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Epistaxis: etiological profile and treatment outcome in a teaching hospital in South India

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ABSTRACT

Background: Epistaxis is the most common otorhinolaryngological emergency worldwide. Minor bleeding episodes occur more frequently in children and adolescents, whereas severe bleed requiring otolaryngologic intervention often occur in older individuals. 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 study done in 131 patients with epistaxis, in the Department of ENT, Government Medical College, Trivandrum, with the aim to determine the etiology and the outcome of the conservative and surgical management.
Results: The most common causes of epistaxis were trauma and hypertension. The age incidence increased after forty years and majority had unilateral, anterior nasal, mild-moderate bleed. 79% of the cases were managed by conservative measures as opposed to only 21% who required surgical intervention. Success rate of anterior nasal pack and cauterisation of bleeding point was nearly 84%.
Conclusions: Majority of cases of epistaxis can be successfully managed by conservative measures and surgical intervention may not be necessary in most cases. Cauterization of bleeding point is the best conservative method which can be offered to the patient though anterior nasal packing still remains the most preferred method to control the bleed. The most common causes of epistaxis being trauma and hypertension, reducing road traffic accidents and lifestyle illness can reduce the incidence of nasal bleed.

Keywords: Epistaxis, Etiology, Treatment outcome

INTRODUCTION

Epistaxis is the most common otorhinolaryngological emergency worldwide. About 60% of people have a nosebleed at some point in their lifetime and 10% of it are serious.[1]It is derived from the word 'Epistazo', where 'EPI' means 'above' and 'stazo' means 'to fall in drops'.[2] Though most nose bleeds resolve spontaneously, it is still an uncomfortable experience upsetting the patient. Minor bleeding episodes occur more frequently in children and adolescents, whereas severe bleeds requiring otorhinolaryngologic intervention often occur in individuals older than 50 years.

Epistaxis can be primary (no causal factors) or secondary (trauma, hypertension, bleeding disorder, etc.). As our understanding of etiology advances, the number of cases of true primary epistaxis decreases. Based on the patterns of presentation, nasal bleeding can be broadly classified as either anterior or posterior. 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. Bleeding is profuse in posterior epistaxis, because of larger vessels in that location (usually sphenopalatine artery). In general posterior epistaxis occurs in older patients who have fragile vessels because of hypertension, atherosclerosis or coagulopathies.

The management of epistaxis starts with resuscitative measures in conjunction with assessment by history taking and clinical examination. Both conservative and surgical modalities have been used in treatment of epistaxis. Conservative management includes cauterization of bleeding site, anterior nasal packing (ANP) and posterior nasal packing. Surgical approaches includes arterial ligation techniques (endoscopic sphenopalatine artery ligation, maxillary artery ligation, external carotid artery ligation, anterior/posterior ethmoid artery ligation), nasal septal surgery (septoplasty or SMR), arterial embolization etc.[3]

Aim of the study

The aim of the study was to determine the etiology and the outcome of the conservative and surgical management of epistaxis.

METHODS

This is a prospective study done in patients who presented with nasal bleeding, in the Department of ENT, Government Medical College, Trivandrum, during a period of one year from 21st March 2012 to 20th March 2013. Patients of both sexes and all age groups, presenting with epistaxis, received through casualty and outpatient department, were included in this study. Patients who were not willing for study and patients with life threatening emergencies (i.e. myocardial infarction etc.) were excluded from the study.

As soon as the patient presented to the hospital, priority was given to arrest the bleeding and to improve the general condition of the patient. Suction of the nasal cavity and nasal endoscopy (if possible) was done to localise the site of bleeding. If the bleeding site could be located, it was cauterized; while if the site was not localised and the patient presented with anterior epistaxis, anterior nasal packing was done with vaseline ribbon gauze or merocel packs. In cases of continued bleeding or posterior epistaxis or both, post nasal packing with Foley's catheter was done.

