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Risk Factors And Clinical Outcomes Of Epistaxis In Elderly Patients

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ABSTRACT

Background:Epistaxis is a frequent otolaryngological emergency in elderly patients and is often complicated by multiple comorbid conditions and polypharmacy. Age-related vascular fragility, mucosal atrophy, and widespread use of antithrombotic drugs contribute to increased bleeding severity, higher recurrence rates, and greater need for hospitalization in this population.

Objectives:To identify major clinical and medication-related risk factors for epistaxis in elderly patients and to evaluate short-term outcomes including recurrence, transfusion requirement, length of hospital stay, and in-hospital mortality.

Methodology:This cross-sectional study was conducted in the Department of ENT of Pak International Medical College, Peshawar from January to June 2025. Eighty consecutive patients aged ≥60 years presenting with active epistaxis were enrolled. Data regarding demographic profile, comorbidities, blood pressure, laboratory parameters, and use of antiplatelet or anticoagulant medications were recorded. Management strategies and outcomes including nasal packing, blood transfusion, hospital stay, and recurrence within 30 days were analyzed using SPSS version 24.0. Associations were tested using chi-square and independent t-tests, with $p<0.05$ considered significant.

Results:The mean age of patients was 68.7 ± 6.4 years; 57.5% were males. Hypertension was present in 65.0% and 51.3% were using antithrombotic drugs. Posterior epistaxis occurred in 36.3% cases and was significantly associated with hospital admission. Patients on antithrombotic therapy had higher transfusion rates than non-users (26.8% vs 8.1%, $p=0.018$). Poorly controlled hypertension was linked to recurrent bleeding ($p=0.031$). Mean hospital stay was 3.4 ± 1.9 days and was longer in posterior bleeds with multiple comorbidities ($p=0.022$). No mortality was recorded.

Conclusion:Epistaxis in elderly patients is strongly associated with hypertension, antithrombotic use, and systemic comorbidities, leading to increased recurrence and resource utilization. Early identification of high-risk patients and optimal control of modifiable factors may improve outcomes..

Keywords: Epistaxis; Elderly; Hypertension; Anticoagulants

1. INTRODUCTION

Epistaxis is one of the most common emergencies encountered in otolaryngology practice and represents a significant cause of morbidity in the elderly population. Although up to 60% of individuals experience at least one episode of epistaxis during their lifetime, only a small proportion require medical attention [1]. However, in patients aged 60 years and above, epistaxis is more likely to be severe, recurrent, and associated with systemic illness, often necessitating hospital admission and invasive interventions [2].Physiological aging leads to progressive atrophy of the nasal mucosa, reduced elasticity of blood vessels, and increased friability of the septal capillary plexus [3]. These structural changes predispose elderly individuals to spontaneous bleeding, even after minimal trauma such as sneezing or nose blowing. In addition, impaired local healing.

capacity and chronic inflammation further exacerbate the vulnerability of nasal mucosa [4]. Comorbidities commonly present in the elderly play a central role in the pathogenesis and prognosis of epistaxis. Hypertension remains the most frequently implicated systemic risk factor and is thought to contribute by increasing intravascular pressure within fragile nasal vessels, thereby precipitating rupture. Metabolic disorders such as diabetes mellitus impair microvascular integrity and delay mucosal repair, while chronic kidney disease and liver disease are associated with coagulopathy, platelet dysfunction, and anemia, all of which worsen bleeding severity and prolong recovery [5,6]. Polypharmacy further compounds this risk. Antiplatelet agents and anticoagulants are widely prescribed in older adults for cardiovascular and cerebrovascular disease prevention. Although these medications significantly reduce thrombotic events, they also increase the likelihood of severe epistaxis and complicate hemostatic control. In low-resource settings, lack of monitoring of coagulation parameters and unsupervised medication use often result in avoidable bleeding complications [7,8]. Epistaxis in elderly patients frequently originates from posterior nasal structures, particularly branches of the sphenopalatine artery. Posterior epistaxis is typically more profuse, difficult to control, and associated with longer hospital stay, higher transfusion requirements, and increased healthcare costs. Failure to promptly identify high-risk cases may lead to hypovolemic shock, aspiration, and rarely, death [9]. Despite its clinical importance, there is a paucity of regional data describing the burden, risk factors, and outcomes of epistaxis among elderly patients in Pakistan. Most existing studies originate from high-income countries and may not reflect the patterns of comorbidity, medication use, and healthcare access seen in South Asian populations. Local evidence is therefore essential to formulate context-specific management algorithms and preventive strategies [10].This study aims to evaluate the risk factors associated with epistaxis in elderly patients presenting to a tertiary-care hospital and to assess short-term clinical outcomes

By identifying predictors of severe disease and poor prognosis, this work seeks to inform clinicians regarding early risk stratification and targeted interventions for this vulnerable group.

