Reticulated platelets count in childhood ITP

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Thrombocytopenia can result from production insufficiency of the bone marrow, increased platelet turnover or abnormal pooling. Flow cytometric evaluation of reticulated platelets (RPs), i.e. young, RNA containing platelets, has been introduced as an additional, noninvasive diagnostic tool. It has been shown that the abundance of RPs mirrors the rate of megakaryopoiesis in the bone marrow, and conditions with high platelets turnover can be discriminated from bone marrow insufficiency by a significantly increased percentage of reticulated platelets in the peripheral blood (PB).

RPs count in PB was defined by flow cytometry with thiazole orange in 7 healthy children, 33 patients with different clinical course of immune thrombocytopenic purpura (ITP). It is established that patients with chronic diseases percentage of RPs and their absolute number is significantly higher compared with the control group ($p = 0.00001$). The absolute number of RPs in PB of patients with chronic diseases is also more statistically significant, than in patients with an acute form of the disease ($p = 0.012$).

In patients with persistent platelet counts lower than 50×10^9/l percentage of RPs in PB was significantly higher than at the level of platelet count of more than 50×10^9/l ($p = 0.001$), but the absolute number was significantly lower. This proves ineffective thrombocytopoiesis in these patients, and justifies the need for appointment of a thrombopoietin mimetics (agonists), which bind to the transmembrane region of thrombopoietin receptor and stimulate intracellular JAK2 / STAT and MAP kinase signaling pathways, activating thrombocytopoiesis. In patients with chronic ITP and platelet counts normal share of RPs in PB is significantly higher than in the control group ($p = 0.000012$). In patients with chronic disease after splenectomy (median follow-up of 36 months) the percentage of RPs and their absolute number was significantly higher than that of the control group ($p = 0.00001$), and in children with chronic disease and platelet count of more than 50×10^9/l without splenectomy.