INTERLEUKIN PROFILE IN HIV-INFECTED INDIVIDUALS WITH DIFFERENT LEVEL OF IMMUNODEFICIENCY

A.I. Piddubna, postgraduate student
Scientific advisor – MD, prof. M.D. Chemych
Sumy State University, Department of Infectious Diseases and Epidemiology

Objective. Cytokines play an important role in controlling the homeostasis of the immune system in HIV infection. But currently issues of pathogenesis mechanisms and characteristics of the disease can not find a unique solution. The measurement cytokines in plasma in patients with HIV may provide additional information to complement prognostic markers and understand disease procession. Aim of the present study was to determine the IL-4, IL-10 and TNF-α profiles in plasma of north-eastern Ukrainian HIV-infected individuals with different CD4 T-cell levels.

Materials and methods. We used a immunoassay method to measure IL-4, IL-10, TNF-α in plasma of 59 HIV-infected people among whom there were 40 (67.8 %) men and 19 (32.2 %) women aged (32,61±0,87) years, who were treated in Sumy Region Clinical Infectious Diseases Hospital. Patients were divided into groups depending on the levels of CD4 T lymphocytes. Group I included 26 people with T-helper cell counts ≥ 350 cells/μL, group II - 33 patients with T-helper cell counts ≤ 200 cells/μL. Comparison group consisted of 30 similar sex and age normal healthy individuals.

Results. In the cytokine profile of HIV-infected people the increased levels of pro-inflammatory cytokine TNF-α compared to controls (group I – (0.77±0.08), group II – (2.34±0.69), healthy controls – (0.51±0.32) pg/mL, $p<0.05$) and the anti-inflammatory IL-10 (group I – (3.99±0.99), group II – (20.08± 0.44), healthy controls – (1.68±0.32) pg/mL, $p<0.001$) were demonstrated. No significant difference in IL-4 between surveyed troops and comparison group was found (group I – (0.54±0.08), group II – (0.68±0.07), healthy controls – (0.81±0.07) pg/mL, $p>0.05$). Patients with CD4 T lymphocyte levels ≤ 200 cells/μL showed significantly higher plasma concentration of TNF-α and IL-10 compared with the group I ($p<0.05$), which leads to the existence of deep imbalance of immune response in the later stages of the disease. Among HIV-infected from group II mean serum concentrations of TNF-α higher than that of group I in 3 times ($p<0.05$). A significant increase in the concentration of IL-10 detected in patients with severe immunodeficiency (IL-10 levels in group II was 5 times higher, $p<0.05$), which may indirectly indicate a more active involvement of IL-10 during disease progression. In favor of this assumption also indicates strength of correlation in patients of group II between the concentration of this cytokine and the index of opportunistic infections compared with TNF-α (IL-10: $r=0.23$, $p<0.05$; TNF-α: $r=0.17$, $p<0.05$); severity of the disease (IL-10: $r=0.43$, $p<0.05$; TNF-α: $r=0.25$, $p<0.05$).

Conclusions. HIV-infection was associated with an increase in plasma levels of TNF-α and IL-10. Immune imbalance due to changes in concentrations of cytokines is more pronounced in HIV-infected individuals with severe immunosuppression with CD4 T lymphocyte counts ≤ 200 cells/μL.

Актуальні питання теоретичної та клінічної медицини : збірник тез доповідей Міжнародної науково-практичної конференції студентів та молодих вчених, м. Суми, 10-12 квітня 2013 р. / Відп. за вип. М.В. Погорєлов. — Суми : СумДУ, 2013. — С. 136.