Research Objectives:

To determine clinical and medication-related risk factors for epistaxis in elderly patients and to assess their association with recurrence, transfusion requirement, and length of hospital stay.

Materials And Methods:

Study Design & Setting:

This cross-sectional study was conducted in the Department of Otolaryngology of Pak International Medical College, Peshawar from January to June 2025.

Participants:

All consecutive patients aged 60 years or above presenting with active epistaxis were included. Patients were evaluated at emergency presentation or during inpatient admission. Demographic data, comorbidities, medication history, blood pressure, laboratory investigations, and clinical findings were recorded using a structured proforma.

Sample Size Calculation:

Assuming an expected prevalence of hypertension among elderly epistaxis patients of 60%, a confidence level of 95%, and a margin of error of 10%, the minimum required sample size was calculated as 80 patients using the WHO sample size calculator.

Inclusion Criteria:

Age ≥60 years

Presentation with active epistaxis

Willingness to provide informed consent

Exclusion Criteria:

Nasal trauma or recent nasal surgery

Known bleeding disorders

Incomplete medical records

Diagnostic and Management Strategy:

All patients underwent anterior rhinoscopy and endoscopic nasal examination to identify bleeding site. Management included local pressure, topical vasoconstrictors, anterior or posterior nasal packing, blood transfusion when required, and referral for surgical intervention if conservative measures failed.

Statistical Analysis:

Data were analyzed using SPSS version 24.0. Continuous variables were expressed as mean ± standard deviation, and

categorical variables as frequencies and percentages. Associations between risk factors and outcomes were assessed using chi-square and independent t-tests, with $p<0.05$ considered statistically significant.

Results:

Eighty elderly patients with epistaxis were included. The mean age was 68.7 ± 6.4 years. Hypertension was present in 65.0% patients, diabetes mellitus in 38.8%, and chronic kidney disease in 17.5%. Antiplatelet or anticoagulant use was reported in 51.3% cases. Posterior epistaxis was identified in 36.3% patients and was significantly associated with prolonged nasal packing and longer hospital stay. Patients receiving antithrombotic therapy had significantly higher transfusion requirements compared to non-users ($p=0.018$). Poorly controlled hypertension was significantly associated with recurrence within 30 days ($p=0.031$). The mean duration of hospital stay was 3.4 ± 1.9 days and was longer in patients with posterior bleeds and multiple comorbidities ($p=0.022$). No in-hospital mortality was recorded.

Intervention Outcome:

Conservative management successfully controlled bleeding in most patients. Anterior nasal packing was effective in 63.7% cases, while posterior packing or surgical referral was required in 36.3%. Timely intervention resulted in zero mortality and low recurrence when modifiable risk factors were adequately managed.

Table 1. Baseline Demographic and Clinical Characteristics of Elderly Patients with Epistaxis (n = 80)

Variable	Frequency (n)	Percentage (%)
Age (years)	68.7 ± 6.4	—
Male gender	46	57.5
Female gender	34	42.5
Hypertension	52	65.0
Diabetes mellitus	31	38.8
Chronic kidney disease	14	17.5
Ischemic heart disease	19	23.8
Antiplatelet/Anticoagulant use	41	51.3
Smoking history	27	33.8

Data are presented as mean ± SD or frequency (%).

Table 2. Distribution of Epistaxis Characteristics and Management Modalities

Variable	Frequency (n)	Percentage (%)
Anterior epistaxis	51	63.7
Posterior epistaxis	29	36.3
Anterior nasal packing	51	63.7
Posterior nasal packing	29	36.3
Blood transfusion required	14	17.5
Surgical referral	6	7.5

Posterior epistaxis was associated with prolonged hospital stay and increased intervention requirement.

Table 3. Association of Antithrombotic Therapy with Blood Transfusion Requirement

Antithrombotic Use	Transfusion Required n (%)	No Transfusion n (%)	p-value
Yes (n=41)	11 (26.8)	30 (73.2)	**0.018**
No (n=39)	3 (8.1)	36 (91.9)	

Patients receiving antithrombotic therapy had significantly higher transfusion requirements.