Once the bleeding was controlled, detailed clinical history and examination, and necessary investigations were carried out as per the proforma prepared, which also included the patient's demographics, cause of epistaxis, anatomical location of bleeding sites, management modalities and complications. To assess the severity of epistaxis, blood loss was graded as Minimal (blood loss less than 50 cc and Hb is normal), Moderate (blood loss is more than 51 cc but not more than 100 cc and Hb is less than normal but not less than 10 mg%.), and severe (blood loss more than 100 cc and Hb less than 10 mg%).

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, septal spurectomy, surgical excision of tumours and/or endoscopic sphenopalatine artery coagulation.

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 131 patients, 37 females and 94 males, were included in the study with the age varying from 5 yrs to 91 years. The age incidence increased after forty years, with the maximum number of cases in the age group 40-50 years and above 60 years (Table 1).

Table 1: Age distribution.

Age in years	Frequency	Percentage (%)
0-10	13	9.9
11-20	8	6.1
21-30	7	5.3
31-40	11	8.4
41-50	31	23.7
51-60	30	22.9
>60	31	23.7
Total	131	100.0

Clinical features

Severe blood loss was seen in only in 14 cases (10.7%), while in majority the blood loss was minimal [64 cases (49%)]. Most of the cases (80.9%) had intermittent bleed, but 25 patients (19.1%) came with a single episode of nasal bleed. The epistaxis was mostly unilateral (65.6%) than bilateral (34.4%). The common associated clinical features in these patients were nasal obstruction (42%), headache (40.5%), nasal pain (25.2%), nasal discharge (18.3%), nasal mass (15.3%) and deviated nasal septum (25.2%). Majority of patients (71.8%) had anterior nasal bleeding, while 16% had postnasal bleed and both anterior nasal and postnasal in 12.2%.

Etiology

In our study the etiology of epistaxis were varied (Table 2). The local causes included trauma, neoplasms, infection, idiopathic and others (e.g. rhinosporidiosis). The general causes were hypertension, bleeding disorders

and chronic liver disease. The causes for epistaxis in the 1st and 2nd decades were mainly trauma, infection and septal abnormalities. Hypertension, trauma and neoplasms accounted for the majority of cases from 4th decade onwards. Regarding social habits 43 cases were smokers and 54 cases were alcoholic.

Table 2: Etiological distribution.

		Frequency	%
Trauma	RTA	35	26.7
	Assault	7	5.3
	Self fall	5	3.8
Infection	Sinusitis	6	4.6
	AFRS	4	3.1
Neoplasm	Inverted papiloma	2	1.5
	Haemangioma	2	1.5
	JNA	4	3.1
	Ca Maxilla	1	0.8
	Olfactory neuroblastoma	1	0.8
Others	Rhinosporidiosis	7	5.3
Idiopathic		17	13.0
Hyper tension		37	28.2
Bleeding disorders		1	0.8
Chronic liver disease		2	1.5
Total		131	100.0

Treatment

In this study, the treatment options of epistaxis were divided into non-surgical and surgical methods. 78.6% of the cases were managed by non-surgical measures as opposed to only 21.4% who required surgical intervention. Only 8 cases (6.1%) required blood transfusion. Successful treatment was defined as no recurrent epistaxis following pack removal or no readmission with epistaxis within 24 hours of discharge from hospital. Failure of treatment was defined as persistent epistaxis even after packing for 24–48 hrs, or readmission with epistaxis within 24 hrs of hospital discharge

Out of 131 patients, 12 were successfully treated medically with local and systemic decongestants, antibiotics and analgesics. Hypertensive patients were managed with anti hypertensives. Appropriate medical treatment was given to the cases with bleeding disorders. If the bleeding point was visualised, it was cauterized with chemical or electrocautery. Chemical cauterization was successful in controlling bleed in 16 patients and electrocauterisation in 15 patients. If the bleeding point was not visualized and bleeding persisted, then the nose was packed with antibiotic ointment coated gauze or Merocel pack (anterior nasal packing). This was successfully done in 54 patients. The pack was kept in situ for 24 to 48 hours. In cases of continued bleeding or posterior epistaxis or both, post nasal packing was done with Foley's catheter and kept for 48-72 hours. 5 cases needed post nasal packing. One case of maxillary carcinoma-post treatment recurrence with intractable bleed was referred for haemostatic radiotherapy.

