

RESEARCH ARTICLE

Effectiveness of Local Hemostatic Agents in Epistaxis

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ABSTRACT

Background: Epistaxis is the commonest otorhinolaryngological emergency affecting up to 60% of the population in their lifetime with 6% requiring medical attention.

Objective: The aim of this study was to find out the epidemiological profile of epistaxis in our area and to find out the effectiveness of various available eight treatment options.

Materials and methods: This study was conducted to describe the etiological profile and treatment outcome of epistaxis. This was a prospective study of the cases of epistaxis from July 2012 to May 2013. Till date, the data regarding the management of epistaxis in our setting was not available. The purpose was to evaluate the clinical and management options for epistaxis in our settings.

Results: A total of 100 patients with epistaxis were studied. Males were affected twice more than the females (2.6:1). Their mean age was 48.63 years (4-82 years). The commonest cause of epistaxis was idiopathic (33%) followed by trauma (21%) and hypertension (18%). Nonsurgical measures, such as light packing with cotton gauze soaked with local hemostatic (hemocoagulase) and antiseptic/antibiotic (36%), silver nitrate cauterization 20 (16%) and anterior nasal packing (15%) and observation alone (11%) were the main intervention methods in 78% of cases. Surgical measures mainly intranasal tumor resection was carried out in 3% of cases.

Conclusion: The most common etiological factor for epistaxis is idiopathic. Most cases were successfully managed with conservative treatment alone and surgical intervention may not be necessary in most cases and should be the last resort.

Keywords: Epistaxis, Hemocoagulase, Idiopathic, Silver nitrate.

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INTRODUCTION

Epistaxis or nasal bleeding is recognized as one of the most common otorhinolaryngological emergencies worldwide and presents a challenge in resource-poor centers where facilities for caring of these patients are limited. Epistaxis is a problem frequently encountered in general practice and may present as an emergency, as a chronic problem of recurrent bleeds

or may be a symptom of a generalized disorder. It affects the hemodynamic status as well as the psychological aspects of the patient and the accompanying attendants causing significant anxiety. Epistaxis is estimated to occur in 60% of persons worldwide during their lifetime, and approximately 6% of those with nose bleeds seek medical treatment.¹ The prevalence increases for children less than 10 years of age and then rises again after the age of 40 years.¹ Generally, males are affected more than females until the age of 50, but after 50 no deference between sexes as reported.^{1,2,4,5,7} Epistaxis is commonly divided into anterior and posterior epistaxis, depending on the site of origin.¹ Anterior nose bleeds arise from damage to Kiesselbach's plexus on the lower portion of the anterior nasal septum, known as the Little's area whereas posterior nose bleeds arise from damage to the posterior nasal septal artery.^{4,6} Anterior epistaxis is far more common than posterior epistaxis, accounting for more than 80% of cases.^{4,6,7}

The etiology of epistaxis can be broadly divided into the local or systemic causes, although even this distinction is difficult to make and the term 'idiopathic epistaxis' is ultimately used in about 80 to 90% of the cases.^{4,8} The etiological profile of epistaxis has been reported to vary with age and anatomical location.¹⁻⁸ Traumatic epistaxis is more common in younger individuals (under age 35 years) and is most often due to digital trauma, facial injury, or a foreign body in the nasal cavity.¹⁻⁸ Nontraumatic epistaxis is more characteristic of older patients (over age 50 years) and may be due to organ failure, neoplastic conditions, inflammation or environmental factors (temperature, humidity, altitude).¹⁻⁸ Epistaxis that occurs in children younger than 10 years usually is mild and originates in the anterior nose, whereas epistaxis that occurs in individuals older than 50 years is more likely to be severe and to originate posteriorly.⁹ Epistaxis poses a greater risk in elderly people in whom clinical deterioration may progress rapidly, if the blood loss is significant.⁷

The treatment of epistaxis requires a systematic and methodical approach, and options vary according to the cause, location and severity of the hemorrhage.^{4,6,7,9} Both conservative and surgical treatment modalities have been used in the treatment of epistaxis.^{2,6} However, their outcome has never been evaluated in our setting partly because of paucity of local data. Most of the underlying causes of epistaxis are preventable.¹⁻⁹ A clearer understanding of the

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causes, treatment and outcome of these patients is essential for establishment of preventive strategies as well as treatment guidelines.^{1,7,8} Such data is lacking in our settings as there is no local study which has been done on the subject. This study was conducted to identify the etiological profile and to determine the outcome of treatment of these patients. The results of this study will provide basis for planning of preventive strategies and establishment of treatment guidelines.

