



ORIGINAL RESEARCH PAPER

Medicine

EPISTAXIS: ETIOLOGY, CLINICAL PROFILE AND OUTCOME IN A TERTIARY HOSPITAL.

KEY WORDS: Epistaxis, Etiology, Conservative management, surgical intervention, Trauma, Hypertension.

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ABSTRACT

Background: Epistaxis is the commonest otolaryngologic emergency affecting up to 60% of the population in their lifetime, with 6% requiring medical attention. The etiological profile of epistaxis has been reported to vary with age and anatomical location. The management of epistaxis is well summarized in an age-old dictum: resuscitate the patient, establish the bleeding site, stop the bleeding and treat the cause of epistaxis. Treatment options can be conservative or surgical, the selection of which should be made considering the parameters: efficiency, complications, and cost-benefit. **Methods:** This was a prospective descriptive study done in 80 patients with epistaxis, in the Department of ENT, GSL medical college, Rajahmundry, to determine the clinical etiological profile and the outcome of the conservative and surgical management. **Results:** Male-female ratio in this study was 2.3: 1 and the mean age was 44.24 Years with a standard deviation of 16.4. The most common etiology in young patients was trauma and in middle-aged/ elderly patient's hypertension was the common underlying cause for epistaxis. In 20% of cases, no underlying cause was found. Most of the patients (92.5%) in this series were managed conservatively with a success rate (91.5%) and only 6 (7.5%) of the patient's required surgical intervention with a success rate of 50%. The recurrence rate in this study was 10% with the highest in nasopharyngeal tumour group and trauma cases. The mortality rate in this study was 1.25%. **Conclusion:** Epistaxis is a common emergency condition in Otorhinolaryngology. Trauma resulting from road traffic accidents (RTA) remains the most common etiological factor for epistaxis in young patients while in middle-aged and elderly people hypertension is the common etiology. Multiple methods for treating epistaxis are available, and occasionally more than one treatment is used. Our experience shows that the conservative approach is arguably sufficient in the management of most cases of epistaxis without the need for surgical intervention. Non-surgical treatment is useful to arrest nasal bleeding and it is safe and cost-effective, and surgical intervention should be the last resort. Reducing the incidence of trauma from RTC will reduce the incidence of emergency epistaxis.

INTRODUCTION

Epistaxis or nasal bleeding is derived from word "Epistazo" where "epi" means above and "stazo" means "to fall in drops".¹ Epistaxis is one of the most common otorhinolaryngological emergencies worldwide with an incidence ranging from 30 to 100 per 100,000 each year and lifetime occurrence rate of approximately 60% with approximately 6% of those with nosebleeds seek medical treatment.^{2,3}

In literature, the etiological profile of epistaxis has been reported to vary with age and anatomical location. Traumatic epistaxis is more common in a young while as non-traumatic epistaxis is common in elderly.^{4,5} Epistaxis is commonly divided into anterior and posterior epistaxis, depending on the site of origin. Anterior epistaxis being bleeding from a source anterior to the plane of piriform aperture and posterior epistaxis from a site posterior to the above-mentioned plane. posterior epistaxis is commonly seen in elderly people and is usually severe because of larger vessels in that area. Anterior epistaxis is far more common than posterior epistaxis around 80% of epistaxis cases.^{7,8} Local causes include inflammatory, infective, traumatic, anatomical (deviated nasal septum, septal spur), chemical, or climatic changes, neoplasm, and foreign body. Similarly, the systemic causes of epistaxis are haematological diseases causing coagulopathy, cardiovascular diseases such as hypertension and vascular heart disease, liver disease, renal disease, and anticoagulant drugs. Despite all investigations, in a majority (80-90%) of patients, no identifiable cause is found and is labelled as "idiopathic".^{6,7}

The management of epistaxis is well summarized in an age-old dictum: resuscitate the patient, establish the bleeding site, stop the bleeding and treat the cause of epistaxis.⁹ In patients of epistaxis management begins with the resuscitation of patients, establishing the site of bleed and stopping the bleeding either by conservative methods of treatment or by surgical approaches. Conservative management like nasal packing and cauterization of the bleeding site is effective in

most patients however some patients may need surgical treatment like arterial ligation nasal septal surgery and arterial embolization.¹⁰ Patients with systemic causes of epistaxis to need treatment of underlying disease to prevent a recurrence. In figure 1 stepwise management of epistaxis is shown from primary care by general physician/emergency physician to tertiary care by otolaryngologists.¹¹

