Tranexamic acid use in elective hip and knee arthroplasty: how are we dosing?

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Background
• There is increasing evidence to suggest that tranexamic acid (TXA) can significantly lower blood loss by up to 30% in patients undergoing lower limb arthroplasty with seemingly no significant increase in risk.
• However, there remains a wide discrepancy on the agreed dose and timing of TXA with many trials using ranges from 10-30mg/kg. The BNF suggests a dose of 15mg/kg for the prevention of blood loss.

Aims
To review our current TXA practice in patients undergoing elective TKR and THR.
• Dosing
• Timing of administration
• Peri-operative blood transfusion

Methods
• A retrospective inter-hospital two-week audit of all elective orthopaedic patients undergoing total knee (TKR) or hip replacement (THR) in Woodend Hospital and Raigmore Hospital
• Data was obtained from anaesthetic charts, operation notes, patient records and blood transfusion services.

Demographics
• 68 patients
  • 33 TKR + 35 THR
• Average weight 85.9kg (range 49-172kg)
• 7 patients taking anti-coagulants & anti-platelets pre-operatively
• No patients had documented bleeding disorders

Results
Average dose 1g (500-1500mg)
Average dose/kg 12mg/kg (range 5.8-23mg/kg)
14 patients did not receive TXA despite no recorded contraindication
2 Patients were given a second bolus

Timing of administration was highly variable, occurring both pre- and post-incision for hip replacement and pre- and post-tourniquet for knee replacement

12 patients were anaemic pre-operatively
Average blood loss 319mls (range 0-855mls)
Average Hb drop 21.1 (range 0-43)
1 patient received blood intra-operatively
2 patients received blood products post-operatively – both were anaemic prior to surgery

Conclusion
• Significant variation in TXA dose and timing
• Higher doses of TXA did not appear to be associated with a smaller drop in Hb or reduced blood loss
• Patient without contraindications are having TXA omitted

Recommendations
• Introduce TXA protocol to standardise practice and dosing
• Repeat dosing for patient with estimated blood loss >1000mls
• Local education for surgical and anaesthetic teams is being prioritised to raise awareness of our protocol

References
2 https://bnf.nice.org.uk/drug/tranexamic-acid.html#indicationsAndDoses

Aberdeen Anaesthesia
www.aberdeenanaesthesia.org