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A RETROSPECTIVE STUDY OF EPISTAXIS IN A TERTIARY CARE HOSPITAL OVER FIVE YEARS

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ABSTRACT

Background: Epistaxis remains among the most frequent otolaryngologic emergencies worldwide. Despite being often self-limiting, severe cases may require urgent intervention. Understanding the etiological profile and treatment outcomes is essential for optimizing management protocols. **Objective:** To analyze the clinical characteristics, etiological factors, and treatment modalities among patients presenting with epistaxis in a tertiary care setting over five years. **Materials And Methods:** This retrospective observational study included 250 patients who presented with epistaxis between January 2019 and December 2024 at Basveshwar Teaching and General Hospital, Kalaburagi, Karnataka. Data were collected from medical records, including demographic details, clinical presentation, identified causes, and treatment methods. Descriptive statistics were applied. **Results:** Among the 250 patients, 62% (n=155) were male and 38% (n=95) were female. The highest incidence occurred in the 21–40 year age group (37.6%), followed by 41–60 years (30.0%). Trauma was the leading cause (42.0%), followed by idiopathic epistaxis (24.0%), hypertension (15.6%), inflammatory causes (8.0%), and neoplasms (4.0%). Unilateral epistaxis occurred in 84.0% of cases, with anterior bleeds comprising 82% of presentations. Non-surgical management, mainly observation and anterior nasal packing, was successful in 86.8% of cases, while 13.2% required surgical interventions such as cauterization, septoplasty/FESS, arterial ligation, or tumor excision. Significant associations were found between age and etiology ($p < 0.001$) and between type of epistaxis and treatment modality ($p < 0.001$). **Conclusion:** Trauma and hypertension remain significant contributors to epistaxis. Conservative measures suffice in the majority of cases; however, surgical management is indispensable in select patients. Prevention strategies should target trauma in youth and hypertension in older adults.

KEYWORDS

Epistaxis, nasal packing, trauma, hypertension

INTRODUCTION

Epistaxis, commonly referred to as nosebleed, is one of the most frequent otolaryngological emergencies, with a lifetime incidence of up to 60%, although only a small proportion of cases require medical attention (1,2). While most episodes are benign and self-limiting, recurrent or severe hemorrhage can cause significant morbidity, particularly among elderly patients or those with comorbid conditions (3). Systemic hypertension has been shown to prolong the duration of spontaneous epistaxis, especially in older individuals with age-related atrophy and dryness of the nasal mucosa (4).

Epistaxis is generally classified as anterior or posterior, based on the site of bleeding. The anterior septum, specifically Kiesselbach's plexus in Little's area, is a highly vascularized region and the most frequent site of bleeding (5). Anterior epistaxis accounts for over 80% of cases and is usually less severe, whereas posterior epistaxis, though less common, often results in brisk hemorrhage and requires more aggressive intervention (6).

The etiology of epistaxis can be broadly categorized into local and systemic causes, with cases lacking an identifiable source labeled as idiopathic. Local factors include blunt trauma—often from facial impact and sometimes associated with nasal fractures—foreign body insertion (including digital trauma from nose-picking), inflammatory conditions such as acute rhinitis or chronic sinusitis, and anatomical abnormalities like septal spurs or hereditary hemorrhagic telangiectasia (7,8). Other recognized local causes are intranasal drug insufflation (e.g., tobacco snuff), benign or malignant sinonasal tumors, environmental dryness, prolonged or improper use of intranasal corticosteroid sprays, barotrauma from pressure changes during flying or diving, ingestion of contaminated supplements containing heavy metals, and postoperative states following septoplasty or functional endoscopic sinus surgery (FESS) (9,10).

Systemic causes commonly include hypertension, use of anticoagulants and antiplatelet agents (e.g., aspirin, warfarin, clopidogrel, prasugrel), certain antihistamines (e.g., fexofenadine), retinoids (e.g., isotretinoin), desmopressin, and herbal remedies such as ginseng (3,11). Other systemic contributors include excessive alcohol intake, anemia, liver disease, connective tissue disorders, hematologic malignancies, idiopathic thrombocytopenic purpura, vascular pathologies, vitamin C and K deficiencies, and inherited coagulopathies such as von Willebrand's disease (12,13).

Given the multifactorial etiology and potential for significant morbidity, understanding the demographic patterns, etiological factors, and treatment approaches for epistaxis in different clinical settings is essential for improving management strategies and patient outcomes.

Despite numerous reports on epistaxis, few studies comprehensively assess its clinical profile, causes, and treatment over time in tertiary care settings. This study analyzes these aspects over five years in a tertiary hospital in North Karnataka.

