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MULTIPLE PHASES OF THE PLATELET RECRUITMENT AFTER INTERVENTIONAL INJURY IN ANGIOPLASTY AND CORONARY ARTERY BYPASS GRAFT SURGERY

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In the absence of any critical parameter of thrombogenicity after a thrombotic heart attack and stroke, we developed the first parameter of regional platelet density (RPD) in the adherent platelet thrombus (APT) in 1978. From the platelet counts per ml of radioactive blood and area of injury and APT radioactivity, we developed an algebraic equation for converting the APT into number of platelets and normalized this value per unit area, an ideal universal parameter. The rate of reduction of platelet recruitment (RPR) is an index of progression of wound healing after an interventional injury and effectiveness of antiplatelet drug therapy in the animal models. After the analysis of regional platelet density (RPD: millions of platelets/cm^2) in an adherent thrombus after coronary artery bypass surgery (CABG) and angioplasty for myocardial reperfusion, we observed that the RPR occurs in two to three phases with definite half-life values. The areas of injury from angioplasty and the anastomosis in CABG surgery are the specific sites for platelet recruitments. The regional platelet density (RPD) at proximal and distal anastomoses (DA, PA) showed three values of declining radioactivity with half-lives of (30 ± 5), (50 ± 10) and (500 ± 50) hours, a tri-exponential curve. The mid-graft showed a bi-exponential curves with half-life values of (15 ± 5) and (150 ± 15) hours. Due to invasive nature of direct sampling for radioactivity and area, these measurements could not be repeated in human patients.