IMMUNOLOGICAL MARKERS OF LONG-TERM EFFECTS OF CEREBROLYSIN TREATMENT IN PATIENTS WITH MILD COGNITIVE IMPAIRMENT

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The aim of the study was to study the effect of the course therapy with Cerebrolysin on the systemic inflammation factors level in patients with amnesic MCI (aMCI) depending on the clinical effect of treatment.

Materials and methods. The study included 20 aMCI patients, 16 women and 4 men aged from 54 to 84 years (mean age 72 years). The patients underwent one course 20 intravenous infusions of Cerebrolysin therapy (30 ml in 100 ml of physiological solution once a day). Evaluation parameters were measured at the beginning of the study and at 6 weeks, 22 weeks and 12 months after Cerebrolysin treatment. An immunological examination included determination of level of IgA, IgM, IgG, cortisol, C-reactive protein (CRP), IL-2, IL-4, IL-8, TNFa by enzyme immunoassay method. Evaluation of the effectiveness of therapy was measured on the following scales: CGI, MMSE, MoCA-test.

Results. The level of proinflammatory proteins increased at 6 weeks and decreased at 22 weeks and 12 months after Cerebrolysin therapy (Figure 1). The detection of systemic inflammation signs with an increase in IL-8 levels above 25 PG/ml in patients with MCI at 6 weeks after treatment was a marker of the lack of favorable short-term dynamics of cognitive functions during Cerebrolysin therapy (Figure 2).

Figure 1. Serum levels of IL-8 in patients with amnesic MCI before treatment and at 6, 22 weeks and 12 months after Cerebrolysin treatment.

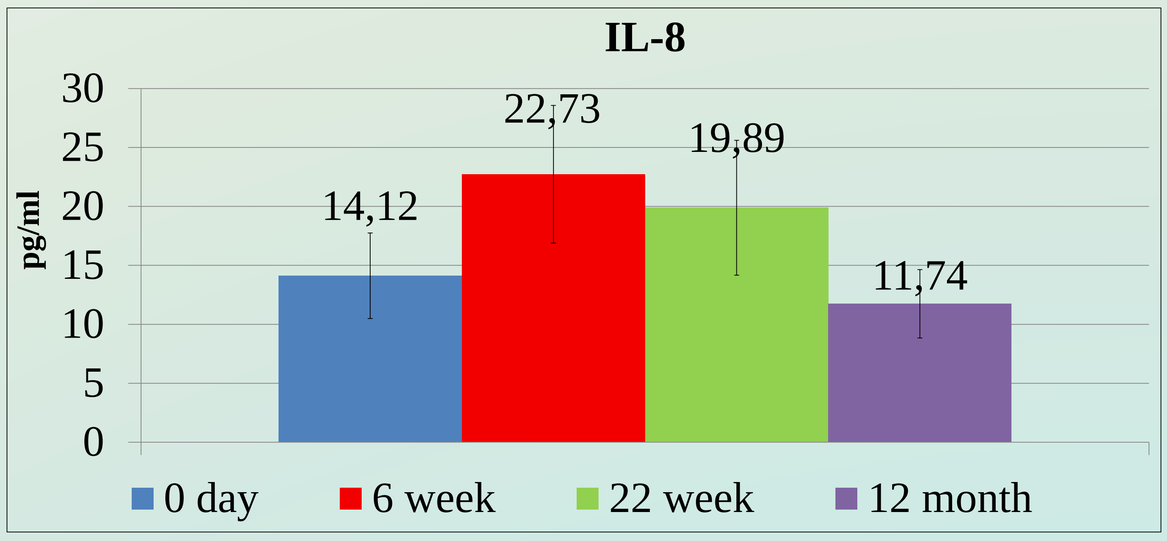


Figure 2. Clinical effect of treatment at 6 weeks in aMCI patients (the IL8 levels < 25 PG/ml and Il-8 > 25 PG/ml)