MATERIALS AND METHODS:

This retrospective observational study was conducted in the Department of Otorhinolaryngology at Basveshwar Teaching and General Hospital, Kalaburagi, Karnataka, India, over a period of five years from January 2019 to December 2024, and included 250 patients who presented with active nasal bleeding, irrespective of age or gender, comprising both anterior and posterior epistaxis cases, while excluding postoperative nasal bleeding and epistaxis secondary to maxillofacial trauma requiring multidisciplinary management.

The diagnosis of epistaxis was established through clinical evaluation, including endoscopic assessment, general physical and systemic examination, as well as relevant laboratory and radiological investigations. When indicated, examination under anesthesia of the nasal cavity and nasopharynx, along with biopsy, was performed. Non-surgical management comprised observation, anterior and posterior nasal packing, while surgical interventions included nasal bone fracture reduction, septal corrective procedures, functional endoscopic sinus surgery (FESS), and excision of bleeding intranasal tumors.

Patient data were retrieved from hospital medical records, including those presenting directly to the ENT department as well as referrals from other departments, and details collected comprised demographics (age and sex), clinical presentation, etiology, type of bleeding, treatment modalities employed, and treatment outcomes. Data were analyzed using descriptive statistics, and results were expressed as frequencies and percentages.

Statistical Analysis:

Data collected from patient records were compiled and entered into a Microsoft Excel spreadsheet and subsequently analyzed using IBM SPSS Statistics for Windows, Version 25.0 (IBM Corp., Armonk, NY, USA). Descriptive statistics were used to summarize demographic variables, clinical characteristics, etiological factors, and treatment modalities. Categorical variables, including age group, gender

distribution, etiology, type of bleeding, and treatment outcomes, were expressed as frequencies and percentages. Continuous variables, such as age, were presented as mean ± standard deviation. The association between categorical variables (e.g., etiology and age group, treatment modality and type of bleeding) was analyzed using the Chi-square test. A p-value of <0.05 was considered statistically significant.

RESULTS

Table 1: Age And Gender Distribution

Age Group (years)	Male	Female	Total (%)
<20	17	28	45 (18.0%)
21–40	67	28	95 (37.6%)
41–60	43	25	68 (30.0%)
>60	28	14	42 (16.8%)
Total	155	95	250 (100%)

Age group distribution revealed that the majority of cases occurred in individuals aged 21–40 years (95 patients, 37.6%), followed by those aged 41–60 years (68 patients, 30.0%), under 20 years (45 patients, 18.0%), and over 60 years (42 patients, 16.8%). Overall, males (155 patients, 62.0%) were more frequently affected than females (95 patients, 38.0%), with the male predominance observed across all age groups

Table 2: Etiological Factors

Etiology	<20 yrs (n=45)	21–40 yrs (n=95)	41–60 yrs (n=68)	>60 yrs (n=42)	Total
Trauma	17	48	30	10	105
Idiopathic	10	18	20	12	60
Hypertension	2	7	17	13	39
Inflammatory	7	10	3	0	20
Neoplasms	0	3	2	5	10
Others	10	8	3	2	23
Total	45	95	68	42	250

Trauma constituted the predominant etiology of epistaxis (42.0%), followed by idiopathic causes (24.0%), hypertension (15.6%), inflammatory conditions (8.0%), neoplasms (4.0%), and miscellaneous factors (9.2%), which included barotrauma, drug abuse (including tobacco sniffing), neglected intranasal foreign bodies, rhinolith, nasal myiasis, and blood dyscrasias

Table 3: Treatment Modalities

Treatment Modality	Anterior Epistaxis	Posterior Epistaxis	Total
Observation	106	17	123
Anterior Nasal Packing	64	3	67
Posterior Nasal Packing	2	11	13
Chemical/Electrocautery	12	2	14
Septoplasty/FESS	8	3	11
Arterial Ligation	3	6	9
Surgical Excision of Tumor	5	2	7
Other Surgical Modalities (Fractured nasal bone reduction, Rhinolith excision)	4	2	5
Total	204	46	250

Observation was the most frequently employed treatment modality for epistaxis (123 cases, 49.2%), followed by anterior nasal packing (67 cases, 26.8%), septoplasty/FESS (11 cases, 4.4%), chemical or electrocautery (14 cases, 5.6%), posterior nasal packing (13 cases, 5.2%), arterial ligation (9 cases, 3.6%), surgical excision of tumor (7 cases, 2.8%), and other surgical modalities (6 cases, 2.4%), which included fractured nasal bone reduction and rhinolith excision.

