Efficacy of Prophylactic Low Dose of Tranexamic Acid in Spinal Fixation Surgery: A Randomized Clinical Trial

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Abstract

Background: Spinal fixation surgery is potentially associated with significant bleeding, often requiring multiple blood transfusions. Concern for the risks of transfusion-acquired infection and immune modulation effects of allogeneic blood has led to the investigation of various hemostatic agents such as tranexamic acid (TXA). The investigators hypothesized that a prophylactic low dose of TXA would reduce blood loss and transfusion requirements during spinal fixation surgery.

Methods: Of 92 patients, 76 were eligible for participation: 38 patients underwent TXA (10 mg/kg) at the initiation of induction of anesthesia during 10 min followed by intravenous infusion of 1 mg/kg/h (TXA group) and 38 patients received normal saline (control group). General anesthesia was administered and different hemodynamic parameters, complete blood count, abnormal prothrombin time, partial thromboplastin time, fibrinogen level, electrolytes, blood loss, and complications were assessed.

Results: Amount of blood transfused to the TXA group (n=10; 675±382 mL) compared with the control group (n=15; 600±220 mL) was not statistically significant (P=0.539). Total intraoperative blood loss was not significantly reduced in the TXA group compared with the control group (1269±690 vs. 1336±550 mL; P=0.659). In the 2 groups, fibrinogen level changed to the same extent and platelet count was reduced. Trend of changes in sodium, potassium, and calcium was the same in either group. No thromboembolic complications were clinically detected in either group.

Conclusions: The administration of a prophylactic low dose of TXA did not have a significant effect in the management of intraoperative blood loss and transfusion requirements in patients undergoing spinal fixation surgery.

Key Words: spinal fixation, spine surgery, tranexamic acid, blood loss, antifibrinolytic drugs, blood transfusion