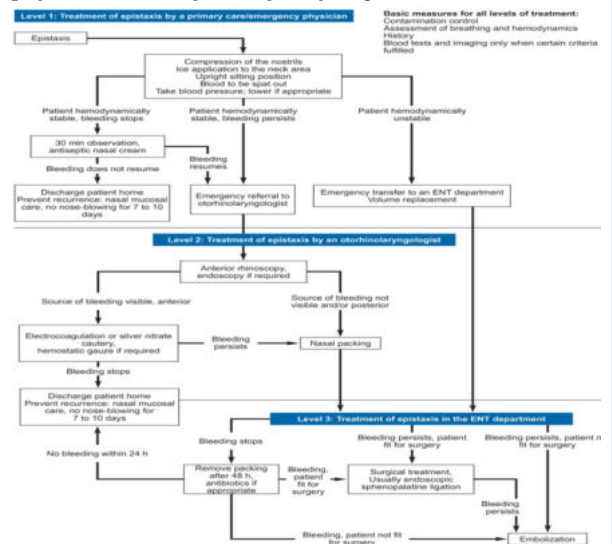


Figure 1: management of epistaxis.

In our environment due to the lack of previous studies on this subject aim of this study is to identify the etiological profile and the outcome of these patients and the establishment of treatment guidelines.

Material and methods

This is a prospective descriptive study conducted in the department of otolaryngology GSL medical college Rajamundry on patients of epistaxis from a period of March 2018 to April 2019.

Inclusion criteria:

Age greater than 12 years.
All patients of epistaxis admitted in the hospital for at least 48 hours were included in this study.

Exclusion criteria:

Age less than 12 years.
Patients of epistaxis who were managed as outpatients or remain admitted in the hospital for less than 48 hours.

The priority after admission was given to resuscitation first and arresting the bleeding. Initially, the patients were subjected to anterior rhinoscopy to localize the site of bleeding and in cases where it does not reveal bleeder endoscopic examination was done. Once the patient was hemodynamically stable, he or she underwent detailed history and examination both local and systemic examination to find out the severity and etiology of epistaxis. All patients were subjected to baseline haematological parameters like complete blood count, haemoglobin level, platelet count, random blood sugar, serum electrolytes, urea, creatinine, liver function tests, and blood grouping. Coagulation profile such as prothrombin time, activated plasma thromboplastin time, and bleeding and clotting time was also performed in all patients. Radiological examination like Computed tomography (CT) was done in selected cases. Besides this, other investigations such as chest X-ray, electrocardiogram (ECG), and serological tests had to be performed for the fitness of procedures requiring general anaesthesia in patients who underwent surgical treatment. To assess the severity of epistaxis, blood loss was graded as mild (blood loss less than 50 ccs and no fall in serum Hb level) and moderate/severe (blood loss is more than 51 ccs and serum Hb level below normal)

Treatment of the patients with epistaxis included conservative or nonsurgical treatment and surgical or interventional treatment. Nonsurgical treatment methods included observation alone, application of topical vasoconstrictors such as oxymetazoline and xylometazoline nasal drop, chemical cauterization of the bleeder, and anterior and posterior nasal packing. In this study, all patients were initially managed with conservative non-surgical methods. After initial nasal packing along with the topical application of vasoconstrictors' initial attempt of controlling bleeding further treatment was guided by etiology and recurrence if any. Once etiology was established, the patient was given definitive treatment like control of infection by medical measures, control of hypertension, fresh blood or platelet transfusions, reduction of nasal bone fractures, surgical excision of tumours. All patients received antibiotics for a minimum of 5 days. After discharge, the first follow-up was after one week and then the patients were regularly followed up at monthly intervals for three months. Statistical analysis was done by descriptive statistics.

RESULTS

Demography

A total of 80 patients, 24 females and 56 males, were included in the study with the age varying from 13 years to 78 years. The mean age of patients was 44.24 years with a standard deviation of 16.4. Age incidence increased after forty years, with the maximum number of cases in the age group 40 to 50 years. (Table 1 and 2).