Table 3: Type Of Epistaxis Depending On Side Of Nose Involved

Type of Epistaxis	Number of Patients	Frequency (%)
Unilateral	210	84.0
Bilateral	40	16.0
Total	250	100.0

Unilateral epistaxis was more common, occurring in 210 patients (84.0%), while bilateral involvement was observed in 40 patients (16.0%)

Non-surgical management was used in 184 anterior and 33 posterior epistaxis cases (total 217 patients, 86.8%), while surgical intervention was performed in 20 anterior and 13 posterior cases (total 33 patients, 13.2%)

- **Non-surgical** = Observation + Anterior Nasal Packing + Posterior Nasal Packing + Chemical/Electrocautery
- **Surgical** = Septoplasty/FESS + Arterial Ligation + Surgical Excision of Tumor + Other Surgical Modalities

Table 4: Treatment Modality Wise Distribution By Type Of Epistaxis (n=250)

Type of Treatment Modality	Anterior Epistaxis	Posterior Epistaxis	Total	Frequency (%)
Non-surgical	184	33	217	86.8
Surgical	20	13	33	13.2
Total	**204**	**46**	**250**	**100.0**

DISCUSSION

In the present study of 250 patients with epistaxis, the peak incidence occurred in the 21–40 year age group (37.6%), followed by 41–60 years (30.0%). This bimodal age distribution has been consistently reported in earlier literature [6,14]. The first peak in young adults is often attributed to higher exposure to trauma-both accidental and self-inflicted (digital trauma)-and occupational or sports-related injuries. The second rise in older adults is more likely associated with systemic conditions such as hypertension and vascular fragility, which increase susceptibility to bleeding [4,14].

A male predominance (62.0%) was noted across all age groups, which is consistent with previous findings [4,3]. This trend may be explained by greater engagement of males in outdoor activities, manual labor, and contact sports, which increase the risk of nasal trauma. Additionally, certain lifestyle factors, such as higher rates of smoking and alcohol consumption, may contribute to mucosal dryness and vascular changes predisposing to epistaxis [3].

Trauma emerged as the leading cause in this study (42.0%), especially in individuals younger than 40 years. This mirrors previous studies where anterior nasal trauma-commonly from nose-picking was the most frequent trigger [6,15]. Hypertension accounted for 15.6% of cases, predominantly in older patients, reinforcing the established relationship between elevated arterial pressure and both the onset and prolonged duration of bleeding [4]. Idiopathic epistaxis (24.0%) also constituted a large proportion, reflecting the challenge of identifying subtle or multifactorial causes despite thorough clinical and endoscopic evaluation [3].

Unilateral epistaxis predominated (84.0%), which is consistent with the vascular anatomy of Kiesselbach's plexus in the anterior septum, an area with a dense capillary network prone to bleeding [14]. Bilateral epistaxis, though less common, was observed in 16% of cases and may be associated with more severe systemic or posterior nasal sources.

In terms of management, non-surgical measures were used in 86.8% of patients, with observation and anterior nasal packing as the primary modalities. This aligns with current guidelines advocating conservative treatment as first-line for anterior epistaxis, given its high success rate and low complication profile [6]. Surgical interventions, such as septoplasty/FESS, arterial ligation, and tumor excision, were reserved for refractory cases, particularly in posterior epistaxis where bleeding control is more challenging due to anatomical inaccessibility and the involvement of larger-caliber vessels [4].

The statistically significant association between treatment modality and type of epistaxis ($p < 0.001$) in our findings underscores the need for individualized treatment planning. Posterior epistaxis required surgical intervention more frequently, reflecting its potential for greater blood loss and recurrence risk. Similarly, the significant relationship between age and etiology ($p < 0.001$) highlights the value of targeted preventive strategies-such as trauma prevention counseling for younger individuals and hypertension control for older adults.

Study Limitations And Recommendations

This single-center, retrospective study may not be fully generalizable, and reliance on medical records could have led to underreporting of certain etiologies. Lack of gender-wise etiological data limited detailed statistical analysis. Future multi-center, prospective studies with standardized diagnostic protocols and long-term follow-up are recommended to better define epidemiology, reduce idiopathic classifications, and assess treatment outcomes.

CONCLUSION

Epistaxis in this series most commonly affected males and showed a

bimodal age distribution, with trauma predominating in younger patients and hypertension in older adults. Unilateral and anterior epistaxis were far more frequent than bilateral and posterior cases. Non-surgical management, particularly observation and anterior nasal packing, was the mainstay of treatment, while surgical interventions were primarily reserved for refractory posterior bleeds. The significant associations between age and etiology, and between treatment modality and type of epistaxis, highlight the need for age-specific preventive strategies and tailored management approaches to optimize outcomes.

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