Comparing Two Different Intravenous Regimens of Tranexamic Acid in Total Hip Arthroplasty, Total Knee Arthroplasty, and Total Shoulder Arthroplasty

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ABSTRACT

One significant intraoperative outcome of concern to anesthesiologists and orthopedic surgeons is controlling the amount of blood loss both intraoperatively and postoperatively. The use of the antifibrinolytic, tranexamic acid (TXA) is an innovative strategy that has been shown to decrease postoperative bleeding as well as decrease the need for blood transfusions. Currently, there are multiple intravenous tranexamic acid dose regimens that are being employed for orthopedic surgeries. In this study, the aim was to evaluate the effectiveness of 2 dose regimens (1000 mg within 30 minutes pre-op and 1000 mg 4-6 hrs post-op) compared to a single 1000 mg preoperative IVPB dose.

This study was a retrospective cohort conducted on patients undergoing total hip arthroplasty (THA), total knee arthroplasty (TKA), and total shoulder arthroplasty (TSA). Both TXA regimens resulted in similar transfusion rates and adverse event rates with no significant difference as determined by statistical analysis. Our results indicate that a single preventative IVPB 1000 mg dose of TXA is cost effective way to prevent blood loss and postoperative complications without increasing adverse events.

RESULTS

Method

- 140 bed rural community hospital
- All patients underwent total hip arthroplasty, total knee arthroplasty, and total shoulder arthroplasty
- Patients undergoing partial knee arthroplasties and revisions were excluded.
- For a 10-month period, the hospital employed a 2 dose tranexamic acid protocol (1000 mg IVPB pre-op as defined above and 1000 mg 4-6 hrs post-op) which included 366 patients (132 patients having THA, 238 having TKA, and 18 having TSA) and was labeled as Group I.

The study was conducted in order to compare a flat fixed dose 2 regimen (1000 mg IVPB within 30 min pre-op and 1000 mg post-op 4-6 hrs) to a flat fixed single dose regimen (1 pre-op dose of 1000 mg). The percentage of adverse events in Group II was less than that of Group I but there was not a significant difference. Our results indicate that a single preventative IVPB 1000 mg dose of TXA is a cost effective way to prevent blood loss and postoperative complications without increasing adverse events.

DISCUSSION

- Advantages of study
  - Sequencing of TXA regimens allowed us to effectively compare regimens
  - Patient base demographics similar
  - Flat fixed regimens reduced calculation mistakes thus reducing pharmacokinetics variability
  - Patients with a past medical history of thrombolytic complications or other risk factors were not excluded

REFERENCES


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