

## **Anemias in lymphomas: pathogenesis mechanisms**

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### **Abstract**

**Aims:** To spot the value of blood serum cytokines (IL-1 $\beta$ , IL-6, TNF- $\alpha$ , IF- $\gamma$ ) in the development of an anemic syndrome in patients with lymphoproliferative diseases.

**Methods:** We inspected 88 patients with lymphoproliferative diseases: T and B-cellular non-Hodgkin's lymphomas and multiple myeloma. The level of serum interleukins (IL-1 $\beta$ , IL-6, TNF- $\alpha$ , IF- $\gamma$ ) was identified.

**Results:** Patients with lymphoproliferative diseases and an anemia had average levels of IL-1 $\beta$ , TNF- $\alpha$ , IF- $\gamma$  in their blood serum that were 3.4, 2.8, and 14.4 times higher respectively than in patients with lymphomas without an anemia ( $p < 0.05$ ). The return correlation between levels of IL-1 $\beta$ , TNF- $\alpha$ , IF- $\gamma$  and the level of erythropoietin serum ( $r = -0.79$ ) confirms the importance of IL-1 $\beta$ , TNF- $\alpha$ , IF- $\gamma$  in an anemia pathogenesis at hemoblastoses. For 8.3% of patients with lymphomas and an anemia, myelodysplasia tags, recorded levels of IL-1 $\beta$  and TNF- $\alpha$  were twice as high as patients with normal erythron. This indicates a probable role of the researched cytokines in the development of secondary myelodysplasia in patients with lymphomas.

The return correlation between IL-6 and erythron of bone marrow was available in patients with multiple myeloma ( $r = -0.96$ ). IL-6 raises a proliferation of myeloma cells, which—in turn—displace and depress a proliferation of remaining sprouts of myelopoiesis, including erythroid.

**Conclusions:** The cited data bears the importance of cytokines IL-1 $\beta$ , IL-6, TNF- $\alpha$ , and IF- $\gamma$  in a pathogenesis of an anemic syndrome for patients with lymphoproliferative diseases.

**Keywords:** cytokines, lymphoproliferative diseases, anemia, non-Hodgkin's lymphoma, multiple myeloma