Table 3: Treatment- conservative methods.

Conservative method		No. of patients
Medical treatment		12
Cauterisation	Chemical cauterisation (Phenol)	16
	Electro cauterisation	15
Anterior nasal packing	Gauze	51
	Merocel	3
Posterior nasal packing		5
Referred for radiotherapy		`1
Total		103

Table 4: Treatment– surgical methods.

Surgical treatment	No. of patients
JNA excision	4
Haemangioma excision	2
ESS	9
Rhinosporidium excision	7
Inverted papilloma excision	2
Nasal Bone Reduction	2
ESPAC	2
Total	28

Two patients with refractory bleed despite conservative therapy, underwent endoscopic sphenopalatine artery coagulation for control of epistaxis. In two cases of bleeding septal polyps, the polyps were excised and the base cauterised with electrocautery. Two cases of nasal bone fracture, bleeding not controlled with nasal packing, were treated with fracture reduction. 4 cases of juvenile nasopharyngeal angiofibroma, and 2 cases of inverted papilloma presented with epistaxis, were treated with excision. Functional endoscopic sinus surgery was done in 9 cases of rhinosinusitis and allergic fungal rhinosinusitis. In rhinosporidiosis (7 cases), the mass was excised and the base cauterized with electrocautery (Table 3 and 4).

Treatment outcome

The outcome of conservative treatments is shown in Figure 1. Anterior nasal packing was done in a total of 64 (46.6%) patients and was successful in 54 (84.5%) of them. Of the rest 10 patients to control bleed despite anterior nasal packing, 2 cases underwent PNP (one case of hypertension and one case of trauma), nasal bone reduction was done for 2 cases (nasal bone fracture), 3 cases underwent electro-cauterization (one case of hypertension and two cases of trauma), and 1 case underwent surgical treatment- ESPAC (cause-idiopathic). The success rate of posterior nasal packing was 100%

(5/5). All cases treated with surgical treatment were successful apart from treating the underlying pathology causing epistaxis (Table 5).

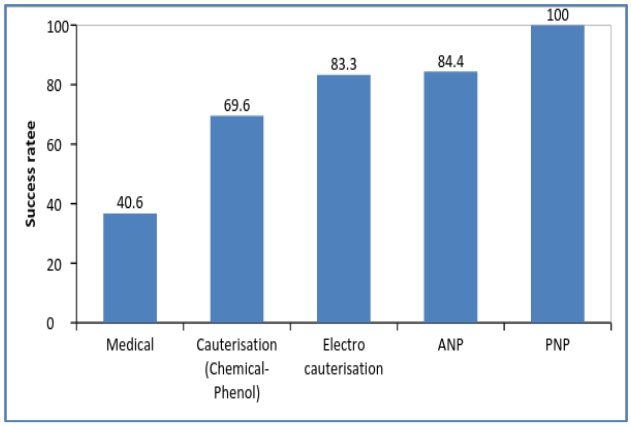

Figure 1: The outcome of conservative treatments.

Recurrence

Among the patients who were treated conservatively, 10%. (10 cases out of 103) reported to have at least one episode of epistaxis (3 after medical treatment, 3 after chemical cauterization, 2 cases after ANP and 2 after electrocauterisation. None of the patients reported to hospital for recurrence, as the bleeding was minimal.

Duration of hospitalization

118 patients (90.1%) required hospitalization and the average duration of stay was 6.5 (±1.1) days. On an average, patients undergoing cauterization of the bleeding site required hospitalization for 2.5 (±1) days compared to those cases where ANP was needed who had an indoor stay of 6.5 (±1.1) days. Those requiring PNP remained in hospital for an average of 9.6 (±1.52) days. The patients who underwent surgery recorded an average duration of hospitalization of 6.93 (±2.32) days (Table 6).