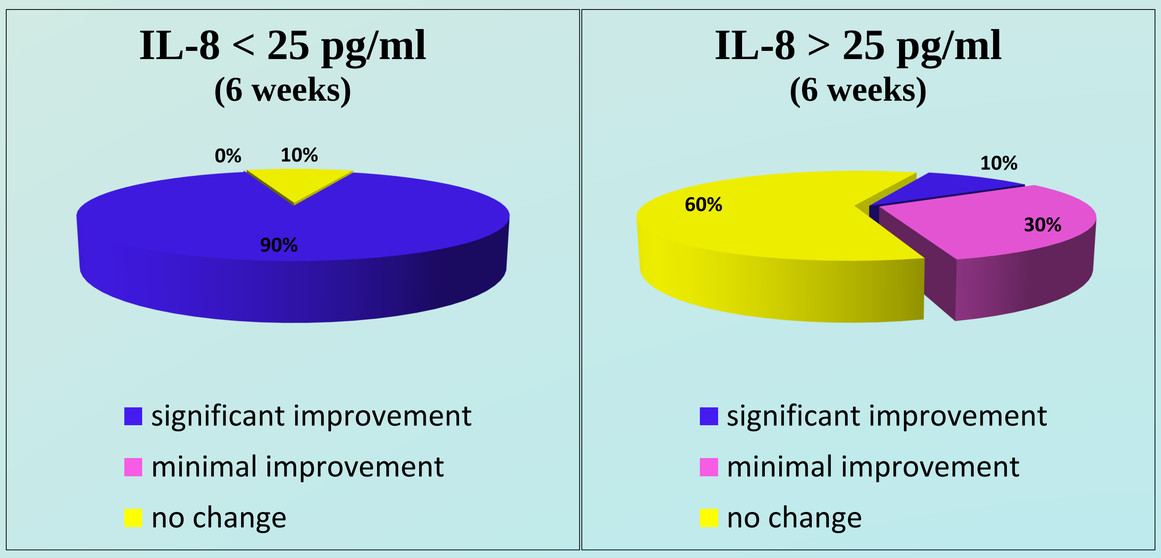
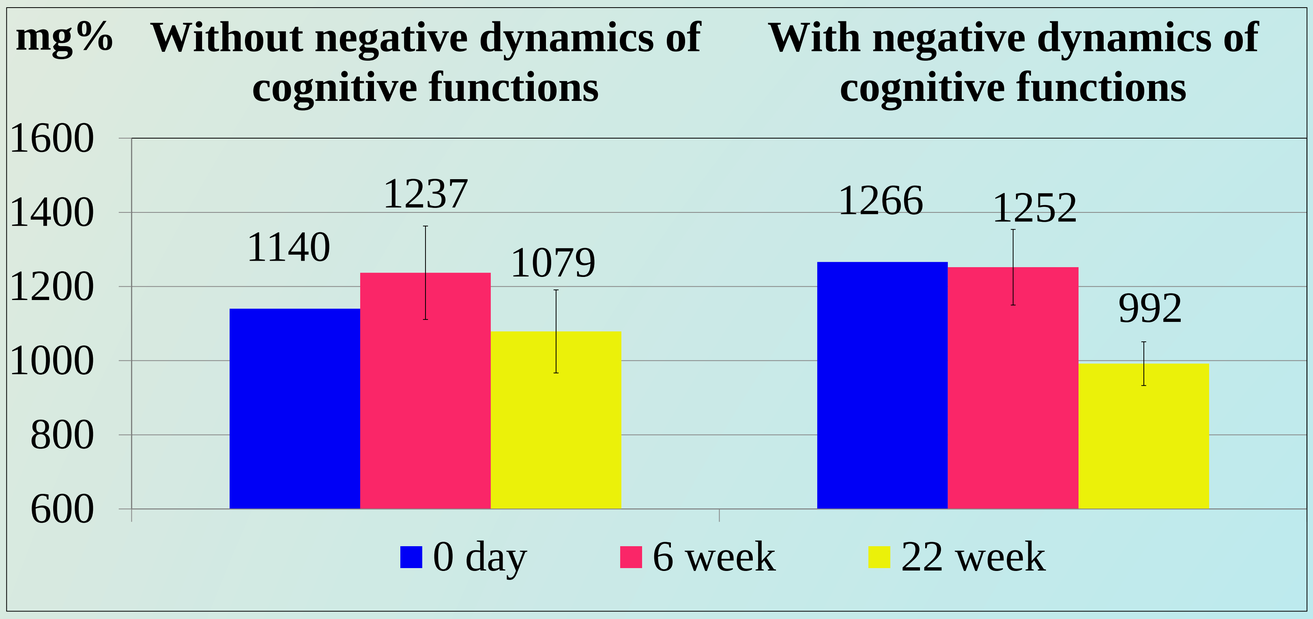


