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Abstract

A retrospective chart review of patients presenting to the ED for epistaxis was performed with the objective to correlate INR levels with severity and risk of epistaxis. There was a significantly positive correlation between INR >1.96 and severity of epistaxis requiring intervention. Use of anticoagulants was not associated with increased risk of epistaxis recurrence, however, it was found to be associated with increased severity of epistaxis. Our study emphasizes the importance of measuring INR in evaluating patient risk of developing severe and recurrent epistaxis episodes.

Introduction

Epistaxis is one of the most common otolaryngologic emergencies, accounting for 0.46% of all ED visits in the US. Abrich et al did not find INR to be a measure of increased risk of epistaxis, and routine screening of coagulation factors has not been useful in epistaxis patients. However, others still support prothrombin time testing in anticoagulated patients.

This study was designed to determine whether a threshold INR level existed that would place patients at increased risk of more severe, recurrent episodes of epistaxis. Our null hypothesis was that mean INR level for recurrent episodes is equal to mean INR level for single episodes, and that having an INR >2.5 would not be associated with a higher risk of recurrent ED admissions for epistaxis.

Mean Age (years)	66.4
Gender	
Male	49 (51%)
Female	48 (49%)
Cohort	
Exposed	19 (19.5%)
Unexposed	79 (81.4%)

Results

A total of 97 patients were identified using inclusion criteria as described above (See **Table 1** for patient demographics). Comorbidities recorded included atrial fibrillation, hypertension, and anemia.

Refer to **Table 2** and **Figure 1** for breakdown of mean INR within cohorts. Recurrent epistaxis patients had statistically significantly higher INR in exposed cohort versus unexposed cohort. There was no statistically significant difference in INR for recurrent episodes versus single episode.

A higher INR level was not associated with higher rate of recurrence (68% in exposed group vs 54% in unexposed group, $p = 0.31$). Patients in the exposed cohort with recurrent epistaxis had a statistically significant higher INR than patients in the unexposed cohort with a single episode. Patients who required intervention had statistically significant higher INR than patients who did not.

The presence of anemia was more likely in patients with recurrent episodes of epistaxis. Use of anticoagulants was not significantly correlated with severity of epistaxis (see **Table 3**).

	Mild	Moderate
Exposed		
Single	-	3.8
Recurrent	2.8	3.8
Overall INR = 3.5		
Unexposed		
Single	1.1	1.2
Recurrent	1.2	1.1
Overall INR = 1.1		

