

THE SIGNIFICANCE OF IMPEDANCE AGGREGOMETRY IN CARDIAC SURGERY

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The function of normal hemostasis is to prevent blood loss from an uninjured blood vessel and to stop excessive bleeding from a damaged blood vessel. Blood loss from an uninjured vessel is prevented by normal vessel structure and normal platelet function. Platelet aggregation is mediated by von Willebrand factor, a polymeric plasma glycoprotein. This protein binds to specific platelet membrane receptors and collagen. Primary aggregation of incoming platelets is facilitated by the action of thrombin. Aggregated platelets then release serotonin, thromboxane A2 and adenosine diphosphate (ADP) which stimulate vasoconstriction which is an additional stimulus for platelet aggregation and represents secondary aggregation. Many factors are related to bleeding during cardiac surgical procedures. Impedance aggregometry is a test of aggregation of platelets in whole blood, which allows us to observe the function of platelets in the presence of erythrocytes and leukocytes and prevents the artificial activation of platelets that occurs due to the separation process. Aggregometry is used to diagnose disorders of platelet function, which are rarely congenital, and most often acquired.

In our research, we proved that 31% of patients had post-operatively impaired platelet function, with postoperative bleeding after 24 hours being statistically significantly higher in patients with ADP < 300 AU/min 24 hours after surgery, as well as TRAP < 500 AU/min 24 hours after surgery ($p = 0.002$). Twenty-two patients (22.0%) received a platelet transfusion 3 hours after surgery - ADP test ≤ 300 AU/min, ASPI ≤ 400 AU/min, TRAP ≤ 500 AU/min. On average, 11.14 ± 4.45 doses were administered. No patient in this study needed a transfusion of platelets 24 h after the procedure. Contemporary principles such as "time is life" together with modern clinical protocols and experienced personnel are essential in the treatment of hemostatic disorders during cardiac interventions.

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