

Original Research Article

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Clinicopathological profile and treatment outcomes of patients presenting with epistaxis: a hospital-based cross-sectional study in Southern railway headquarters hospital, Chennai

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ABSTRACT

Background: Epistaxis (nose-bleed) is one of the commonest emergencies presenting to an otolaryngological emergency that affects up to sixty per cent of the population in their lifetime; in this, six per cent needs medical care.

Methods: Hospital-based cross-sectional study carried between October 2018 to January 2020 in the department of ENT at Southern Railway Headquarters Hospitals, Perambur, Chennai.

Results: The mean age of the subjects was 47.76 ± 23.01 . Females were less affected compared to males with 1.68:1 male: female ratio. The results of ENT examination/anterior rhinoscopic examination revealed that all 153 (100%) subjects had anterior epistaxis and 5 (3.27%) had posterior epistaxis. 143 (93.46%) had deviated nasal septum. Diagnostic nasal endoscopy revealed that 90 (58.82%) had deviated nasal septum to the left, and 55 (35.94%) had to the right. The majority of subjects, i.e., 86 (56.21%), were managed conservatively, followed by 52 (33.99%), 5 (3.27%), and 1 (0.65%) patient were given treatment with anterior nasal packing, anterior and posterior nasal packing, and cauterization respectively. Whereas 9 (5.88%) subjects needed a surgical mode of treatment to manage their epistaxis.

Conclusions: Findings revealed that the incidence was high in elderly individuals, with male preponderance over females. Anterior epistaxis more commonly occurred in comparison to posterior epistaxis. Our research supports the conservative management methods' credibility in the epistaxis treatment. The practice of simple nasal packing is the commonest conservative approach that has a high rate of success. As a result, this method will be the best choice for epistaxis management.

Keywords: Epistaxis, Clinicopathological, Conservative methods, Nasal packing, Surgery

INTRODUCTION

Nasal bleeding, or Epistaxis, is identified as one of the commonest otorhinolaryngological emergencies all over the world, and it poses a concern in resource-poor settings with limited resources for caring for these patients.¹ Epistaxis is a common issue encountered in general practice, and it might emerge as an emergency, as a chronic issue involving recurring bleeding, or an

indication of a generalised ailment.¹ It not just has an effect on hemodynamics but also create a lot of anxiety among patients. Epistaxis is expected to affect sixty per cent of people globally at some point in their lives, and only about six per cent of those who experience nasal bleeding take medical assistance.^{3,4} Children with <10 years of age show an increased prevalence, which further again increases after thirty-five years.^{4,5} In general, males are affected slightly more compared to females until fifty years of age,

but there is no gender difference after crossing that age.^{3,6} Based on the region of origin, epistaxis is separated commonly into anterior epistaxis and posterior epistaxis.⁷ Injury to Kiesselbach's plexus in the lower anterior nasal septum region, referred to as the Little's region, causes anterior nasal bleeding, while injury to posterior nasal septal artery causes posterior nasal bleeding.^{1,6} Anterior epistaxis is significantly more common compared to posterior epistaxis, with anterior epistaxis responsible for over eighty per cent of cases.^{8,9}

The aetiology of epistaxis can be separated broadly into systemic and local causes, even though this differentiation is hard to achieve, and the "Idiopathic Epistaxis" term is finally made use in around 80 to 90 per cent of cases.⁶ Epistaxis' etiological profile has been shown to differ with anatomical location and age.⁶ Facial damage, foreign body or a digital trauma in the nasal cavity are the commonest traumatic epistaxis causes in younger people (below 35 years old).¹ Patients above the age of 50 are more likely to get non-traumatic epistaxis. It might be because of neoplastic conditions, organ failure, inflammation, hypertension, or environmental reasons (altitude, humidity, temperature).^{10,11} Epistaxis in children under the age of ten years is generally mild and begins in the anterior nasal region. On the other hand, epistaxis in people over fifty years of age is expected to be severe and develop posteriorly.¹ Epistaxis is far riskier in older individuals, who may experience rapid clinical deterioration if there is a significant loss of blood.¹¹

Epistaxis treatment needs a methodical and systematic approach, with varying options depending on the location, cause as well as severeness of the haemorrhage.^{6,11,13} In epistaxis treatment, both surgical and conservative modalities of treatments have been used.^{11,13,14} The majority of epistaxis' root factors can be prevented.^{1,15} Developing preventable measures and guidelines of treatment needs a better understanding of its cause, treatment, and outcome of these subjects.^{2,17} With this scenario, the current study was done with the primary goal of identifying the clinicopathological characteristics and determining the treatment outcome of epistaxis patients.

