ACC.11
60th Annual Scientific Session & Expo

E1600
JACC April 5, 2011
Volume 57, Issue 15

VASCULAR DISEASE

PLATELET SIZE IS AN EXCELLENT SURROGATE FOR INCREASED PLATELET ACTIVITY

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Tuesday, April 05, 2011, 9:30 a.m.-10:45 a.m.

Session Title: Vascular -- Pathophysiology–Clinical
Abstract Category: 10. Vascular–Pathophysiology–Clinical
Session-Poster Board Number: 1146-95

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Background: Increased platelet activity is associated with cardiovascular morbidity and mortality. A variety of techniques used in laboratory research and clinical practice measure platelet activity, yet, there is no accepted gold standard. Moreover, many methods of evaluating platelet activity require sophisticated personnel and equipment, and are both time-consuming and expensive. Mean platelet volume (MPV), conversely, is readily available, quick and inexpensive. We sought to investigate the correlation of MPV and other measurements of platelet activity.

Methods: Ninety six patients with and without peripheral vascular disease were recruited for this analysis. In addition to measuring MPV, we measured platelet count, immature platelet fraction (IPF), percent reticulated platelets (RP), monocyte platelet aggregation (MPA), PAC-1 platelet binding, impedance aggregometry, and light transmission aggregometry (LTA).

Results: MPV correlated with IPF (r=0.85, P<0.01), RP (r=0.62, P<0.01), PAC-1 binding (r=0.34, P=0.07), impedance aggregometry in response to arachidonic acid [AA] (r=0.24, P=0.03), collagen (r=0.30, P<0.01), and LTA in response to AA (r=0.27, P=0.03). MPV correlated inversely with platelet count (r=-0.27, P=0.01). No significant correlation existed between MPV and MPA, impedance aggregometry (in response to saline and ADP), and LTA (in response to saline, ADP, and collagen). Patients with an MPV in the highest quartile had a higher IPF (5.9% vs 1.5%, P<0.01), RP (22.2% vs 14.3%, P<0.01), impedance aggregometry in response to saline (8.4 vs 5.6 AUC, P=0.08), ADP (58 vs 41 AUC, P=0.02), AA (49.5 vs 28.6 AUC, P=0.06), and collagen (51.7 vs 31.8 AUC, P<0.01), and LTA in response to ADP 0.4uM (11.2% vs 2.6%, P=0.08), and AA (24.7% vs 19.5%, P=0.05).

Conclusions: MPV is associated with several (although not all) markers of platelet activity, most notably were markers of increased platelet turnover. Future studies should investigate whether MPV obtained as part of routine laboratory testing could identify patients at risk for cardiovascular events and help guide anti-platelet and other pharmacologic risk-factor reduction strategies.