Methods and Materials

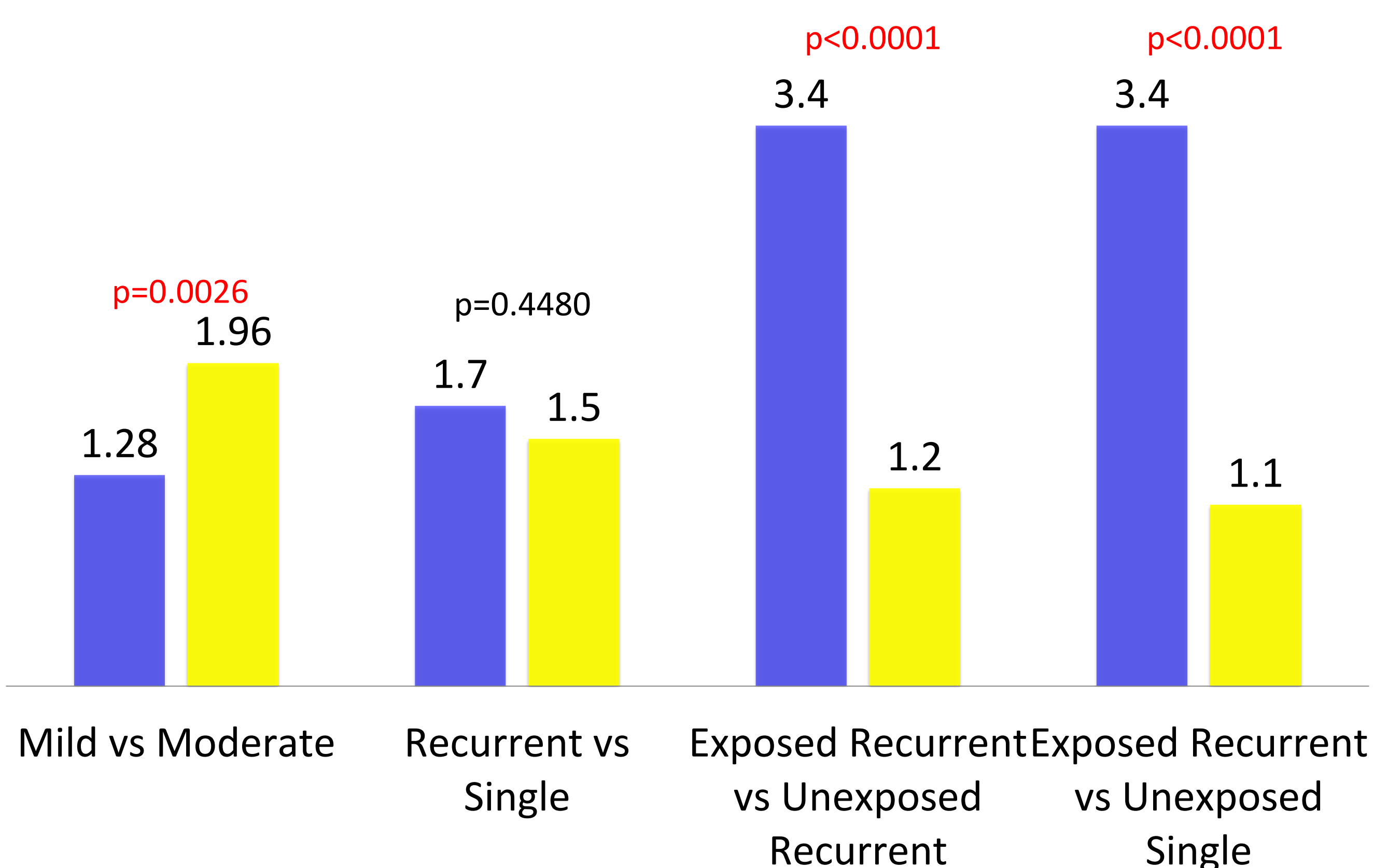
Patient Characteristics and Data Collection: Patients >18 years old on warfarin for indication of atrial fibrillation in 2010-2012 presenting to ED with a diagnosis of epistaxis were included. INR level, medical comorbidities, including additional use of anticoagulants, number of admissions to ED for epistaxis, and intervention required were recorded. Patients were stratified into an exposed group (INR >2.5), and unexposed group (INR <2.5). A "mild" episode required no intervention, while a "moderate" episode did (ie, nasal packing, cautery, transfusion, admission to hospital).

Outcomes Measures: Outcomes measures included severity of epistaxis, number of recurrent episodes of epistaxis, and INR level at time of presentation.

Discussion

Our findings showed that INR levels in recurrent episodes were not statistically significantly different compared to levels in a single episode (INR 1.7 vs 1.5, $p = 0.4480$). However, patients with epistaxis of moderate severity, thus requiring intervention of some nature, had a statistically higher INR than patients with self-resolving, mild epistaxis (INR 1.96 vs 1.28, $p = 0.0026$). Thus, it appears that while there is no INR threshold that places patients at higher risk of recurrent episodes of epistaxis, an INR >1.96 places patients at higher risk of a more severe episodes requiring intervention. We also found patients with anemia were more likely to have recurrent episodes compared to those with only a single episode (40.5% vs 12.2%, $p = 0.0041$).

Mean INR Levels



	Comorbidities		
	Anemia	HTN	p-value
Recurrent Episodes	40.5%	12.2%	0.0041
	Severity		
	Moderate	Mild	p-value
Use of Anticoagulation	52.9%	50%	0.43

Conclusions

Based on our results, we recommend patients on warfarin with INR >1.96, as well as a diagnosis of anemia, be more aggressively monitored with routine CBC and INR to identify those patients at higher risk of more severe episodes of epistaxis.

References:

1. Abrich V, Brozek A, Boyle TR, Chyou PH, et al. Risk factors for recurrent spontaneous epistaxis. *Mayo Clin Proc* 2014;89:1636-43.
2. Shakeel M, Trinidade A, Iddamalgoda T, et al. Routine clotting screen has no role in the management of epistaxis: reiterating the point. *Eur Arch Otorhinolaryngol* 1020;267:1641-1644.
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4. Rudmik L, Smith TL. Management of intractable spontaneous epistaxis. *Am J Rhinol Allergy*. 2012;26:55-60.