

Epistaxis - Assessment of Aetiology and Effectiveness of Treatment Modalities

ABDUR REHMAN, FAISAL RAFIQ, BILAL HUSSAIN

ABSTRACT

Background: Epistaxis is the commonest otolaryngological emergency affecting up to 60% of the population in their lifetime, with 6% requiring medical attention. The cause may be local or systemic but in majority it is spontaneous and idiopathic.

Methods: This was a prospective descriptive study, designed to assess the aetiology and effectiveness of treatment modalities in epistaxis patients, in a tertiary care setting, from January 2013 to December 2014. A total of 120 patients underwent prospective evaluation by consultant and non-consultant doctors with considerable experience in ENT emergencies management.

Results: This study demonstrated a bimodal distribution with incidence peaks in below 20 years & above 45 years of age. Males were affected more than the females (1.7:1.00). Anterior nasal bleeding was noted in majority anterior epistaxis. While posterior bleeding was controlled by posterior nasal packing with Foley's catheter. The most common cause was found to be idiopathic, followed by trauma and hypertension.

Conclusion: It may be concluded from this study that epistaxis is a common ENT emergency, affecting all age groups. It has a bimodal age presentation and affects males more than females. Anterior bleeding is more common than posterior bleeding. Epistaxis may be controlled with chemical/electrocautery if the bleeding point is visible. In case of failure to localize or access a bleeding point or profuse bleeding, anterior nasal packing can effectively control majority of epistaxis. Foley's catheter is a good option that can be used for posterior nasal packing. Gelfoam may be used for controlling epistaxis in cases of bleeding disorders, when there is mucosal ooze.

Keywords: Epistaxis, etiology, treatment outcome, nasal packing, Foley's catheter.

INTRODUCTION

Bleeding from inside the nose is called epistaxis¹. Epistaxis is one of the commonest otorhinolaryngological emergencies^{2,3,4}. Epistaxis, whether spontaneous or otherwise, is experienced by up to 60% of people in their lifetime, with 6% requiring medical attention^{5,6,7}. It is thought to occur more frequently in males than in females.⁸ There is a bimodal distribution with peaks in children and young adults and the older adult (45–65 years). Anecdotal evidence suggests that certain stereotypical groups are more prone (for example, elderly women or young boys)⁵.

Epistaxis is normally classified into anterior or posterior. Anterior bleeding is common in younger age group while posterior bleeding is common in older age group^{9,10}. Anterior nosebleeds are observed in approximately 80% patients with epistaxis. They arise from an anastomosis called Kiesselbach's plexus in the lower portion of the anterior septum, called Little's area.^{3,8,11} Conservative

treatment methods are often sufficient for most patients with anterior epistaxis. These methods include local pressure, chemical cautery, and anterior nasal packing. Posterior bleeding originates primarily from the posterior septal nasal artery, a branch of the sphenopalatine artery, and tends to be more serious compared with anterior bleeding. Conservative methods are generally insufficient in such patients, who often require further treatment options that include posterior packing, arterial ligation, and embolization¹⁰.

Various local and systemic factors cause epistaxis. Common local factors include digital trauma, nasal septal deviation, neoplasia, inflammation, and chemical irritants, whereas coagulopathies, renal failure, alcoholism, and vascular abnormalities are common systemic factors^{10,12,13}. However most cases (80%–90%) are actually idiopathic³.

Most of the underlying causes of epistaxis are preventable. We must have a clear understanding of the causes, treatment and outcome of such patients so that we can establish preventive strategies as well as treatment guidelines. This study was conducted in our setting for this purpose so that we can identify the

Deptt. of ENT Nawaz Sharif Social Security Teaching Hospital, Multan Road Lahore

Correspondence to Dr. Abdur Rehman, Assistant Professor E-mail: abdurrehmanberyar@gmail.com Cell: 0300-4358054, H. No. 182-B Sector A, Askari 11 Bedian Road Lahore Cantt

etiology and determine the outcome of treatment of these patients.

MATERIAL AND METHODS

This prospective descriptive study was conducted in Nawaz Sharif Social Security Hospital (NSSSH) Lahore from January 2013 to December 2014. NSSSH is a tertiary care and teaching hospital for University College of Medicine, University of Lahore.