Table 1: Age and gender

Total No. of patients	M: F ratio	Mean age	SD
80	2.3:1	44.24 Years	16.4

Table 2: Age distribution

Age group	No. of patients (%)
12 to 20 years	10(12.5%)
21 to 30 years	7(8.75%)
31 to 40 years	13(16.25%)

41 to 50 years	22(27.5%)
51 to 60 years	15(18.75%)
Greater than 60 years	13(16.25%)

Clinical features:

The majority of patients were having mild epistaxis (63 cases 78.7%), moderate and severe epistaxis was in 17 cases (21.3%). Most of the patients were admitted through accident and emergency unit (55 cases 66.7%) while 20 patients were admitted from OPD and 5 patients from other departments. Anterior nasal bleeding was the predominant presentation in this study in 60 cases while as posterior nasal bleed in only 8 cases and 12 cases it was from both locations (table 3)

Table 3: Clinical features.

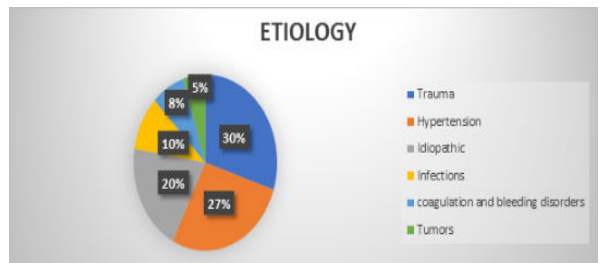
Parameter	Findings
Location of bleeding	Anterior: 60 (75%), posterior: 8 (10%), both: 12 (15%).
Severity of epistaxis	Mild: 63 (78.7%), moderate and severe: 17 (21.3%).

Etiology:

As shown in table 4 and graph 1 trauma (24 cases:30%) is the most common etiology of epistaxis in this study followed by hypertension in 22 cases (27.5%). In 8 of the cases (10%) infections in the form of sinusitis, upper respiratory infections and rhinitis were responsible for epistaxis. Systemic diseases like cirrhosis and renal failure and other bleeding disorder were the cause of nasal bleed in 6 patients (7.5%). in 4 of the cases nasopharyngeal tumours like papilloma, Haemangioma, Ca Maxilla and JNC were found. Despite an extensive search, in 16 patients, no cause was found and they were grouped under idiopathic etiology.

Table 4: Etiology of epistaxis

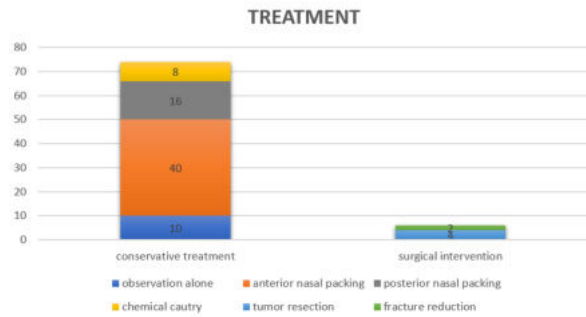
Etiology	Frequency (%)
Trauma	24(30%)
Hypertension	22(27.5%)
Idiopathic	16(20%)
Infections	8(10%)
Bleeding and coagulation disorders	6(7.5%)
Tumors	4(5%)
Total	80(100%)



Graph 1: Etiology of epistaxis.

Treatment

Regarding treatment modalities, the conservative/nonsurgical method was sufficient to control epistaxis in most (74; 92.5%) of the patients (chart 2). Among the conservative methods, observation alone without active intervention was carried out in 10 (12.5%) patients. However, 40 (52.38%) patients were treated with anterior nasal packing. Chemical cautery was performed in 8 (14.28%) patients and 16(16.66%) patients underwent posterior nasal packing. Surgical measures to control epistaxis were carried out in 6(7.5%) patients. Among these patients 4 (2.38%) underwent resection of tumor surgery, another 2 patients needed nasal bone fracture reduction. Blood transfusion was required in 6 (7.5%) of the patients. The mean stay of hospitalization in this study was 5.2 days (graph 2)



Graph 2: Treatment of epistaxis.