MATERIALS AND METHODS

This was a prospective study of patients who presented with epistaxis at SMHS Hospital, from December 2011 to December 2012.

The study subjects included all patients who presented with epistaxis at SMHS Hospital during the period under study. These patients were received either directly in Department of ENT or as referral from other departments. Initial assessment included hemodynamic status, type and severity of bleeding. 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. Resuscitation was carried out according to Advanced Trauma Life Support (ATLS) principles. After resuscitation all patients underwent a detailed history taking and a through general examination, systemic examination and examination of the nose, throat and ears with special emphasis to identify the site of bleeding. The patients were subjected to investigations of hematological parameters and radiological evaluation. Blood samples were taken and sent for base line hemoglobin estimation and blood grouping and cross matching when indicated. Other relevant investigations were ordered based on clinical suspicion regarding a particular etiology. The diagnosis of epistaxis was based on clinical history, physical findings, laboratory and radiological investigations with examination under anesthesia of the nose and nasopharynx; and biopsy was taken wherever necessary. All patients were treated conservatively initially and surgical intervention was considered only when conservative means failed to control the epistaxis. Conservative (nonsurgical) treatment included light packing with gauze soaked with hemostatic agent and antiseptic\antibiotic ointment, cauterization of the bleeding site using silver nitrate cauterization, electrocautery, anterior nasal packing and posterior nasal packing. Surgical treatment included resection of intranasal tumors. Arterial ligation and endovascular embolization were not performed as there were no patients with intractable epistaxis. Successful treatment was defined as no recurrent epistaxis following pack removal or no readmission with epistaxis within 24 hours of hospital discharge.

Data Collection, Management and Statistical Analysis

The data was collected using a pretested, 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, and length of hospital stay, complications and mortality. In descriptive analysis, the mean and standard deviation of continuous variables and percentages of categorical variables were computed.

ETHICAL CONSIDERATION

Ethical approval to conduct the study was sought from the institutional ethic review committee before the commencement of the study.

RESULTS

During the period under study, a total of 100 patients were studied. Seventy-seven (77%) patients presented directly in department of ENT and 23 (23%) were referred from other departments and hospitals. There were 75 males (75%) and 25 females (25%) with a male to female ratio of 2.6:1. Their ages ranged between 5 and 71 years (mean 48.63 years). The modal age group was 41 to 50 years (Table 1). The commonest cause of epistaxis was idiopathic (33%) followed by trauma (21%) and hypertension (18%) (Table 2).

Nonsurgical measures were the main intervention methods in 88% of cases. Of this, light packing with cotton gauze soaked with local hemostatic (hemocoagulase) and antiseptic/antibiotic, local silver nitrate cauterization, observation alone without active intervention to arrest bleeding and anterior nasal packing were most common nonsurgical measures accounting for 36 and 16, 11 and 15% respectively. Surgical measures mainly tumor resection was carried out in 3% of cases (Table 3). According to the bleeding site, 88 patients (88%) had anterior nasal bleeding, 12 (12%) had posterior bleeding. The right nasal cavity 58 (58%) was more affected than the left 32 (32%). Bilateral involvement

Table 1: Age distribution

Age groups (yrs)	No. of patients	Age (%)
0-10	5	5
11-20	15	15
21-30	10	10
31-40	7	7
41-50	34	34
51-60	19	19
61-70	7	7
71-80	3	3



was recorded in 10 (10%) of cases (Table 4). Blood transfusion was required in five (5%) of cases. The overall success rate of treatment was 92.0%. Success rates for various treatment modalities are shown in (Table 5). Prophylactic broad spectrum antibiotics were prescribed in all patients who had nasal packing, local cauterization and those who underwent surgical resection of intranasal tumors. The majority of patients 55 (55%) were admitted in the ENT wards and the remaining 45 (45%) were treated as outpatients. Three (3%) patients among the inpatients had severe head injuries and were referred to neurosurgery. Most of inpatients were discharged between 1 and 4 days after treatment. The majority of patients (90%) had good recovery.