The study subjects included all patients who presented with epistaxis at NSSSH during the period under study. These patients were received through casualty, Out-patient department (OPD) and as referral from other departments. Those patients who died before the initial assessment were excluded. Initial assessment included haemodynamic status, type and severity of bleeding. In cases of mild bleed and stable patient history details were noted alongwith. In case of heavy bleed, history was taken after the bleeding was controlled. If there were signs of excessive blood loss and/or patient was in a state of shock, steps were taken to stabilize the patient simultaneously with control of epistaxis. Blood samples were taken and sent for base line haemoglobin estimation and blood grouping and cross matching when indicated. Other relevant investigations were ordered based on clinical suspicion regarding a particular aetiology. The diagnosis of epistaxis was based on clinical history, physical findings, laboratory and radiological investigations with endoscopic examination under anaesthesia of the nose, nasopharynx and biopsy. All patients were treated conservatively initially and surgical intervention was considered only when conservative means failed to control the epistaxis.

The data was collected using a pre-tested, structured proforma prepared for the purpose. Data collected included: patient’s demographics, cause of epistaxis, anatomical location of bleeding sites, management modalities, need for blood transfusion, complications and mortality.

RESULTS

A total number of 120 patients presented with epistaxis to our department during the period under study, their ages ranged between 2 and 75 years. Out of 120 patients, 56 patients (46.66%) were below 20 years, 24 patients (20%) were between 20-45 years of age and 40 patients (33.33%) were older than 45 years. This showed a bimodal presentation of epistaxis among the patients who presented to our department. There were 76 males (63.33%) and 44 females (36.66%) with a male to female ratio of 1.7:1. Anterior nasal bleeding occurred in 99(82.50%) and

posterior nasal bleeding occurred in 10(8.33%) patients. In 11 patients (9.16%), the bleeding site was not identified. The commonest cause of epistaxis was idiopathic (30%) followed by trauma (26.66%) and hypertension (18.33%) (Table 1). Deviated nasal septum was seen in 09 cases (7.5%) and 04 cases (3.33%) had associated bony spur.

Table 1 Causes of epistaxis

Aetiological factors	n	%age
Idiopathic	36	30.00
Trauma	32	26.66
Hypertension	22	18.33
Sinonasal infections(including deviated nasal septum)	15	12.50
Blood dyscrasia(including liver disease)	08	6.66
Sinonasal Tumours	03	2.50
Nasal Foreign body(including Maggots)/ Rhinolith	03	2.50
Drug induced	01	0.83

Non surgical measures were the main intervention methods in 91.66% of cases. Of this, observation alone without active intervention to arrest bleeding and anterior nasal packing were most common non-surgical measures accounting for 33.33% and 30% respectively. Surgical measures mainly septal surgery (03.33%) were carried out in 08.33% of cases (Table 2).

Table 2 Treatment modalities

Treatment modality	n	%age
Nonsurgical	110	91.66
Observation alone	40	33.33
Anterior nasal packing	36	30.00
Posterior nasal packing± Foley catheter balloon	06	05.00
Local cauterization	20	16.66
Gelfoam	08	06.66
Surgical	10	08.33
Surgical excision of bleeding intranasal tumor	03	02.50
Septal surgery	04	03.33
Removal of foreign body/ Rhinolith	03	02.50
Arterial ligation	00	00.00

DISCUSSION

Epistaxis is a reasonably common symptom encountered in our Otolaryngological experience. Epistaxis may affect all age groups. Same has been noted in our study as well with bimodal presentation, consistent with other studies.^{4,6} The higher prevalence in younger males is most probably related to more exposure to trauma on account of active involvement in out-door activities; sports, traveling and inter-personal violence. Whereas in the older (geriatric) patients, systemic factors such as hypertension, advanced age, and bleeding disorders are the most common causes of serious epistaxis^{3,12,13}. Vascular wall changes associated with

ageing, such as fibrosis of the arterial tunica media, have been implicated in the development of epistaxis. Therefore, elderly patients are at higher risk of epistaxis³. Systemic diseases like renal and hepatic pathologies and malignancies are also more common in this age group.

In the present study, epistaxis was found to affect more males than females, with a male to female ratio of 1.7:1. This male preponderance has been documented in literature,^{4,6, 7, 14} but, some researchers reported that there was no significant difference between male and female cases.¹⁵ Anterior nasal bleeding occurred in 82.50% of patients, while posterior bleeding occurred in 08.33% of cases in this series. In 11 patients (09.16%) the site could not be assessed. Gilyoma and Chalya have reported 88.5 % anterior bleeding and 7.7 % as posterior bleeding⁷, while Hussain G et al have reported 71.6% anterior bleeding and 28.35 % as posterior bleeding.⁴ These studies satisfy our findings that anterior bleeding is more common.