Outcome

One of the patients expired on follow up because of the metastasis of the primary tumour. The mortality rate in this study was 1.25%. The overall recurrence of epistaxis in this study was seen in 10 cases (12.5%). Among those with recurrence, the majority (70%) were having minimal epistaxis while 30% of patients were bleeding severely and recurrence was mostly within a week of admission (8 cases; 80%). Recurrence of epistaxis was more common in the surgical group (50%) as compared to only 9.5% of cases in the conservative treatment group.

Table 5: Outcome

Parameter	Frequency (%)
Mortality rate	1(1.25%).
Recurrence of epistaxis	10(12.5%).
Severity of recurrence	Minimal: 7(70%), moderate or severe: 3(30%).
Timing of recurrence	Within 7 days of admission: 8(80%), 7 to 90 days: 2(20%).
Recurrence of epistaxis in different treatment groups	Conservative treatment group: 7(9.5%) Surgical group: 3(50%).

Maximum recurrence of nasal bleeding was found in patients of nasopharyngeal tumours [2 in 4 (50%)] patients followed by patients of coagulation disorders [2 in 6 (33.3%)]. In trauma patients recurrence was seen in 4 patients out of 24 (16.7%) while as in hypertension and idiopathic groups it was one patient in each category who had recurrent epistaxis.

Table 6: Recurrence of epistaxis.

Etiology	Recurrence rate (%)
Trauma	4 out of 24 (16.7%).
Coagulation and bleeding disorders	2 out of 6 (33.3%).
Nasopharyngeal Tumours	2 out of 4 (50%).
Hypertension	1 out of 22 (4.5%)
Idiopathic	1 out of 16 (6.3%)

DISCUSSION.

Epistaxis not only can be life-threatening but a cause of severe anxiety to patients and family members. In the present study, epistaxis was found more in males with a male-female ratio of 2.3:1. The male preponderance in this study may be attributed to the high incidence of traumatic epistaxis which tends to affect young males because of their frequent involvement in high risk-taking behavior. This male preponderance has also been found in other studies.¹²⁻¹⁴ Globally there is a male preponderance in epistaxis, however, in some reports, no sex difference exists in elderly patients.¹⁵ The mean age of this study was 44.24 years with a standard deviation of 16.4. The presentation of epistaxis was bimodal in this study with one peak in the young age group less than 20 years and another peak in 40 to 50 years, however, most of the patients were more than 40 years. These results were similar to those reported in local and foreign literature.^{12,16} Contrary to our results, in a study by Awan et al all of the patients, were from the paediatric age group. A similar bimodal presentation of

epistaxis is also been reported in the literature.¹² The bimodal presentation in this study can be explained by more trauma and assault cases at a young age while hypertension, tumours and other systemic diseases common in middle and old age. The majority of the cases (78.7%) in this study had minimal epistaxis while 21.3% of cases presented with a complaint of moderate or severe bleed. Anterior epistaxis was more common than posterior bleeds (75% vs. 10%). Symptomatology in the present study is comparable to previous studies.¹⁷⁻²¹ The rate of blood transfusion for epistaxis has been reported in the literature to range between 6.92-15.1% which is similar to the blood transfusion rate in this study (7.5%).^{14,15}

In this study commonest etiological factor was trauma (30%), followed by hypertension (27.5%), infection (10%), bleeding and coagulation disorders (7.5%) and neoplasms (5%). In 20% of patients no definite cause could be identified (idiopathic). Trauma and infection being the most common etiology in young adults & hypertension, coagulation disorders and tumours in patients above 40 years. In a study by Juselius et al, trauma accounts for only 2.6% of the cases while a recent study by Amusa et al showed traumatic epistaxis in 70.9% of cases.^{17,21} The high incidence of traumatic epistaxis in this study can be explained on account that our hospital is a tertiary referral centre located very close to national highway where most of the road traffic accident victims are treated. Reducing the incidence of trauma from RTA will reduce the incidence of epistaxis in our centre. The other major cause of epistaxis is hypertension. Hypertension was a major etiological factor in studies conducted by Juselius (47.3%), Monjas et al (56%), and Varshney et al (31.8%) also.^{16,17,22} Good primary healthcare with early diagnosis and proper management of hypertension in the community can reduce hypertension associated epistaxis in our setup.

