

ABSTRACT NO. 03

CIRCULATING INFLAMMATORY CELLS ARE ASSOCIATED WITH VEIN GRAFT STENOSIS

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Platelets and monocytes are the key thrombo-inflammatory cells that arrive first at sites of vascular injury. These cells have counter-receptors that recruit and activate each other. And derangements in vascular healing (intimal hyperplasia and atherosclerosis) are associated with abnormal inflammation. We wished to see if the platelets and monocytes of patients with graft stenosis manifested a different biological behavior.

Methods: Twenty-one vascular surgery patients were studied, in a stable quiescent period after infrainguinal vein graft bypasses for occlusive disease. Thirteen had hemodynamically significant graft stenoses confirmed by imaging, and 8 were free from stenosis. The presence of platelet-monocyte aggregates (PMA) in whole blood was quantified using 2-color flow cytometry. The basal, in-vivo level of aggregates (Circulating PMA) was estimated by immediate flow analysis. The predisposition to spontaneously generate PMA was measured after in-vitro incubation (Spontaneous Generation). Sensitivity to thrombin was quantified by the in-vitro dose response to exogenous thrombin receptor activating peptide (sfllrn).

Results: Patients with intimal hyperplastic stenoses of their vein grafts had more vigorous platelet-monocyte interactions. Circulating PMA levels were no different in stenosis vs. non-stenosis (18.5% + 3.1 vs. 15% + 2.9). But Spontaneous Generation of PMA was significantly higher in patients with stenosis (58.3% + 4.8) versus no stenosis (44.1% + 3.6). The stenotic patients had significantly higher responses to thrombin agonist ($p < .05$, ANOVA). Covariables of smoking, statin or antithrombotic therapy could not account for these differences.

Discussion: Platelet-monocyte reactivity may play a role in determining which patients are prone to develop intimal hyperplasia. Those with/without stenosis differed primarily in their threshold, or predilection to form aggregates, while their basal circulating levels of PMA were similar. Provocative measurements may unmask pathologic differences that are not apparent on baseline studies.