According to the medical history and physical examination the chronic pathology of the gastrointestinal tract, hepatobiliary system was deleted. In addition to general clinical tests in all patients were examined serum levels of IL-1 $\beta$ , IL-6, IL-4, IL-10 and sIg A at admission and  $(5,73 \pm 0,16)$  day from the onset of the disease. The control group consisted of 20 clinically healthy donors.

Results. At admission in all patients studied cytokine levels were higher than control ( $p < 0,001$ ). Thus, the level of IL-1 $\beta$  was (on 1-st, 2-nd and control groups)  $4,45 \pm 0,48$ ,  $(5,07 \pm 0,55)$  and  $(1,81 \pm 0,03)$  pg/L; IL-6 –  $(26,22 \pm 1,58)$ ,  $(25,39 \pm 1,48)$  and  $(1,21 \pm 0,16)$  pg/L; IL-4 –  $(8,26 \pm 0,52)$ ,  $(9,83 \pm 0,37)$  and  $(0,97 \pm 0,13)$  pg/L; IL-10 –  $(17,83 \pm 0,28)$ ,  $(18,05 \pm 0,41)$  and  $(0,62 \pm 0,13)$  pg/L. In the dynamics of all convalescents IL-1 $\beta$  decreased to normal and did not differ between the groups ( $p > 0,05$ ). The patients in 1-st group IL-6 levels  $(8,43 \pm 0,20)$ , IL-4  $(5,36 \pm 0,43)$  and IL-10  $(3,72 \pm 0,22)$  pg/L did not reach rates ( $p < 0,001$ ), but decreased in comparison with the acute period of the disease ( $p < 0,001$ ). In patients treated with colloidal silver, IL-6  $(5,49 \pm 0,28)$ , IL-4  $(3,95 \pm 0,32)$  and IL-10  $(2,02 \pm 0,16)$  pg/L and rapidly decreased ( $p < 0,001$ ), but were higher than normal ( $p < 0,001$ ). With coverage in 2-nd group was significantly lower than in the 1-st corresponding period of the study ( $p < 0,05-0,001$ ), indicating that the smaller local inflammation and reduction of persistent potential pathogens.

At the beginning of treatment, all patients found knots in sIg A serum to five times compared to normal (1-st group –  $(20,13 \pm 1,25)$  mg/L, 2nd –  $(20,67 \pm 0,95)$  mg/L and the norm –  $(4,05 \pm 0,36)$  mg/L,  $p < 0,001$ ). In the dynamics of the concentration of sIg A patient treatment groups did not reach the control values ( $p < 0,001$ ), but varied depending on the applied treatment regimen. The higher levels of sIg A in serum of patients in 1-st group compared with the 2-nd (respectively  $(19,06 \pm 1,71)$  mg/L  $(13,52 \pm 0,90)$  mg/L,  $p < 0,001$ ), indicating significant inflammatory-destructive changes in the intestine and the need to enhance rehabilitation.

Output. When using colloidal silver in the treatment of acute intestinal infections, compared with basic therapy decreases the severity of inflammatory and destructive changes in the gastro-intestinal tract.