



Original Research Article

A CROSS-SECTIONAL STUDY ON THE ETIOLOGICAL FACTORS AND MANAGEMENT OF EPISTAXIS IN A TERTIARY CARE CENTRE

Lekshmi Devi V¹, Anjali Vinod², Swapna U P³, Smitha B⁴, Nikhila Rajendran⁵

¹Junior Resident, Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala, India.

²Assistant Professor, Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala, India.

³Professor and Head of the Department, Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala, India.

⁴Associate Professor, Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala, India.

⁵Assistant Professor, Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala, India.

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Corresponding Author:

Dr. Lekshmi Devi V,
Junior Resident, Department of
Otorhinolaryngology, Sree Uthradom
Thirunal Academy of Medical Sciences,
Thiruvananthapuram, Kerala, India.
Email: lekshmigsv@gmail.com

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ABSTRACT

Background: Epistaxis is one of the most common emergencies encountered in otorhinolaryngology practice.^[1] Although most cases are self-limiting, some may become severe and life-threatening. Etiology varies with age, environmental factors, and systemic comorbidities. Identifying the underlying cause is essential for proper management and prevention of recurrence. **Objectives:** Primary objective is to identify the cause of epistaxis in different age groups among patients attending the ENT Department. The secondary objective is to identify the most commonly affected age group, and effective management of epistaxis on the basis of etiology.

Materials and Methods: A hospital-based cross-sectional study was conducted in the Department of Otorhinolaryngology at Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, from March 2023 to October 2024. A total of 162 patients presenting with epistaxis were included. Detailed clinical history, ENT examination, nasal endoscopy, laboratory investigations were done in all patients. Radiological evaluation were performed when indicated. Data were analyzed using Jamovi software version 2.6.23.

Results: Among 162 patients, 90 (55.6%) were males and 72 (44.4%) were females. The most commonly affected age group was 1–15 years (38.3%). Trauma was the leading etiological factor (33.95%), followed by acute on chronic adenoiditis (19.75%), hypertension (13.58%), septal spur (9.88%), acute sinusitis (8.64%), rhinosporidiosis (4.94%), acute on chronic rhinosinusitis (4.32%), tumors (1.85%), idiopathic causes (1.85%), granulomatous disease (0.62%), and internal carotid artery aneurysm (0.62%). Conservative treatment was effective in 64% of patients, while 36% required surgical intervention.

Conclusion: Epistaxis is a common ENT emergency with varying etiological patterns across different age groups. Trauma and inflammatory conditions predominate in children and young adults, whereas hypertension is more common among older patients. Appropriate evaluation and early etiological identification help in effective management and reduction of morbidity.

Keywords: Epistaxis; Etiology; Trauma; Hypertension; Nasal bleeding; Management.

INTRODUCTION

Epistaxis, commonly known as nasal bleeding, is one of the most frequent emergencies encountered in otorhinolaryngology practice.^[1] Approximately 60% of the general population experience at least one episode of epistaxis during their lifetime, though only a small percentage require medical attention.^[2] The condition affects all age groups and both sexes. Most episodes are mild and self-limiting; however, severe cases can result in significant morbidity and occasionally mortality.

Epistaxis is broadly classified into anterior and posterior types based on the site of bleeding.^[3] Anterior epistaxis commonly arises from Kiesselbach's plexus located in Little's area of the nasal septum and is more frequent in children and young adults.^[3,10] Posterior epistaxis, often arising from Woodruff's plexus, is more common among elderly individuals and may require aggressive management.^[11]

The causes of epistaxis are multifactorial and may be local or systemic.^[7] Local causes include trauma, infections, inflammatory conditions, structural abnormalities, neoplasms, and drug-induced mucosal irritation. Systemic causes include hypertension, bleeding disorders, liver disease, renal disease, and vascular abnormalities. Identifying the etiology is essential for targeted management.

Management ranges from simple first-aid measures and nasal packing to endoscopic cauterization, surgical intervention, and embolization in refractory cases.^[6,7,9] Understanding the etiological distribution across age groups can help clinicians adopt age-specific diagnostic and therapeutic approaches.

The present study was undertaken to evaluate the etiological factors and management modalities of epistaxis in patients presenting to a tertiary care centre.