The present study showed that the most common cause of epistaxis was idiopathic followed by trauma and hypertension. This is consistent with other studies in developing countries that cite idiopathic cause as the commonest, followed by trauma^{6,8,14,16}. Whereas in other studies, trauma was the commonest cause^{4,7}. A committed search for the bleeder as well as a deliberate effort to find the cause of epistaxis is necessary, because too many cases of epistaxis are grouped as idiopathic or primary. In our study 30% of cases were idiopathic that is less than findings of Kodya AM et al⁶ who found 45.55% of cases as idiopathic. It may likely decrease with more resources/better equipment and careful examination. The male preponderance in this study may be attributed to high incidence of traumatic epistaxis(26.66% of cases) which tends to affect young males because of their frequent involvement in high risk taking behaviour. Young males are the most active in the population and so are more vulnerable to trauma from nose picking especially among children, fights, road traffic accident with maxillofacial injuries causing epistaxis.

In our study 18.33% of patients had hypertension without any other identifiable cause of epistaxis. The prevalence of hypertension in patients with epistaxis reportedly ranges from 24% to 64%.¹⁷ Bleeding was more severe among patients with hypertension however there is no causal relationship between hypertension and epistaxis. The role of hypertension in epistaxis is controversial, and the evidence available is insufficient to prove a significant association between hypertension and epistaxis. However, the control of epistaxis may be more difficult in patients with hypertension¹². Shaheen OH

has reported that it is not the hypertension that causes epistaxis, rather it is the atherosclerosis that results in decreased vascular response to haemostasis and these patients tend to bleed heavy and longer¹⁸.

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 modalities can be separated into two groups; nonsurgical/non-interventional/conservative and surgical/interventional approaches. Non-surgical approach has been reported to stop the bleeding in more than 80-90% of cases⁷

The first step in the treatment of acute epistaxis is identification of the bleeding point. In our study, 99 (82.50%) of the patients had anterior epistaxis. This incidence rate is compatible with the rates reported in the literature^{3,4,5,7}. After localization of the bleeding point, chemical cautery or electrocautery can be performed. Since cauterization of the bleeding point entails a good success rate and no complications it should therefore be the preferred modality of treatment where ever the bleeding site can be visualized. Rigid nasal endoscopy as part of the initial assessment in patients with epistaxis, with direct visualization and control of the bleeding point has been shown to be effective in the majority of patients, reducing the need for nasal packing¹⁹. Silver nitrate can be used as a chemical cauterization agent, especially for minor bleeding, with minimal discomfort. Cauterization should be one-sided in order to prevent septal perforation³. In our study group, 99(82.50%) patients had anterior epistaxis, 20(16.66%) of whom were successfully treated with silver nitrate cautery. In the case of cauterization failure, nasal packing must be considered as the next treatment option. Nasal packing has the advantage of easy placement and removal; there was no need for an anesthetist or theatre space for that treatment. It is also affordable to the patients. Many different types of packs are available, including absorbable, nonabsorbable, anterior, and posterior packs. Common absorbable materials used for anterior packing include oxidized cellulose (e.g., Surgicel) and gelatin foams (e.g. Gelfoam). All these absorbable products are easily used and cause minimal pain and discomfort. Various kinds of nonabsorbable packing materials are being used, including inflatable balloons, calcium alginate, polyvinyl alcohol (e.g., Merocel), and petroleum jelly- impregnated gauze. Anterior nasal packing with gauzed glove finger packing was the most frequent modality of treatment in our study. The major disadvantage of anterior packing with these materials is the need for removal of the material and the pain associated with

placement and removal. Complications caused by anterior packs include ulcerations, septal perforation, sinusitis, synechia, hypoxemia, and arrhythmias. Contrarily, Kurtaran et al. reported that nasal packing with airway tubes is not a cause for postoperative respiratory dysfunction and hypoxia.²⁰ None of the complications mentioned above were observed in this study due to adequate precautions such as technique of insertion of the pack, use of antibiotics. Approximately 10% of all nosebleeds arise from the posterior part of the nose.³ Posterior epistaxis is often encountered in elderly individuals. This condition may be associated with diseases such as hypertension and arterial degeneration.³ In our study group, 10 (08.33%) patients had posterior epistaxis. Posterior nasal packing was performed using a formal posterior pack made of ribbon gauze or balloon Foley catheters inserted in the nasopharynx via the nostrils and inflated with sterile water. However, posterior packing is associated with increased risk of mortality and morbidity. In some cases, traditional nasal packing fails to control the epistaxis. Angiographic embolization or endoscopic techniques for sphenopalatine artery ligation can be used for the control of intractable bleeding. In our study, all patients with epistaxis were treated using conventional methods. No further interventions such as embolization or sphenopalatine artery ligation were required. In this study, surgical treatment was done only in 10(8.33%) patients mainly septoplasty (03.33%) for septal spur resulting in recurrent nosebleed and it was successful in 100% of them. Twenty patients (16.66%) were hospitalized and 4 (3.33%) required a blood transfusion and this is comparable with findings of Yuksel A et al³ and of Kodiya AM et al⁶. We had no mortality in our study, similar to Kodiya AM et al⁶.