DISCUSSION

In this review, epistaxis was found to be more prevalent in patients older than 40 years, which is in agreement of

Varshney and Saxena¹ who reported most of their patients to be older than 40 years which correlates with other reports, which showed that epistaxis is a geriatric problem and with Eziyi et al.⁵ In the present study, epistaxis was found to affect more males than females, with a male to female ratio of 2.6:1. This male preponderance has been documented in literature. Globally, there is a male preponderance in epistaxis except in the geriatric age group in some reports where no significant sex difference exists. The male preponderance in this study may be attributed to high incidence of traumatic epistaxis which tends to affect young males because of their frequent involvement in high-risk taking behavior. 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.

The present study shows that the most common cause of epistaxis was idiopathic causes followed by trauma and hypertension, which is consistent with other studies in developing countries.^{1,3,7,8} Trauma being the second most common cause.⁶ This trauma varied from minor injury such as digital trauma to varying degrees of nasal injury from road traffic injury. Hypertension being the third commonest cause in this report shows epistaxis as evidence of poor blood pressure control. This is in keeping with an earlier report from Nigeria of some patients who had epistaxis when their hypertension was not controlled due to cessation of anti-hypertensive drug therapy.¹² Varsney and Saxena¹ in India recorded hypertension as the second commonest cause of epistaxis after idiopathic causes while Chaiyasate et al in Thailand reported hypertension to be the commonest cause of epistaxis followed by idiopathic causes so does Mgbor.⁷ The need for regular blood pressure check and compliance to antihypertensive medications must be emphasized.

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. Dealing with a patient with active severe epistaxis can be bloody. The authors recommend universal precautions for all health care personnel involved in the care of these patients, including face mask with shields, gowns, hair coverage and double-gloving. The key to controlling most epistaxis is to find the site of the bleeding and cauterizing with silver nitrate or bipolar diathermy.⁴ The goal of treatment include: hemostasis, short hospital stay, low complication and cost effectiveness of the method of therapy. Controversy exists concerning the treatment that will best accomplish these goals. Treatment modalities can be separated into two groups; nonsurgical/conservative and surgical/interventional approaches. Nonsurgical approach has been reported to stop

Table 2: Causes of epistaxis

Causes of epistaxis	Frequency	Age (%)
Idiopathic	33	33
Trauma	21	21
Rhinitis (inflammatory)	14	14
Hypertension/atherosclerosis	18	18
Tumors	3	3
Iatrogenic	2	2
Foreign body	4	4
Blood dyscrasias (Glanzmann's thrombasthenia/hemophilia A)	2	2
Congenital heart disease (TOF)	1	1
Pregnancy	3	3

Table 3: Treatment modalities

Treatment modalities	No. of patients	Age (%)
Observation	11	11
Light packing with gauze (antiseptic/antibiotic/local hemostatic)	36	36
Local trichloroacetic acid (TCA) cautery	16	16
Anterior nasal packing	15	15
Posterior nasal packing	3	3
Endoscopic cautery	5	5
Surgical intervention	0	0
Combined procedures	14	14

Table 4: Bleeding sites

Sites of bleeding	No. of patients	Age (%)
Septum (ant/post) (40/16)%	56	56
Lateral wall (inf. turbinate/middle turbinate/middle meatus) (9/11/1)%	12	12
Floor (ant/post) (28/4)%	32	32

Table 5: Success rates for various treatment modalities

Treatment modality	Number of patients	Number of patients treated successfully	Success rate (%)
Light packing with hemostatic/antiseptic/antibiotic ointment	36	28	77.77
Anterior nasal packing	15	13	86.66
Posterior nasal packing	3	3	100
Local TCA cauterization	16	10	62
Surgical resection of bleeding nasal tumor	0	0	0
Endoscopic electrocautery	5	5	100