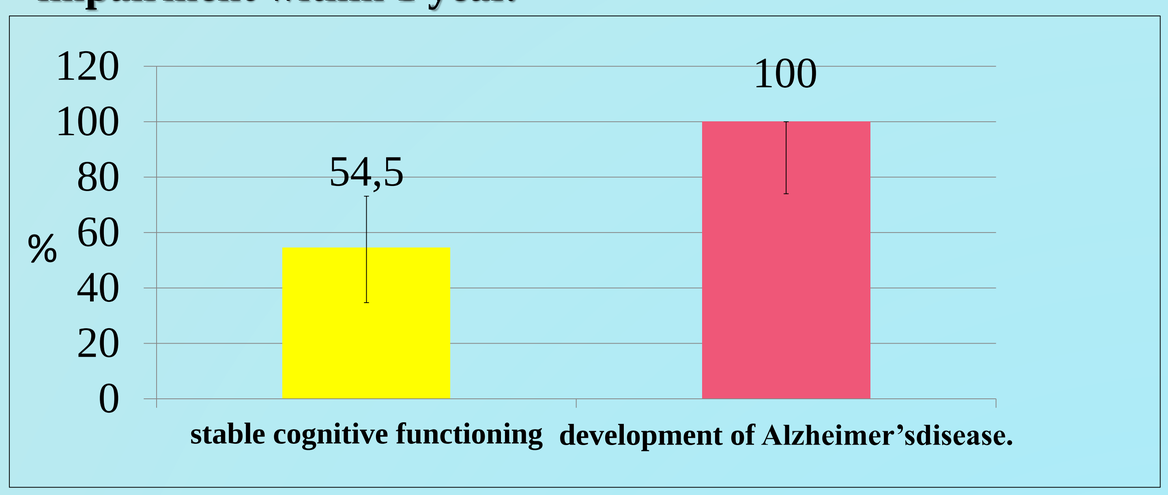
Figure 3. The changes of IgG level depending on the dynamics of cognitive function in aMCI patients at 6 and 22 weeks after Cerebrolysin treatment



After a year of the study 3 patients had Alzheimer's disease and 4 patients was with severe negative dynamics of cognitive functions, the patients had signs of systemic inflammatory response (the increase of C-reactive protein and proinflammatory cytokines IL-1β, IL-8, TNFa) (Figure 4).

Progression of cognitive impairment in aMCI patients after 1 year of follow-up was associated with the presence of systemic inflammation in combination with IgG level decrease after 6 and 22 weeks of follow-up (Figure 3).

Figure 4. The signs of systemic inflammation in patients with aMCI depending on the clinical dynamics of cognitive impairment within 1 year.



Conclusion: in this study, the relationship between the immune system and the dynamics of cognitive functions in the course of observation was revealed. The detection of signs of systemic inflammation with an increase in IL-8 levels above 25 pg/ml in patients with MCI at 6 weeks after Cerebrolysin treatment was a marker of the lack of favorable short-term dynamics of cognitive functions. The presence of systemic inflammation at the beginning of therapy was prognostically unfavorable sign in aMCI.