CONCLUSION

We concluded from our study that epistaxis is the common ENT emergency, affects all age groups and both sexes. Anterior bleeding is more common than posterior bleeding. Epistaxis can be controlled with chemical/electro-cautery if the bleeding point is visible and accessible. Anterior nasal packing with topical antibiotic soaked ribbon gauze can control majority of epistaxis. Foley's catheter is a good option that may be used for posterior nasal packing. Gel foam can be used for controlling epistaxis in cases of bleeding disorders with mucosal ooze. Although the bleeding can be arrested in most cases by means of sometimes rather drastic measures, the underlying cause of the bleeding still remains obscure in a great

many cases. Trauma resulting from road traffic accidents (RTA) remains the common etiological factor for epistaxis in our setting. Reducing the incidence of trauma from RTA will reduce the incidence of emergency epistaxis in our centre.

REFERENCES

1. Dhingra PL, Dhingra S. Epistaxis. In: Diseases of Ear, Nose and Throat. 5th edition. Elsevier:2010;189-93.
2. Chhapola S, Matta I, Marker P. Comparison of blind nasal packing vs endoscopic control of epistaxis in an emergency setting. *International Journal of Head and Neck Surgery*. 2011; 2(2):79-82.
3. Yuksel A, Kurtaran H, Kankiliç ES, Ark N, Uğur KS, Gündüz M. Epistaxis in geriatric patients. *Turk J Med Sci* 2014; 44: 133.
4. Hussain G, Iqbal M, Shah SA, Said M et al. Evaluation of aetiology and efficacy of management protocol of epistaxis. *J Ayub Med Coll Abbottabad* 2006; 18(4): 62-65
5. Pope LER, Hobbs CGL. Epistaxis: an update on current management. *Postgrad Med J* 2005, 81:309-314.
6. Kodiya AM, Labaran AS, Musa E, Mohammed GM, Ahmad BM. Epistaxis in Kaduna, Nigeria: a review of 101 cases. *African Health Sciences* 2012; (4): 479 – 482
7. Gilyoma JM and 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 and Throat Disorders* 2011 11:8.
8. Varshney S, Saxena RK: Epistaxis: a retrospective clinical study. *Indian Journal of Otolaryngology, Head Neck Surgery* 2005, 57:125-129.
9. Salih AA, Majeed EA. Relation between Epistaxis and Hematological- Disorders. *Tikrit Medical Journal* 2012;18(2):143-149.
10. Kucik CJ, Clenney T. Management of epistaxis. *Am Fam Physician* 2005;71(2):305-11
11. Al- Ubaidy KK, Mahdi RK, Kadem H. The Association of Migraine And Recurrent Epistaxis In Adults. *Kufa Med. Journal* 2008;11(1): 391-398
12. Gifford TO, Orlandi RR. Epistaxis. *Otolaryngol Clin N Am* 2008; 41: 525–536.
13. Genç S, Kürkçüoğlu ŞS, Karabulut H, Acar B, Tunçel Ü, Değirli S. Giant lobular capillary hemangioma of the nasal septum. *Turk J Med Sci* 2009; 39: 325–328.
14. Hussain T. Effectiveness of Local Haemostatic Agents in Epistaxis. *Int J Head Neck Surg* 2014; 5(1):1-5.
15. Ahmed A, Woolford T J. Endoscopic bipolar diathermy in the management of epistaxis: an effective and cost-efficient treatment. *Clin. Otolaryngol* 2003; 28(3): 273-5
16. Mgbor NC: Epistaxis in Enugu: A 9 year Review. *Nig J of otolaryngology* 2004, 1(2):11-14.
17. Herkner H, Havel C, Müllner M, Gamper G, Bur A, Temmel AF, Laggner AN, Hirschl MM. Active epistaxis at ED presentation is associated with arterial hypertension. *Am J Emerg Med* 2002; 20: 92–95.
18. Shaheen OH. Epistaxis in Scott Brown's Otolaryngology. 5th edn, vol 4, I.S. Mackay and T.R. Bull (eds), Butterworths London 1987: 272-282.
19. 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.
20. Kurtaran H, Ark N, Sadıkoğlu F, Uğur KŞ, Yılmaz T, Yıldırım Z, Aktaş D. The effect of anterior nasal packing with airway tubes on pulmonary function following septoplasty. *Turk J Med Sci* 2009; 39: 537–540.