

R548

Publication Only

Mycology: Fungal infections

Immunological parameters in adult and non-adult patients with acute lymphoblastic leukemia and invasive aspergillosis

N. Klimko¹, O. Shadrivova¹, E. Frolova², L. Filippova², A. Uchevatkina², S. Khostelidi¹, T. Bogomolova², S. Ignatyeva², A. Volkova³, N. Vasilyeva²

¹Department of Clinical Mycology Allergy and Immunology, Mechnikov North-Western State Medical University, St. Petersburg, Russia ; ²Kashkin Research Institute of Medical Mycology, Mechnikov North-Western State Medical University, St. Petersburg, Russia ; ³R.Gorbacheva Memorial Institute of Children Hematology and Transplantation, Pavlov State Medical University, St. Petersburg, Russia

Objective: To study of immunological parameters in patients with ALL and IA.

Methods: We observed two groups of 21 patients with ALL and IA. Group I included 11 non-adult patients (children and teenagers), median age was 16 years (range 5-20), females - 64%. Group II: 10 adult patients, median age - 50 years (range 24-61), females - 30%. For the diagnosis of IA criteria EORTS/MSG, 2008 was used. Immunological parameters were evaluated within 2-4 weeks after IA diagnosis. Lymphocyte subsets were determined with using monoclonal antibody («DAKO»). Blood cell supernatants were tested for IFN- γ , IL-6, IL-10, IL-17, TNF- α and G-CSF by using an ELISA test («Cytokine», Russia). Data were analyzed using Statistica 6.0 software (median, range).

Results: In the non-adult group 100% of patients had probable IA with lung involvement, patients after allogeneic hematopoietic stem cells transplantation (allo-HSCT) with graft versus host disease (GVHD) - 73%. In adult group: probable - 90%, proven - 10%, lung involvement – 80%, central nervous system – 10% and large intestine – 10%, allo-HSCT with GVHD patients - 30%. Bacterial infections were detected in 27% vs 40% patients at the time of IA diagnosis, viral infections - 36% vs 20%.

We identified more significant immunological defects in non-adult group as compared with adult patients. Reduction of absolute number CD4+ T-cells ($<0,680 \times 10^9/L$) 90% vs 70% ($p=0,04$) was found. Key cytokine levels were most decreased in non-adult group: IFN- γ production median 55 (range 24-131) pg/ml vs 336 (128-795) pg/ml, $p=0,01$; TNF- α – 50 (4-356) pg/ml vs 305 (164-463) pg/ml, $?=0,02$; IL-6 median 22 (range 7-483) pg/ml vs 599 (242-651) pg/ml, $?=0,007$; IL-17 – 3 (1-5) pg/ml vs 64 (31-176) pg/ml, $?=0,007$; IL-10 – 33 (4-45) pg/ml vs 128 (36-324) pg/ml, $?=0,04$. G-CSF and immunoglobulin levels were similar in both groups.

12-weeks survival was not different in both groups (81% vs 80%), complete remission of IA during of observation period was 64% vs 50%.

Conclusion: Special features of the immune response to invasive aspergillosis in children and teenagers were significant reduction of absolute number CD4+ T-cells, and inhibition of key cytokine production (IFN- γ , IL-6, IL-10, IL-17, TNF- α) as compared with adult patients with acute lymphoblastic leukemia.