IMMUNOPHENOTYPING OF BLAST CELLS IN CHILDREN WITH ACUTE LYMPHOBLASTIC LEUKEMIA IN SOUTHERN RUSSIA

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Background and Aims: Studying the immunophenotype of blast cells, as well as studying frequency and details of complications of polychemotherapy and analysis of lethality in in children with acute lymphoblastic leukemia (ALL).

Material and Methods: 105 case reports of kids with ALL, 0-18y, receiving treatment from 2007 to 2014 at State-funded Health Care Facility Regional Children's Clinical Hospital of Stavropol.

Results: Immunophenotyping has identified two immunological variants of ALL: a B-cell leukemia (B-ALL) in 85 (81,0%) patients; a T-cell leukemia (T-ALL) – 20 (19,0%) patients.

Figure 1. Immunological characteristics of acute leukemia in children

Figure 2. Immunological features of acute leukemia in children of different age groups

Total mortality accounted for 24,7% (26 children), 50,0% in T-ALL, 18,8% in of B-ALL ($p < 0,01$). 11,5% of patients died during the induction phase, 50,0% died the consolidation phase, 7,7% died re-induction, 30,7% died the anti-relapse treatment.

Figure 3. Total mortality

Figure 4. Lethal outcome depending on immunophenotype

Figure 5. Stage of treatment

Leading causes of death: B-ALL – infectious complications with multiple organ failure in 37,5%, infectious and haemorrhagic complications in 25,0%. T-ALL – infectious complications in 30,0% of cases, multiple organ failure in 30,0%.

Conclusions:

- Based on the results of bone marrow cells immunophenotyping it is reported that B-ALL prevails over T-ALL with the ratio 4,3:1.
- Dominating complications of polychemotherapy are infectious, toxic and haemorrhagic ones, they are associated with underlying aplastic anemia and occur more often in patients with T-ALL, which is statistically significant.
- Consolidation phase and anti-relapse treatment phase are the most threatening stages of treatment in terms of complications development. Infant mortality in T-ALL is higher than that in B-ALL, which is statistically significant.

Conflict of interest: there is no conflict

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EAPS8-1485