The selection of the adequate treatment option for the patient with epistaxis must consider three parameters: efficiency, complications, and cost-benefit. This study supports the credibility of conservative treatment procedures in control of epistaxis. Since the majority of patients were having mild epistaxis and not life-threatening so most of the cases (92.5%) in this study were managed conservatively. In a conservative approach, we used 3 conservative modalities in a stepwise fashion: initially, local vasoconstrictors and chemical cauterization (silver nitrate) if the bleeding point was visible, anterior nasal packing if the bleeding was profuse, and posterior nasal packing if anterior nasal packing failed. In this study surgical intervention was required only in 6 cases (7.5%), tumour resection in 4 cases and nasal fracture reduction in 2 trauma cases. In our series, no surgical ligation of the vessel was required. Arterial ligation is necessary in intractable cases of epistaxis when conservative measures fail. Similar results of the non-surgical approach success rate (80 to 90%) had been reported in the literature.²³ These results were also in accordance with previously published studies by Phillip et al (83%) and Arshad et al (81.66%) where the conservative approach was required in the majority of the patients.^{19,20} In the study by Villwock et al out of 57,039 patients in different hospitals, surgical intervention was required only in 8.1%.²⁴

On analysing the outcome of these two treatment modalities, the success rate was 91.5% for conservative treatment and 50% for surgical treatment. Recurrence of epistaxis was seen in 10% of patients in this study but it was usually mild. Among different etiologies of epistaxis in the present study, recurrence was highest in nasopharyngeal tumours (50%) and coagulation disorders patients (33.3%) and least in other etiologies. In this series, one of the patients expired due to metastasis of the primary tumour. Our results of conservative treatment fell within the failure rates of 10% to 52% reported in the literature.^{25,26} In surgical approaches this study had high failure rates as compared to others however in this study

among different surgical approaches only tumour resection and fracture reduction surgeries were employed as compared to other previous studies.²⁷ Currently, endoscopic approach and intervention radiology have made arterial ligation safer and faster in the management of epistaxis. In future these methods can be employed in patients of epistaxis which may help in decreasing the recurrence rate of epistaxis in our setup. Our mortality rate in the present study was found to be similar to that reported in other studies.²⁷⁻²⁹

CONCLUSION

Epistaxis is a common emergency condition in Otorhinolaryngology. Trauma resulting from road traffic accidents (RTA) remains the most common etiological factor for epistaxis in young patients while in middle-aged and elderly people hypertension is the common etiology. Multiple methods for treating epistaxis are available, and occasionally more than one treatment is used. Our experience shows that the conservative approach is arguably sufficient in the management of most cases of epistaxis without the need for surgical intervention. Non-surgical treatment is useful to arrest nasal bleeding and it is safe and cost-effective, and surgical intervention should be the last resort. Reducing the incidence of trauma from RTC will reduce the incidence of emergency epistaxis.

Funding: None.

Conflict of interest: None declared.

Ethical approval: Not required.

REFERENCES:

