



The Aggregation of Blood Cells and Cell Indices in Acute and Chronic Inflammation in Children

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Editorial

The objective of the present research was to study the effect of changes in blood cells sizes (MPV, PDW, MCV, RDW) on their aggregation in acute (burn injury) and chronic (inflammatory bowel disease) inflammation in children. The study included 33 patients of both sexes ages 5 to 17 with Crohn's Disease (CD), 36 with Ulcerative Colitis (UC), and 25 after thermal trauma. The spontaneous (flow-induced) aggregation of platelets and erythrocytes was investigated using a rheoscope designed according to the method of H. Schmid-Schönbein (1975). MPV, PDW, MCV, RDW were measured in all the patients (Hematology analyzer ABX Pentra 60, HORIBA Medical, France). It has shown that MPV, PDW are significantly reduced in IBD. In contrast to platelets, RDW increased and MCV decreased (more significantly in UC). There is a significant increase in both the degree and the rate of aggregation of platelets and erythrocytes. A negative correlation between MPV and platelet aggregation rate (in patients with UC) was found. Correlation between indicators of erythrocyte aggregation and RDW was not revealed in this research. In the acute inflammatory process (during the period of burn disease toxemia) an increase in platelet and erythrocyte aggregation is also observed. RDW increases soon after thermal injury, and MCV and MPV decrease significantly during toxemia. Correlation between the indices of platelet and erythrocyte aggregation and their sizes in burn disease was not detected. Thus, in acute and chronic inflammation there is a significant increase in the aggregation of blood cells, which is not associated with a change in their sizes. One of the important reasons for platelet hyper aggregation is that the inflammatory process leads to an increase in aggregation inductors in blood and, thereby, to platelet activation. To prove this, blood was stabilized by EDTA. Under these conditions spontaneous aggregation of donor platelets was completely prevented, and persisted in patients with burn disease and inflammatory bowel diseases. It confirmed the presence of a large number of activated platelets in the blood of these groups of patients. Erythrocytes and platelets volume reduction does not lead to a decrease in their functional properties in acute (burn injury) and in chronic (inflammatory bowel disease) inflammation in children. It was found that a large number of activated platelets circulate in the blood of these patients.

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