

Transfusion Requirements in Clopidogrel-Treated Coronary Artery By-Pass Graft Surgery Patients

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Background. Preoperative use of the potent anti-platelet drug clopidogrel in patients undergoing coronary artery bypass graft (CABG) surgery may significantly increase bleeding. We performed a prospective study to evaluate platelet transfusion management in these patients, using several assays to measure platelet function.

Methods. After obtaining consent, 30 patients who received clopidogrel within 7 days of undergoing CABG surgery were enrolled in the study group, and 35 patients not treated with clopidogrel were controls. Platelet function was assessed by ADP aggregometry, Platelet Function Analyzer-100 (PFA-100), and ICHOR-Plateletworks (PW). Blood components were transfused according to a transfusion algorithm.

Results. Groups were comparable in regard to demographics and operative characteristics. In the study group, 24/30 (80%) patients received blood transfusion, which was significantly higher than in controls 18/35 (51%) ($p=0.016$). The mean number of RBC units transfused was 3.4 ± 3.2 in treated patients vs. 1.5 ± 2.3 in controls ($p = 0.01$). Treated patients also received a mean of 9.2 ± 11.9 platelet units vs. 0.9 ± 2.96 for controls ($p = 0.001$). Significantly lower platelet function was detected in treated patients vs. controls by ADP aggregometry ($51 \pm 24\%$ vs. 78 ± 17 ; $p < 0.001$) and by PW ($80 \pm 19\%$ vs. 91 ± 11 ; $p = 0.03$), before CPB, and remained lower up to 6 h after surgery. No differences in platelet function between the two groups were detected by PFA-100. Chest tube blood loss was significantly higher in treated patients than in controls (1792 ± 1782 mL vs. 1058 ± 627 mL) ($p = 0.04$). Platelet transfusions improved platelet function and decreased bleeding from 189 ± 42 mL/h to 48 ± 32 mL/h ($p < 0.0001$).

Conclusion. Preoperative use of clopidogrel is accompanied by higher RBC and PLT transfusion rates in patients undergoing CABG. Use of some platelet function assays may help optimize platelet therapy in these patients.

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