Abstract

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Aspirin-insensitive platelet hyper-reactivity and thromboxane generation are independent risk factors for early vein graft occlusion after coronary artery bypass surgery.

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BACKGROUND: Aspirin (ASA) is routinely given to patients after coronary artery bypass (CABG) surgery to prevent early vein graft (VG) thrombosis. Little is known about the effect of ASA resistance or residual platelet reactivity on VG patency.

METHODS: We prospectively studied 368 patients undergoing first-time CABG maintained on chronic ASA therapy. VG patency was assessed 6 months after surgery in 297 patients by multidetector CT coronary angiography. At the time of angiography, tests of aspirin responsiveness and global platelet function were performed as indicated.

RESULTS: Complete inhibition of AA-induced platelet aggregration was present in 256/258 (99.2%) patients on ASA monotherapy. VG occlusion was associated with low PFA-100 C/ADP CT and elevated levels of $UTXB_2$. By multivariate analysis, a PFA-100 C/ADP CT <88 sec and $UTXB_2$ level > 321 pc/mg creatinine were associated with odds ratios for VG occlusion of 3.1 (p=0.002) and 1.9 (p=0.047), respectively. VGs in 74 (28.8%) patients at highest risk, defined by low PFA-100 C/ADP CT and high of $UTXB_2$ level, had 6.5 times the odds of occlusion (p=0.003) compared to VGs in 67 (26.1%) patients at lowest risk, defined by a high PFA-100 C/ADP CT and low of $UTXB_2$ level.

CONCLUSION: Despite suppression of platelet COX-1 activity by ASA, global platelet hyper-reactivity (defined by low PFA-100 C/ADP CT) and persistent thromboxane generation (defined by an elevated of $UTXB_2$ level) are common 6 months after CABG surgery and are independent risk factors for early VG occlusion.