Risk of Epistaxis in Anticoagulated Patients

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Introduction

This study compares the **rates of severe outcomes following epistaxis** in patients taking three main categories of anticoagulants:

1. Direct oral anticoagulants (DOACs) - i.e., factor Xa inhibitors
2. Vitamin K antagonists (VKAs) - i.e., warfarin
3. Antiplatelet agents (APs) - i.e., aspirin and clopidogrel

Background

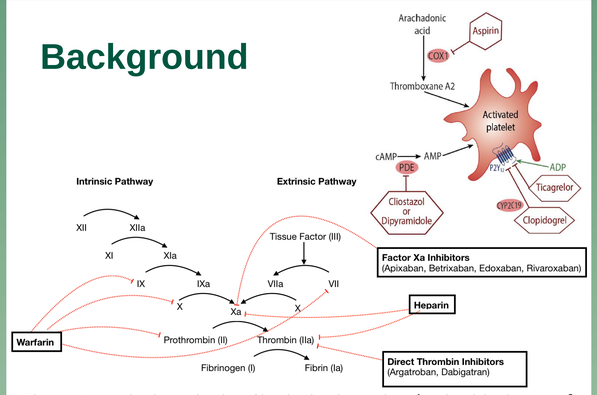

Figure 1&2: Mechanisms of action of involved anti-coagulants [1] and antiplatelet agents[2]

- Anticoagulated patients are at higher risk for epistaxis and severe bleeding[2]
- The ROCKET AF trial showed increased epistaxis in DOACs[3], while smaller studies have shown the opposite or no effect[4]
- The difference in *severity* of epistaxis among the most common anticoagulants has been poorly quantified
- Cessation and reversal of anticoagulation in the setting of epistaxis remains controversial

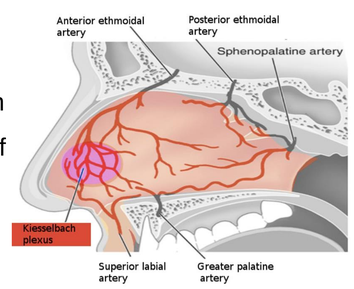

Figure 3: anatomy associated with epistaxis[5]

Methods

Design:

- A retrospective analysis was conducted using the TriNetX Research Platform database, consisting of patients seen at tertiary medical centers in southwest Tennessee

Cohorts:

- Patients >50 years of age with epistaxis were identified by ICD-10CM-R04.0 and stratified into four cohorts based on anticoagulation exposure within 7 days preceding the first episode of epistaxis:
  1. DOACs (n=110)
  2. VKAs (n=60)
  3. APs (n=500)
  4. Controls (n = 5380 unmatched)

Outcomes:

- **Severe Outcomes** were defined as any invasive intervention, transfusion, admission, or critical care based on ICD and CPT codes

Analysis:

- Patients were propensity score-matched, and risk ratios were calculated vs matched and unmatched control groups

Results

- **The VKA group (n=60) had the highest relative risk of Severe Outcome** compared to their matched controls (50.0% vs 16.7%; risk ratio [RR]: 3, 95% confidence interval [95% CI]: 1.61-5.58, p<.001)
- DOACs (36.4% vs 18.2%; RR: 2, 95% CI: 1.254-3.191, p=.002) and APs (36.0% vs 18.0%; RR: 2, 95% CI:1.604-2.494, p<.001) had elevated but more intermediate risk of Severe Outcome compared to their controls
- Subsequent admissions and critical care were the highest contributors to this effect (Figure 4)
- There were no differences in rate of subsequent emergency room visits

Propensity Matched:	n	Severe Outcome	RR	Risk Difference	p-value
DOAC Only	110	40	2	0.182	0.002
- Matched Controls	110	20			
VKA Only	60	30	3	0.333	<.001
- Matched Controls	60	10			
AP Only	500	180	2	0.18	<.001
- Matched Controls	500	90			
Unmatched:					
DOAC Only	120	40	2.457	0.198	<.001
- Unmatched Controls	5380	730			
VKA Only	60	30	3.685	0.364	<.001
- Unmatched Controls	5380	730			
AP Only	500	180	2.601	0.217	<.001
- Unmatched Controls	5380	730			

Table 1: Relative risk and risk difference of Severe Outcome vs controls, by anticoagulation category.

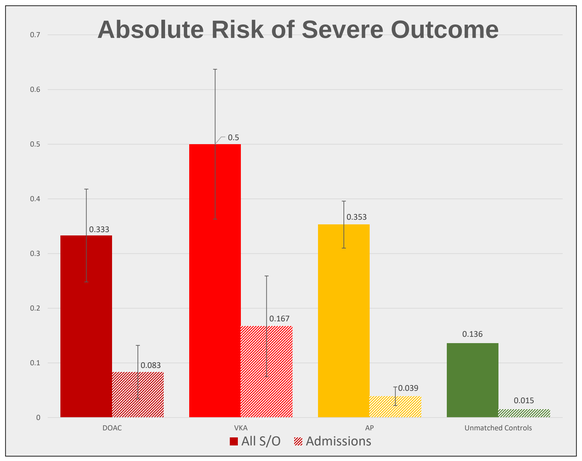

Figure 4: Risk of Severe Outcome associated with epistaxis in each anticoagulation group. 95% CI is shown for difference in risk vs controls

Conclusions

- All three exposure groups had significantly higher risk of Severe Outcomes following epistaxis
- VKAs had the highest risk of Severe Outcomes, particularly subsequent admissions or need for critical care
- Our data suggests that patients treated with newer anticoagulant agents may have fewer serious complications due to epistaxis
- In our study, the apparent difference in side effect profiles implies that the often-preferred **DOACs and anti-platelet agents cause less risk of severe epistaxis compared to warfarin.**

Acknowledgements

The data used in this study was collected on 1/20/2023 from the TriNetX Live network, which provided access to electronic medical records (diagnoses, procedures, medications, laboratory values) from approximately 4 million patients across 5 TN hospital systems.

References

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