Figure 1: DSA pre and post endovascular coiling



Figure 2: Rhinosporidial mass protruding from left nasal cavity



Figure 3: Saddle nose deformity in a patient with EGPA (Eosinophilic Granulomatosis with Polyangitis)

MATERIALS AND METHODS

Study Design and Setting

This hospital-based cross-sectional study was conducted in the Department of Otorhinolaryngology, Sree Uthradom Thirunal Academy of Medical Sciences, Thiruvananthapuram, Kerala.

Study Duration

The study was conducted over a period of 18 months from March 2023 to October 2024.

Study Population

All patients presenting with epistaxis to the outpatient department and emergency department during the study period were considered for inclusion.

Inclusion Criteria

- Patients presenting with epistaxis during the study period.
- Patients willing to participate in the study.

Exclusion Criteria

- Patients unwilling to participate.
- Patients with postoperative epistaxis following nasal surgeries.

Sample Size

The sample size was 162. It was calculated based on a previous study by Parajuli et al.²¹

Data Collection

The first priority was given to stabilize the patient clinically and hemodynamically. After obtaining informed consent, general, ENT and systemic examination was done. ENT examination included anterior rhinoscopy and diagnostic nasal endoscopy. Relevant laboratory investigations included complete blood count, bleeding parameters, liver function tests, renal function tests, and viral markers when indicated.

Radiological investigations such as X-ray, CT scan, and MRI of the nose and paranasal sinuses were performed in selected patients.

Data were recorded in a predesigned structured proforma.

Management Protocol

Initial management included first-aid measures, local pressure application, topical vasoconstrictors, chemical cauterization, anterior nasal packing, posterior nasal packing, antibiotics, antihypertensive medications, and supportive care. Surgical management such as septoplasty, adenoidectomy, functional endoscopic sinus surgery (FESS), and excision of nasal masses was undertaken where indicated.

Statistical Analysis

Data were entered into Microsoft Excel and analyzed using Jamovi software version 2.6.23. Categorical variables were expressed as frequency and percentage.

Ethical Considerations

Approval was obtained from the Institutional Ethics Committee and Institutional Research Committee of Sree Uthradom Thirunal Academy of Medical Sciences.

RESULTS

The study included 162 patients classified into five age groups (Group A-E). Group A included people in the age group of 1-15years, group B : 16-30years, group C: 31-45years, group D: 46-60years, group E: 61-75 years.

Table 1: Distribution of sample according to age in years

Age Group	Frequency	Percentage
Group A (1–15 years)	62	38.3%
Group B (16–30 years)	37	22.8%
Group C (31–45 years)	19	11.7%
Group D (46–60 years)	18	11.1%
Group E (61–75 years)	26	16.0%

Table 2: Distribution of sample according to gender

Gender	Frequency	Percentage
Male	90	55.6%
Female	72	44.4%

There was a slight male predominance. Of the 162 patients, 90 (55.6%) were males and 72 (44.4%) were females.

Table 3: Distribution of sample according to etiology

Etiology	Percentage
Trauma	33.95%
Acute on chronic adenoiditis	19.75%
Hypertension	13.58%
Septal spur	9.88%
Acute sinusitis	8.64%
Rhinosporidiosis	4.94%
Acute on chronic rhinosinusitis	4.32%
Tumors	1.85%
Idiopathic	1.85%
Granulomatous disease	0.62%
ICA aneurysm	0.62%

Trauma was the most common etiological factor accounting for 33.95% of cases. Acute on chronic adenoiditis was the second most common cause (19.75%), followed by hypertension (13.58%), septal

spur (9.88%), and acute sinusitis (8.64%). Rhinosporidiosis, tumors, granulomatous disease, and ICA aneurysm were relatively uncommon causes.

Table 4: Etiology of epistaxis in different age groups

Etiology	Group A	Group B	Group C	Group D	Group E
Finger Nail Trauma	15	1	0	0	0
Road Traffic Accident	0	4	3	2	2
Accidental Hit or Fall	6	2	0	4	4
Assault	2	0	0	0	0
Sports Injury	2	2	0	0	0
Foreign Body	6	0	0	0	0
Hypertension	0	0	0	5	17
Acute on chronic adenoiditis	28	4	0	0	0
Rhinosporidiosis	3	4	0	0	1
Septal Spur	0	10	4	2	0
Acute Sinusitis	0	7	7	0	0
Acute on Chronic Rhinosinusitis	0	2	1	3	1
Tumour	0	0	1	1	1
Granulomatous Disease	0	0	1	0	0
ICA aneurysm	0	0	0	0	1

Trauma and adenoiditis were predominantly seen among children and adolescents, whereas hypertension was more common in older age groups. Structural abnormalities such as septal spur were more frequent in adults.

