Selected cytokines and morphological parameters of blood in patients with *Giardia intestinalis* or *Toxoplasma gondii*

Jolanta Czyżewska, Joanna Matowicka-Karna, Halina Kemona

Department of Clinical Laboratory Diagnostics, Medical University of Białystok, J. Waszyngtona 15A, 15-269
Białystok, Poland

Corresponding Author: Joanna Matowicka-Karna; e-mail: matowic@umb.edu.pl

The study was performed in 48 patients infected with *G. intestinalis*, 40 infected with *T. gondii* and 40 healthy controls. Serum concentrations of IL-5, IL-6 and IL-12 and number of eosinophils, platelets, as well as their morphological parameters, were determined. Significantly higher concentrations of serum IL-5 in patients infected with *G. intestinalis* and *T. gondii* vs. control group were observed (respectively: X=5.10±2.70, X=7.02±2.97 vs. X=3.59±1.59, p<0.05). The same was observed with IL-6 concentration reaching the level of statistical significance with controls in comparison with patients infected with either parasite. The highest mean IL-6 concentration was observed in patients infected with *G. intestinalis* (X=6.11±4.80), however *T. gondii* infected patients (X=5.98±3.10) have also significantly higher IL-6 when comparing with control group (X=2.45±1.44). Concentration of IL-12 was significantly lower in the patients infected with *G. intestinalis* and *T. gondii* in comparison with the controls. The lowest mean IL-12 concentration was present in giardiasis patients (X=63.15±22.57), slightly higher in patients infected with toxoplasmosis (X=88.82±13.62), but highest values was noted in the controls (X=98.16 ±26.20). Significant differences were also observed in eosinophils number between Giardia and other study groups (p<0.05), with highest number in Giardia (X=2.53±1.71), lower in controls (X=1.58±1.11), and the lowest in toxoplasmosis group (X=1.50±1.10). No differences have been found between the study groups when evaluating platelets number and their mean volume (MPV). However, we found that in both parasitic infections the platelet-large cell ratio (LPLT) and the platelet size deviation width (PDW) were significantly higher (P<0.05) than in controls group. To compare percentage of large platelet (LPLT) were observed, that in both *G. intestinalis* and *T. gondii* group the number of megathrombocytes were statistically significant increased. Significantly higher levels of IL-5 and IL-6 in the parasite infected patients might reflect the immunological activation of host organism. Influence of *G. intestinalis* infection is evident when evaluating differences in higher concentration of IL-6, lower concentration of IL-12 and higher number of eosinophils. In the course of toxoplasmosis were reported higher concentration of IL-5, increasing rate of anisocytosis and higher number of megathrombocytes.