1. The American Heritage. Stedman's Medical Dictionary. Houghton Mifflin Company;2002.
2. O'Donnell M, Robertson G, McGarry GW. A new bipolar diathermy probe for the outpatient management of adult acute epistaxis. *Clin Otolaryngol* 1999; 24:537-541.2.
3. Weiss NS. Relation of high blood pressure to headache, epistaxis, and selected other symptoms The United States Health Examination Survey of Adults. *N Engl J Med* 1972;287:631-633.
4. Pope LER, Hobbs CGL: Epistaxis: an update on current management. *Postgrad Med J* 2005,81:309-314.
5. Nash CM, Field SMB: Epidemiology of Epistaxis in a Canadian Emergency Department. *Israeli Journal of Emergency Medicine* 2008, 8:24-28.
6. Pallin DJ, Chng Y, McKay MP, Emond JA, Pelletier AJ, Camargo CA: Epidemiology of epistaxis in US emergency departments, 1992 to 2001. *Ann Emerg Med* 2005, 46:77-81.
7. Ciaran SH, Owain H: Update on the management of epistaxis. *The West London Medical Journal* 2009, 1:33-41.
8. Walker TWM, Macfarlane TV, McGarry GW: The epidemiology and chronobiology of epistaxis: an investigation of Scottish hospital admissions 1995-2004. *Clin Otolaryngol* 2007, 32:361-5.
9. Daudia A, Jaiswal V, Jones NS: Guidelines for the management of idiopathic epistaxis in adults: how we do it. *Clinical Otolaryngology* 2008, 33:607-628.
10. McGarry GW. Epistaxis. In Gleeson M, ed. *Scott Brown's Otorhinolaryngology Head and Neck Surgery*. 7th ed. London: Hodder Arnold; 2008: 1596-1608.
11. Beck R, Sorge M, Schneider A, Dietz A. Current Approaches to Epistaxis Treatment in Primary and Secondary Care. *Dtsch Arztebl Int*. 2018;115(1-02):12-22.
12. Mgbor NC: Epistaxis in Enugu: A 9 year Review. *Nig J of otolaryngology* 2004, 1(2):11-14.
13. Huang C, Shu C: Epistaxis: A review of hospitalized patients. *Chinese medical journal* 2002, 65(2):74-78.
14. Kaygusuz I, Karlidag T, Keles E, Yalcin S, Alpay HC, Sakallioğlu O: Retrospective Analysis of 68 Hospitalized Patients with Epistaxis. *Firat Tip Dergisi* 2004, 9(3):82-85.
15. Varshney S, Saxena RK: Epistaxis: a retrospective clinical study. *Indian Journal of Otolaryngology, Head Neck Surgery* 2005, 57:125-129.
16. Kucik CJ, Clenney T. Management of epistaxis: summary for patients. *Am Fam Physician* 2005; 71:305-11.
17. Juselius H. Epistaxis: A clinical study of 1724 patients. *J Laryngol Otol*. 1974; 88:317-27.
18. Phillip AP, Milton GY. Epistaxis: a retrospective review of hospitalized patients. *AJO Head Neck Surg*. 1997;117(1):49-53.
19. Arshad M, Ahmed Z, Liaqat A. Epistaxis: An experience with over 100 cases. *Rawal Medical J*. 2007;32(2):142-5.
20. Gilyoma JM, Chalya PL. Etiological profile and treatment outcome of epistaxis at a tertiary care hospital in Northwestern Tanzania: a prospective review of 104 cases. *BMC Ear Nose Throat Disord*. 2011; 11:8.
21. Akinpelu OV, Amusa YB, Eziyi JA, Nwawolo CC. A retrospective analysis of aetiology and management of epistaxis in a south-western Nigerian teaching hospital. *West Afr J Med*. 2009;28(3):165-8.
22. Monjas CI, Hernandez GI, Mauri BJ, Sanz RB, Gras AJ. Epidemiology of epistaxis admitted to a tertiary hospital. *Acta Otorrinolaringol Esp*. 2010;61(1):417.
23. Rodney JS. Epistaxis: A clinical experience. *New England Journal of Medicine*. 2009;360:784-9. doi: 10.1056/NEJMc0807078.

24. Villwock J, Jones K. Recent Trends in Epistaxis Management in the United States 2008-2010. *JAMA Otolaryngol Head Neck Surg*. 2013;139(12):1279-84.
25. Shaw CB, Wax MK, Wetmore SJ. Epistaxis: a comparison of treatment. *Otolaryng Head Neck*. 1993; 109:60-5.
26. Schaitkin B, Strauss M, Houck JR. Epistaxis: medical versus surgical therapy: a comparison of efficacy, complications, and economic considerations. *Laryngoscope*. 1987;97:1392-6.
27. Iseh KR, Muhammad Z: Pattern of epistaxis in Sokoto, Nigeria: A review of 72 cases. *Ann Afr Med* 2008, 7:107-11.
28. Eziyi JAE, Akinpelu OV, Amusa YB, Eziyi AK. Epistaxis in Nigerians: A 3-year Experience. *East Cent Afr J Surg*. 2009;14(2):93-98.
29. Jaduola CTA, Okeowo PA. Pattern of epistaxis in the tropics. *Cent Afr J Med*. 1983;29:77-80.