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The elimination of cytomegalovirus in patients with ulcerative colitis without antiviral therapy

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Introduction: It is known that immune-suppressive therapy increases the risk of infectious complications and activation of an opportunistic infection in patients with inflammatory bowel diseases. The accumulated data for today shows that, despite the pronounced immune-suppressive effect, mesenchymal stromal cells (MSCs) do not inhibit the functional activity of immunocompetent cells against infectious agents.

Objective: To identify a link between the presence of cytomegalovirus and hormone-dependence/hormone-resistance of patients with ulcerative colitis and to assess the impact of MSCs on to the level of cytomegalovirus (CMV) in patients with ulcerative colitis (UC).

Material and methods: 31 Patients with chronic UC were examined, 13 of them with hormone-dependent and/or hormone-resistant forms (group 1), 18-without hormone dependence and hormone-resistance (group 2). The identification of DNA viruses, Epstein-Barr, cytomegalovirus, and herpes of type 6 in biological samples was conducted by multiplex real-time PCR. For DNA extraction from biological samples and PCR sets of production of FBSI, Central Research Institute of epidemiology of Rospotrebnadzor, DNA-Sorb-B and AmpliSense EBV/CMV/HHV6-screen-FL" were used respectively. PCR with the detection of amplification products in real time was held in the thermocycler "RotorGen 3000" (Corbet, Australia). The conditions of amplification (the number of cycles, temperature mode and parameters of detection of the products of amplification) and the interpretation of data were carried out according to the instructions and methodical recommendations to sets of reagents.

Results: It was established that CMV was detected much more frequently in patients with hormone-dependent and/or hormone-resistant forms: in 9 patients (69.2%) in group 1 vs. 5 patients (27.8%) in group 2 (RR - 2.49; 95% CI 1.09-5.71, χ^2 -3.7; $p=0.05$). The average level of copies of DNA of CMV in patients of the first group was 0.86 ± 0.12 Lg/105 cells, in the second group- 0.35 ± 0.15 Lg/105 cells ($p<0.05$). 150 million MSCs were introduced in 10 patients of the first group. In 4 weeks after the introduction of MSCs in 6 patients without antiviral therapy, CMV by PCR method was not determined. The average level of viral load in patients of the first group after the introduction of MSCs significantly decreased and amounted to 0.24 ± 0.1 Lg/105 cells ($p<0.05$). Out of the 18 patients of the second group, 12 patients were introduced with MSCs. In 4 weeks after the introduction of MSCs in 3 patients without antiviral therapy, CMV by PCR method was not determined. The elimination of CMV did not depend on the presence or absence in hormone-dependent and/or hormone-resistant patients with UC (RR - 0.83; 95% CI 0.2- 3.44, χ^2 -0.11; $p=0.74$).

Conclusions: Cytomegalovirus is the most common in patients with hormone-dependent and/or hormone-resistant forms of ulcerative colitis. The introduction of MSCs culture contributed to the elimination of CMV without holding antiviral therapy in patients both with hormone-dependent and/or hormone-resistant forms of ulcerative colitis, or without hormone-dependence/hormone-resistance.

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