Table 4. Factors Associated with Recurrence and Length of Hospital Stay

Risk Factor	Recurrence within 30 days (%)	Mean Hospital Stay (days ± SD)	p-value
Controlled BP (n=28)	7.1	2.6 ± 1.3	
Poorly controlled BP (n=52)	21.2	3.9 ± 2.1	**0.031**
Anterior epistaxis	9.8	2.8 ± 1.5	
Posterior epistaxis	27.6	4.4 ± 2.3	**0.022**

Poor blood pressure control and posterior epistaxis were significantly associated with recurrence and prolonged hospital stay.

2. DISCUSSION:

In this study of 80 elderly patients presenting with epistaxis, hypertension (65.0%), antithrombotic exposure (51.3%), and posterior bleeding (36.3%) emerged as the dominant clinical correlates of severity and healthcare utilization. Overall outcomes were favorable, with no in-hospital mortality; however, clinically meaningful morbidity was evident through prolonged nasal packing, increased transfusion requirement, longer admission duration, and 30-day recurrence among high-risk subgroups. These findings reinforce the concept that epistaxis in older adults is less a "local" event and more a multidimensional syndrome driven by vascular aging, systemic comorbidity, and medication-related hemostatic impairment [11,12]. Hypertension was the most prevalent comorbidity in our cohort and was significantly associated with recurrence within 30 days (p=0.031). Contemporary evidence continues to demonstrate a high prevalence of hypertension in epistaxis populations, with recent tertiary-care series from South Asia similarly reporting substantial hypertensive burden among epistaxis presentations [13]. While the causal relationship between hypertension and onset of epistaxis remains debated, many recent clinical discussions interpret uncontrolled blood pressure as a marker of disease severity and recurrence risk, particularly in older patients with fragile nasal vasculature and reduced mucosal resilience [14]. Our recurrence signal supports the pragmatic clinical approach: blood pressure optimization should be treated as a core component of secondary prevention, alongside local hemostatic care [15]. Medication exposure—particularly antiplatelet and anticoagulant therapy—was strongly linked to adverse short-term outcomes. In our study, transfusion was significantly higher among antithrombotic users versus non-users (26.8% vs 8.1%, p=0.018). Recent analyses show that anticoagulation status meaningfully influences admission likelihood and healthcare utilization in epistaxis, including transfusion, escalation to major interventions, and longer length of stay in certain subgroups [16]. Importantly, the contemporary literature is nuanced: some studies suggest that direct oral anticoagulants (DOACs) may not uniformly increase severe epistaxis admissions compared with other agents, while others report clinically relevant differences by drug class, dose intensity, and concurrent antiplatelet therapy [17]. The recurring theme across the last five years is that combination therapy (e.g., anticoagulant plus antiplatelet or dual antiplatelet therapy) is consistently associated with higher recurrence and greater intervention needs than single-agent regimens [18]. This aligns with our observation that medication exposure identifies a higher-risk stratum requiring early hematologic assessment and lower thresholds for escalation [19]. Bleeding location also mattered. Posterior epistaxis constituted over one-third of cases and was significantly associated with longer hospital stay (p=0.022), consistent with current clinical guidance that posterior bleeds are more challenging to control, more likely to require admission, and often demand prolonged packing or operative/angiographic management [20]. Recent treatment-focused reviews highlight that posterior epistaxis frequently fails simple first-line measures and carries a higher procedural burden, especially in elderly patients with comorbid disease and antithrombotic exposure [21]. Our mean hospital stay (3.4 ± 1.9 days) is comparable to contemporary inpatient patterns reported in similar hospital-based cohorts where posterior bleeds and medical comorbidity clusters prolong observation and intervention [22]. Clinically, these findings support a risk-stratified model for elderly epistaxis: early identification of posterior bleeding, assessment of antithrombotic regimen (including combination therapy), correction of reversible hemostatic derangements, and active blood pressure control may reduce recurrence and resource utilization [23]. Future prospective work in Pakistan should quantify recurrence beyond 30 days, incorporate standardized severity scoring, and evaluate protocolized pathways (e.g., early endoscopy-guided localization, adjunct topical hemostats, and coordinated anticoagulation management) to further improve outcomes.

3. LIMITATIONS:

This study was conducted at a single tertiary-care center with a relatively small sample size, which may limit generalizability. The cross-sectional design precluded long-term follow-up beyond 30 days, and detailed stratification of specific antithrombotic agents and dosage regimens was not performed.

4. CONCLUSION:

Epistaxis in elderly patients is strongly associated with hypertension, antithrombotic therapy, and posterior bleeding. These factors significantly increase recurrence, transfusion requirement, and hospital stay. Early risk stratification and targeted management of modifiable factors may substantially reduce morbidity and healthcare burden in this vulnerable population.

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Conflict of Interest: Nil

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