Table 5: The outcome of surgical treatments.

Surgical treatment	Tried	Success	Success rate (%)
JNA excision	4	4	100
Haemangioma excision	2	2	100
FESS	9	9	100
Rhinosporidium excision	7	7	100
Inverted papilloma excision	2	2	100
Nasal bone reduction	2	2	100
ESPAC	2	2	100
Total	28	28	100

Table 6: Average duration of hospitalization.

	Duration of hospitalization	Mean duration in days
Conservative	Medical treatment	1
	Chemical cauterisation	1
	Electro cauterisation	2.5
	ANP	6.5
	PNP	9.6
Surgical treatment	JNA excision	12
	Haemangioma exision	4.5
	ESS	5.89
	Rhinosporidium excision	5.86
	Lateral rhinotomy	7
	Nasal bone reduction	6.5
	ESPAC	8

Complications of treatment

Complications noticed in each modality of treatment are shown in Table 7. Complication rate was more in surgically treated patients. Pain was the main complaint in majority (51 patients). Temporary staining of vestibule, synechiae and acute otitis media were the other complictions. There were no complications in the form of toxic shock syndrome, hypoxia or hypovolemia. No mortality due to epistaxis per se was encountered in the present study.

Table 7: Complications of treatment.

Treatment method	Pain	Temporary staining of vestibule	Synechiae	Acute otitismedia	Total patients	% of complication
Medical treatment		4	-	-	13	30.7
Chemical cautery	6	4	-	-	16	37.5
Electro cautery	5	2	-	-	15	33.3
Anterior packing	22	-	5	-	54	42.6
Posterior packing	3	-	2	1	5	60
Surgery	20		5		28	78.5

DISCUSSION

Epistaxis is a common clinical condition that ranges from a minor nuisance to a life threatening emergency. In the present study epistaxis was found more common in males, with a male to female ratio of 2.5:1. The higher incidence in males may be due to as their increased exposure to trauma, assault and other injuries. Also in premenopausal women oestrogen may have a protective effect on nasal mucosal musculature.

The age of incidence was high in patients from fourth decade onwards with 70.2% cases belonging to this category, as majority of patients in this age group were having hypertension, ischemic heart disease and altered coagulation profile due to use of antiplatelet drugs. The demographic profile in the present study is comparable to previous studies.[4-8]

In our study commonest etiological factor was trauma (35.8%), followed by the hypertension (28.2%), infection (7.7%) and neoplasms (7.7%). In 13% of patients no definite cause could be identified (idiopathic). Trauma and infection being the most common etiology in young adults, and trauma & hypertension 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.[4,9] The high incidence of traumatic epistaxis in our study can be explained on account of higher accident rate due to increase in the number of vehicles and bad roads, and also increase in number of assault cases. Reducing the incidence of trauma from RTA will reduce the incidence of epistaxis in our centre.

The other major cause of epistaxis was 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, pointing to the rise in lifestyle diseases in the community.[4,5,10] Life-style modification can reduce the development of related illness like hypertension, coronary artery disorders etc. which in turn will reduce epistaxis associated with it.

In the present study 43 cases (32.8%) were smokers and 54 cases (41.2%) were alcoholic. Regular alcohol consumption reduces platelet aggregation and prolongs the bleeding time; these effects, coupled with haemodynamic changes such as vasodilatation and changes in blood pressure, may be important in causing some cases of arterial nose bleeds in adults.[11] The rising trend of alcohol intake by people in this region (Kerala) should be viewed with caution, and a detailed history of alcohol intake should be made before labelling epistaxis as idiopathic. Proper health education for a healthy life style can definitely reduce the incidence of epistaxis also.

