CJEM Journal Club

Tranexamic Acid for Epistaxis–A Promising Treatment That Deserves Further Study

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Clinical Question
Does the application of topical tranexamic acid reduce bleeding as compared to anterior packing?
Article Chosen
Zahed R, Moharamzadeh P, Alizadeharasi S, et al. A new and rapid method for epistaxis treatment using injectable form of tranexamic acid topically: a randomized controlled trial. *Am J Emerg Med* 2013;31(9):1389-92.
Objectives
To determine if topically applied tranexamic acid reduces bleeding time in epistaxis.

Keywords: Epistaxis, Tranexamic Acid, Topical Application, Antifibrinolytics

CLINICAL QUESTION

In patients with ongoing epistaxis, does local application of the injectable form of tranexamic acid reduce bleeding as compared to anterior packing?

BACKGROUND

Epistaxis is a common presentation to the emergency department (ED), responsible for approximately 1 in 200 ED visits, and is estimated to affect up to 60% of the population over their lifetime.[1] Epistaxis is most often caused by local trauma or low ambient humidity, though a variety of other factors have been implicated. In the vast majority of cases epistaxis is a self-limiting problem, though in certain populations it can be fatal.[2] Currently a wide variety of management strategies are employed in the ED: local pressure, cauterization, application of topical vasoconstrictor substances, or nasal packing, depending on personal physician preference.[3]

Tranexamic acid is an anti-fibrinolytic used in major trauma and surgical scenarios to increase hemostasis.[4,5] The intravenous doses used for orthopedic and cardiac surgery and severe trauma have not been shown to increase the rates of thromboembolic events.[4,5,6] Furthermore, the topical application of tranexamic acid for the reduction of bleeding surfaces during surgeries or local trauma has not been shown to increase mortality or major thrombotic events (myocardial infarction, stroke, deep vein thrombosis, or pulmonary embolism).[7] The use of a topically applied, injectable form of tranexamic acid has never been examined for reducing overall bleeding or bleeding time in ED epistaxis.

PATIENT POPULATION

All patients with idiopathic epistaxis were eligible. Exclusion criteria included trauma, posterior epistaxis, known bleeding disorders, INR >1.5, shock, and visibly bleeding vessels.

STUDY DESIGN

This study was a randomized, single center clinical trial. Patients presenting with idiopathic epistaxis were randomized to either a topically applied, parenteral form of tranexamic acid or anterior nasal packing soaked in tetracycline in a 1:1 ratio. Senior ED residents evaluated time to cessation of bleeding.

OUTCOME MEASURES

The primary outcome of this study was the time taken for tranexamic acid to arrest bleeding. Secondary outcomes

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included complications, time to discharge, rebleeding rates at one and seven days, and patient satisfaction.

RESULTS

The results were analyzed on an intention-to-treat basis. No patients were lost to follow-up. In the 107 patients who received tranexamic acid, 71% (76) had arrested bleeding at 10 minutes as compared to 31% (34) of the 109 patients who received anterior packing ($p < 0.001$). 95% of patients treated with tranexamic acid were discharged in two hours or less, as compared to 7% in the group treated with anterior packing. There were no adverse events. Re-bleeding occurred in 4.7% of the tranexamic acid group, compared to 12.8% of the standard treatment group.

STUDY CONCLUSIONS

The authors concluded that tranexamic acid is a safe and effective method to treat anterior epistaxis of idiopathic origin.

COMMENTARY

This study attempted to address a common and often challenging problem encountered by emergency physicians. Current treatment options for anterior epistaxis, including packing, often have poor initial results. The results of this paper are promising, since the topical application of the injectable form of tranexamic acid displayed significant reductions in bleeding times and time in hospital as compared to the usual standard of care. In addition, patient satisfaction scores were significantly higher in the tranexamic acid treatment group compared to the standard therapy group.

LIMITATIONS

While promising, there are several methodological limitations that warrant discussion. First, this study was not truly blinded. Investigators treating with tranexamic acid were aware that tranexamic acid was being used, due to differences in consistency, colour and smell. Secondly, the method of determining bleeding arrest was not clearly explained to allow for reproducibility in future studies. Those who received tranexamic acid were evaluated every five minutes by examining blood-soaked pledgets and the oropharynx. However, in the anterior nasal packing group, the study only mentions that nasal packing was removed after three days. Finally, the severity of the epistaxis episodes in this trial was not reported. The Epistaxis Severity Scale (ESS) is an accepted measure of epistaxis severity that was originally developed for hereditary hemorrhagic telangiectasia.[8] Future ED trials of this intervention for epistaxis would benefit from the utilization of the ESS to allow comparison between studies and to allow for subgroup analysis.

CONCLUSIONS

Epistaxis is a common and challenging issue to manage in the ED. The current study provides promising results for future studies and possibly clinical management. The lack of true blinding, as well as potential unaccounted differences in baseline bleeding rates, threatens the overall validity of the trial. The significant improvements in bleeding times demonstrated in this study, combined with the safety profile of injectable-form and topical tranexamic acid, suggest that further prospective randomized controlled trials of ED patients with epistaxis are warranted, and that topical application is a reasonable option when conservative treatment has failed.

Competing Interests: None declared.

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