Management Modalities

Most patients were successfully managed conservatively. Conservative treatment modalities included local pressure application, topical medications, cauterization, and nasal packing.

Table 5: Treatment Methods

Treatment Method	Percentage
Conservative management	64%
Surgical	36%

Table 13: Distribution of sample based on non-surgical treatment methods

Treatment	Frequency	Percentage
Observation (Topical vaso constrictor/trotters/icepack application)	54	52.94%
Antibiotic Therapy	25	24.51%
Anterior Nasal Packing	14	13.73%
Foreign body removal	6	5.88%
Chemical Cauterisation	2	1.96%
Chemoradiotherapy	1	0.98%
Immunomodulatory therapy	1	0.98%

Table 14: Distribution of sample based on surgical treatment methods

Treatment	Frequency	Percentage
Functional Endoscopic Sinus Surgery (FESS)	15	25.00%
Adenoidectomy	14	23.33%
Nasal Bone Fracture Reduction	10	18.33%
Septoplasty	10	16.67%
Rhinoporioid Mass Excision	8	13.33%
Balloon assisted coiling of internal carotid artery aneurysm (fig:1)	1	1.67%
Endoscopic Excision of Tumour	1	1.67%

DISCUSSION

Epistaxis is a common clinical condition encountered across all age groups. The present study evaluated the etiological factors and management strategies among patients presenting with epistaxis in a tertiary care setting.

The majority of patients in the present study belonged to the age group 1–15 years. Similar findings have been reported in earlier studies where childhood epistaxis was found to be common because of increased incidence of finger nail trauma, upper respiratory tract infections, and adenoid hypertrophy. Children frequently manipulate the nose, resulting in trauma to Little's area, which is highly vascular.^[3,10] There was a slight male predominance in the present study. Similar male predominance has been

documented in other studies, possibly due to increased outdoor activity and greater exposure to trauma among males.^[1,4]

Trauma was identified as the most common etiological factor in the present study. Trauma included finger nail injury, road traffic accidents, and nasal fractures. Several studies have similarly reported trauma as the leading cause of epistaxis, especially in younger individuals.^[1,6]

Acute on chronic adenoiditis was the second most common cause. Adenoid hypertrophy and associated inflammation contribute to recurrent nasal irritation and mucosal congestion, predisposing children to epistaxis. Inflammatory conditions such as acute sinusitis and rhinosinusitis were also significant contributors.^[12]

Hypertension was the most common systemic cause observed in this study and predominantly affected older individuals. Although hypertension may not directly initiate bleeding, elevated blood pressure can prolong bleeding episodes and make hemostasis difficult.^[7]

Structural abnormalities such as septal spur contributed to nearly 10% of cases. Septal deviations and spurs can cause localized mucosal trauma due to turbulent airflow and mucosal dryness.^[10]

Rare causes identified in the present study included tumors, granulomatous disease, and internal carotid artery aneurysm. Although uncommon, these conditions should be considered in patients with recurrent, severe, or unilateral epistaxis.^[16,17,19]

Conservative management was successful in the majority of patients. Most episodes were controlled using first-aid measures, cauterization, or nasal packing. Surgical intervention was reserved for patients with identifiable structural pathology, recurrent epistaxis, or failure of conservative treatment.^[6,7]

The findings of the present study emphasize the importance of detailed clinical evaluation and age-specific etiological assessment in patients presenting with epistaxis.

CONCLUSION

Epistaxis is a common ENT emergency encountered in routine clinical practice.^[1] The etiological profile varies with age. Trauma and inflammatory conditions are predominant among children and young adults, while hypertension and structural abnormalities are more common in older individuals.

Most cases can be effectively managed with conservative treatment methods. Early diagnosis of underlying pathology and appropriate management reduce complications and recurrence. Detailed evaluation, including nasal endoscopy and imaging when indicated, is essential in recurrent or severe cases.

Limitations

- This was a single-centre study.
- There was no long term followup.
- Some rare causes of epistaxis had limited representation due to small sample size.

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Conflict of Interest

The authors declare no conflict of interest.

Source of Funding

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Ethical Approval

Institutional Ethics Committee approval was obtained prior to commencement of the study.

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