The impact of anticoagulation on length of stay of epistaxis patients: a quality improvement study.

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Introduction

- Epistaxis is one of the most common ear, nose, and throat emergencies in an emergency department or primary care setting
- Oral anticoagulant medications (e.g., warfarin, apixaban, or rivaroxaban) and antiplatelet medication (e.g., aspirin and clopidogrel) are known to increase the risk of bleeding
- There is still debate on the degree that anticoagulation and antiplatelet therapy has on patient length of stay (LOS)

Problem Statement

The primary goal of this project was to establish if the type of medication (e.g., anticoagulants, antiplatelets, none, or both) epistaxis patients are taking on admission influences the LOS.

Methods

- A retrospective cohort study on 119 patients admitted for epistaxis between January 2018 and March 2020
- Patients were divided into 4 groups
  - No medications (NM)
  - Anticoagulant only (AC)
  - Antiplatelet only (AP)
  - Anticoagulant and antiplatelet therapy (AC+AP)
- Groupings were determined by the type of medication patients were taking at their home.

Epistaxis Cohort	N (%)
All patients	119
Male	71 (60%)
Female	48 (40%)
Average age	71.5
Average LOS (SD)	4.2 (5.6)
Number packed	66 (55%)
Average length of packing	4.9
Average number of comorbidities	5.9
Anticoagulant Only	**N (%)**
All patients	47
Male	31 (65%)
Female	16 (35%)
Average Age	73
Average LOS (SD)	5.7 (7.6)
Number packed	25 (53%)
Average length of packing	5.4
Average number of comorbidities	6.6
Average INR	4.7
Patients with supratherapeutic INR	22 (47%)
Average Supratherapeutic INR	7.4
Antiplatelet only	**N (%)**
All patients	16
Male	12 (75%)
Female	4(25%)
Average Age	70
Average LOS (SD)	5 (4)
Number packed	11 (69%)
Average length of packing	4.4
Average number of comorbidities	5
Anticoagulant + Antiplatelet	**N (%)**
All patients	28
Male	14 (50%)
Female	14 (50%)
Average Age	78
Average LOS (SD)	3.3 (3.5)
Number packed	18 (64%)
Average length of packing	4.7
Average number of comorbidities	7.2
Average INR	2.65
Patients with supratherapeutic INR	10 (35%)
Average Supratherapeutic INR	3.65
No medications	**N (%)**
All patients	28
Male	14 (50%)
Female	14 (50%)
Average Age	63
Average LOS (SD)	2.4 (2.8)
Number packed	12 (42%)
Average length of packing	4.6
Average number of comorbidities	4

Table 1. Descriptive statistics of epistaxis cohort.

Results

- Descriptive characteristics of each group (**Table 1**)
- N = 119 patients in total
  - NM group 28 (23.5%) patients
  - AC group 47 (39.5%) patients
  - AP group 16 (13.4%) patients
  - AC+AP group 28 (23.5%) patients (**Table 2**)
- The AP group had the longest LOS and the NM group had the shortest (**Table 3**)
- Patients with supratherapeutic INR had longer LOS than those with INR in acceptable range (**Table 4**)
- Difference in LOS between the NM and AP groups is significant (**Table 5**)
- No difference in LOS between DOACs vs. Warfarin groups

	Medication group			
	NM (28, 23.5%)	AC (47, 39.5%)	AP (16, 13.4%)	AC+AP (28, 23.5%)
On admission				
Age, mean (SD)	63.3 (12.6)	73.3 (12.1)	69.8 (10.8)	78.0 (10.4)
Gender (Female), n (%)	14 (50.0)	16 (34.0)	4 (25.0)	14 (50.0)
Packing, n (%)	12 (42.9)	25 (53.2)	11 (68.8)	18 (64.3)
Transfusion, n (%)	6 (21.4)	7 (14.9)	1 (6.3)	2 (7.1)
Intubation, n (%)	10 (35.7)	1 (2.1)	4 (25.0)	4 (14.3)
Embolization, n (%)	2 (7.1)	2 (4.3)	2 (12.5)	2 (7.1)
Surgery, n (%)	8 (28.6)	1 (2.1)	1 (6.3)	1 (3.6)
At discharge	NM (52, 44.8%	AC (36, 31.0%)	AP (10, 8.6%)	AC+AP (18, 15.5%)

Table 2. Characteristics of patients between different meds conditions on admission and at discharge.

Variables	Length of packing		LOS (days)		Number of comorbidities	
	median (IQR)	p-value	median (IQR)	p-value	median (IQR)	p-value
Medications on Admission	-	0.408	-	0.029	-	<0.001
NM	0 (0 – 4)		1.5 (0.5 – 3.0)		4 (3 – 5)	
AC	3 (0 – 5)		3.0 (1.0 – 6.0)		7 (5 – 8)	
AP	3 (0 – 5)		4.0 (2.5 – 7.0)		4.5 (4 – 6)	
AC+AP	3 (0 – 5)		2.0 (1.5 – 3.5)		7 (7 – 8)	
Gender		0.136		0.063		0.314
Female	0 (0 – 5)		2.0 (1.0 – 4.0)		6 (4 – 7)	
Male	3 (0 – 5)		3.0 (1.0 – 7.0)		7 (4 – 8)	

Table 3. Distribution of LOS, Length of packing, and the number of comorbidities on meds condition.

Variables	INR categories		
	Acceptable range (44, 57.9%)	Supratherapeutic INR (32, 42.1%)	p-value
Length of packing, median (IQR)	3 (0 – 5)	1.5 (0 – 5)	0.482
Transfusion, n (%)	4 (9.1)	6 (18.8)	0.306
Intubation, n (%)	5 (11.4)	1 (3.1)	0.392
Embolization, n (%)	4 (9.1)	1 (3.1)	0.391
Surgery, n (%)	1 (2.3)	1 (3.1)	1.000
Length of Stay (days), median (IQR)	2.0 (0.5 – 3.5)	3.5 (2.0 – 6.0)	0.002

Table 4. Clinical outcomes of patients across INR categories.

Discussion

- The AP group was found to have the longest LOS among all groups, followed by the AC group and the AC+AP group
  - Antiplatelet medications are not being readily reversible
- Patients with a supratherapeutic INR had a longer LOS than patients with an INR in an acceptable range
- Patients with supratherapeutic INRs had their epistaxis resolved more quickly than the NM group.
  - may indicate the NM group was more likely to experience true posterior epistaxis

- Goljo et al. found that the mean hospitalization cost of epistaxis was $6,925 and the LOS was 3.24
  - LVHN is in-line with that study's LOS findings
- AP group had the longest LOS, but secondary intervention did not positively correlate
- The antiplatelet group had the longest LOS, due to difficulty reversing medication effects
- No difference in LOS for patients taking DOACs vs. Warfarin
- Supratherapeutic INR had the greatest impact on a patient's LOS in the AC or AC+AP groups

Length of Stay (days)

	Wilcoxon Z	DSCF Value	P-value
NM vs. Warfarin	-2.2655	3.2039	0.10
NM vs. AP	-2.6370	3.7292	0.04
NM vs. DOAC	-0.8837	1.2498	0.81
Warfarin vs. AP	-0.9849	1.3928	0.75
Warfarin vs. DOAC	1.3334	1.8857	0.54
AP vs. DOAC	2.1909	3.0984	0.12

Table 5. Multiple comparisons for LOS across four meds groups

REFERENCES

1. Goljo E, Dang R, Iloreta AM, Govindaraj S. Cost of management in epistaxis admission: Impact of patient and hospital characteristics. *Laryngoscope.* 2015;125(12):2642-2647.