In symptomatology, most of the cases in our study presented with minimal (49%) or moderate (40%) blood loss. Only 10.7% cases presented with a complain of severe bleed. Anterior epistaxis was more common than posterior bleeds (72% vs. 16%) and unilateral more common than bilateral (65.6% vs. 34.4%). Symptomatology in the present study is comparable to previous studies.[4-7] The rate of blood transfusion for epistaxis has been reported in literature to range between 6.92-15.1% which is similar to the blood transfusion rate in this study (6.1%).

The selection of the adequate treatment option for the patient with epistaxis must consider three parameters: efficiency, complications, and cost-benefit. This study supports credibility of conservative treatment procedures in control of epistaxis. Our study revealed that majority of epistaxis were anterior and not life threatening and can be treated conservatively. In this study, 78.6% of the patients were managed by conservative measures. This is in accordance with previously published studies by Phillip et al (83%) and Arshad et al (81.66%).[6,7] On analyzing the outcome of various treatment modalities, success rate was 100% for surgical treatment and post nasal packing, 83.3% for electro cautery and 84.4% for anterior nasal packing.

Anterior nasal packing with ribbon gauze can control majority of epistaxis. In our study it was employed for 41.2% of patients with a success rate of 84.4%. ANP is still a common method employed to control epistaxis as it is very effective and easily available at every emergency room. It is also cost-effective. The main inconvenience of packing is the discomfort to the patient. The primary care physician should be properly trained to perform this, which in turn can reduce morbidity and mortality associated with epistaxis.

Cauterization of bleeding point is the best conservative method which can be offered to the patient in terms of efficacy, patient comfort, less hospital stay and cost. Cauterisation can be performed chemically, electrically or with laser. Though is the best option, it requires skill and appropriate facilities like suction-cautery, endoscope etc., which may not be always available in an emergency setting. In their study on 418 patients, Vis et al could identify the bleeding site in 98% of patients and cauterise successfully, with only 2% of them requiring hospitalisation.[13] In our study also, cauterisation of bleeding point, employed for 24% cases, entailed less duration of hospitalization 2.52 (±1) days, with a good success rate and negligible complications. Proper facilities and skill development should be ensured to provide this high quality treatment

In the present study, epistaxis with no co-morbid condition could be managed successfully by medical treatment alone (using oxymetazoline, tranexamic acid, ethamsylate, phenylephrine, antiseptic cream). Among the primary medical treatment failure cases, trauma was the main cause (7 cases), followed by hypertension and thrombocytopenia (1 case each). Padgham showed that medical treatment is the most effective treatment for children with nasal bleed.[14]

In severe posterior epistaxis, Foley's catheter is a very good option for posterior nasal packing. From our observation, endoscopic coagulation of the sphenopalatine artery, is a simple and alternative method of controlling posterior epistaxis. It a reliable intervention which would reduce the primary treatment failure rate with conservative management and would reduce hospital stay, as mentioned in a previous study.[15]

In the present study, 21.4% of the cases required surgical line of management. In the study by Villwock et al out of 57,039 patients in different hospitals, surgical intervention was required only in 8.1%.[16] Ours being a tertiary referral centre, the higher number of surgically treated patients in our study could be due to the increased number of referred patients from periphery requiring surgical intervention.

We experienced a failure rate of 24.4% (32 cases) in controlling epistaxis using initial non interventional treatments. Our result fell within the failure rates of 10% to 52% reported in the literature.[17,18] There were no major complications and no mortality due to epistaxis in our study.

CONCLUSION

The most common causes of epistaxis being trauma and hypertension, reducing road traffic accidents, life-style related illnesses, etc. will reduce the incidence of epistaxis. Alcohol is also an important causal factor in nose bleeds, and a detailed history of alcohol intake should be made before labelling epistaxis as idiopathic. Majority of the patients with epistaxis can be successfully managed by conservative measures, and surgical intervention may not be necessary in most cases and should be the last resort. Though anterior nasal packing still remains the most preferred method in controlling epistaxis as it is efficient and easily available, cauterization of the bleeding point is the best conservative method which can be offered to the patient. Proper facilities and skill development should be ensured to provide this high quality treatment.

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