the bleeding in more than 80 to 90% of cases.³ Of this, light packing with cotton gauze soaked with local hemostatic and antiseptic/antibiotic¹³ was most commonly used method. This form of treatment has not been extensively reported as an effective treatment, although we found in our study that it should be the first line of treatment following nose blowing/pinching keeping in view the discomfort, pain, infective complications and synechiae associated with ANP and many patients refusing the procedure in view of excessive pain. The few patients that had posterior nasal packing were mainly patients with hypertension. Posterior nasal packing was performed using gauze or balloon Foley catheters inserted in the nasopharynx via the nostrils and inflated with sterile water. Anterior nasal packing was used in 15% of patients and was successful in 86.66% of them, while posterior nasal packing was successful in 100% of the cases where it was tried. Urvashi et al⁴ reported successful use of anterior nasal packing in 83.5% case while posterior nasal pack was successful in 95.6% of cases. Nasal packing has the advantage of easy placement and removal; there was no need for an anesthesiologist or theater space for that treatment. It is also affordable to the patients. Complications of nasal packing include septal hematoma, sinusitis and syncope during insertion of nasal pack, pressure necrosis of the alae nasi, toxic shock syndrome. Most of our patients did not suffer this due to adequate precautions, such as technique of insertion of the pack, use of antibiotics and nasal decongestant were administered as some of the adjunct treatment to forestall this. The authors recommend use of prophylactic systemic antibiotics and nasal packing with antibiotic soaked gauze to minimize this complication (see Table 5).

Cautery of the bleeding site can be performed chemically, electrically. Cauterization with laser or chemical (silver nitrate) was not used in our study because of their high costs and lack of availability. Cauterization in the form of electrical cautery was carried out for a group of patients where the bleeding points could be identified during examination. Electrical cauterization was used successfully in 100% of cases. This figure was higher than that reported by Urvashi et al⁴ in India. Nemer and Mottassim³ in Jordan reported a success rate of 74.0% which is lower than that of ours.

We did not encounter any postcautery complications, such as septal perforation or cartilage exposure. 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 packing.

In this study, surgical treatment was done only in 3% of patients who presented with bleeding intranasal tumor and it was successful in 100% of them. Similar finding was also reported in studies.^{6,7} No surgical ligation of any vessel or endovascular embolization was carried out on any patient in this study. Arterial ligation and embolization of feeding vessels are the last resort for intractable epistaxis.

The rate of blood transfusion for epistaxis has been reported in literature to range between 6.92 and 15.1% which is greater than our blood transfusion rate in our study. This high rate of blood transfusion is probably due to severe acute blood loss from the trauma sustained. The use of antimicrobial prophylaxis in the presence of nasal packing for the treatment epistaxis remains controversial.¹⁰ Most of literatures recommend that patients with high-risk nasal packing should be started on prophylactic antibiotics, due to an increased risk for sinusitis and toxic shock syndrome. Blood soaked pack and raw mucosal surface are good media for bacterial multiplication resulting in infection including sinusitis and sometimes toxic shock syndromes.¹¹

The mean length of hospital stay in our study was 2 days which is shorter than that reported by other authors.^{5,3} Patients who underwent local cauterization were found to have significant shorter LOS compared to those with anterior nasal packing. Those requiring posterior nasal packing remained in hospital for an average of 6 days which is higher compared to those with local cauterization or anterior nasal packing. From our observations of average hospital stay with different treatment modalities, we are able to infer that cauterization of the bleeding point reduces hospital stay as compared to anterior nasal packing. However, the difference was not significant comparing anterior nasal packing and

posterior nasal packing. Availability of nasal endoscopes which offers both proper visualization and direct facility for endoscopic cauterization to the area that is not easily accessible may have been able to further reduce the hospital stay and the discomfort of postnasal packing.

LIMITATIONS

Currently used methods for the treatment of epistaxis, like anterior nasal packing and posterior nasal packing, are very painful and a source of great discomfort to patients and are used very frequently even in cases of minor bleed. Use of conservative measures, local hemostatic agents and direct visualization of bleeder followed by cautery should be the treatment of choice in case of nose bleed.

CONCLUSION

Most cases were successfully managed with conservative (nonsurgical) treatment alone, such as light packing with hemostatic/antiseptic/antibiotic ointment, nasal packing and local cauterization. Nonsurgical treatment is still useful to arrest nasal bleeding and it is safe and cost-effective, and surgical intervention should be the last resort. Light packing with hemostatic/antiseptic/antibiotic ointment should be tried in all patients, especially where facilities of nasal endoscopy, silver nitrate cautery are not available on OPD basis. Hemostatic used, in our study, was hemocoagulase (Botroclot).

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