METHODS

This research was a hospital-based cross-sectional study performed between October 2018 to January 2020 in the department of ENT at Southern Railway Headquarters Hospitals, Perambur, Chennai. The calculation of sample size was done presuming the expected proportion of the most common etiology (trauma) as 40.4%, according to research conducted by Siddapur et al.¹⁶ Other factors taken into account for the calculation of sample size were absolute precision of 8% as well as a confidence level of 95%.

$$n = Z^2 p(1 - p) \div d^2$$

Where n = sample size

Z = Z statistic for a level of confidence= 1.96

P = Expected prevalence of proportion (If the expected prevalence is 20%, then P = 0.404),

d = Precision (If the precision is 5%, then d=0.08)

The mandatory sample size, according to the calculation stated above, was 145. Additional 8 patients were added, considering the non-participation rate of about 5%. Hence, a total of 153 participants were comprised in the final study.

Inclusion criteria

All patients presenting to the emergency department or ENT outpatient department with complaints of nasal bleeding in both genders, aged >1 years were involved in the research.

Exclusion criteria

Subjects with postoperative epistaxis surgeries like septoplasty, submucous resection and FESS were excluded from the research.

After attaining approval from Institutional Ethics Committee, the study was initiated and informed written agreement was attained from all study subjects. Pre-structured proforma used to record the details of each case. All patients enrolled in the present study underwent certain routine investigations viz. complete hemogram, bleeding time, clotting time, ESR, absolute eosinophil count, urine analysis, anterior rhinoscopy examination, posterior rhinoscopy examination, and diagnostic nasal endoscopy. Specific investigations such as prothrombin time, platelet count, blood grouping, activated partial thromboplastin time, x-ray paranasal sinuses, nasopharynx, X-ray nasal bones in case of trauma, CT scan paranasal sinuses, ECG, biopsy and histopathological examination were done if required for management of those cases. Treatment initiated according to the aetiology in a particular patient such as chemical cautery, anterior nasal packing, posterior nasal packing, electrical cautery, septal surgery, removal of foreign body, surgery for nasal masses, reduction of nasal bone fracture and arterial ligation if required. Descriptive analysis for quantitative variables was done using the mean and standard deviation, while for categorical variables, the proportion and frequency were used. For statistical analysis, IBM Statistical package for social sciences (SPSS) version 22 was utilised.¹⁷

RESULTS

A total of 153 patients were studied. The mean age of the subjects was 47.76 ± 23.01 , and their ages ranged between 2 and 88 years (95% CI from 44.09 to 51.44). The present study shows that epistaxis is more common in the first decade. Again, the incidence increases after the 4th decade; 11.76% of cases were in the 1st decade and 76.47% cases from the 4th decade onwards (Table 1).

Table 1: Descriptive analysis of age and age group in study population (n=153).

Parameter	Mean±SD	Median	Minimum	Maximum	95% C. I	
					Lower	Upper
Age (years)	47.76±23.01	54.00	2.00	88.00	44.09	51.44
Age groups	No. of patients					
1 to 10	18			11.76		
11 to 20	5			3.27		
21 to 30	13			8.50		
31 to 40	14			9.15		
41 to 50	23			15.03		
51 to 60	26			16.99		
61 to 70	33			21.57		
71 to 80	12			7.84		
81 to 90	9			5.88		

The majority of the study subjects, i.e., 96 (62.75%) and 57 (37.25%), presented male and female, respectively. Among them, 25 (16.34%) were inpatient, and 128 (83.66%) were outpatient (Table 2).

Table 2: Descriptive analysis of gender and patients in the study population (n=153).

Gender	No. of patients	Percentage (%)
Male	96	62.75
Female	57	37.25
Inpatient	25	16.34
Outpatient	128	83.66

Table 3: Descriptive analysis of past history in the study population (n=153).

Past history	No. of patients	Percentage (%)
History of nasal bleed		
Yes	4	2.61
No	149	97.39
History of nasal bleed with hypertension		
Yes	10	6.54
No	143	93.46

The majority of the study subjects, i.e., 149 (97.39%), had no prior history of nasal bleed, and 10 (6.54%) had a past history of nasal bleed with hypertension (Table 3). Among the study population majority, i.e., 78 (50.98%) of the subjects presented with chief complaints of epistaxis followed by 62 (40.52%) had epistaxis with trauma, and 13 (8.50%) had epistaxis and nasal obstruction. Around 62(40%) of subjects had epistaxis with trauma, followed by 46 (29.67%) anterior epistaxis type, followed by 33 (21.57%) had anterior epistaxis with oral anti-coagulants, 10 (6.54%) had anterior epistaxis with foreign body, and 4 (2.61%) had anterior and posterior epistaxis (Table 4).

The results of ENT examination/anterior rhinoscopic examination revealed that all 153 (100%) subjects had

anterior epistaxis and 5 (32.7%) had posterior epistaxis. 143 (93.46%) had deviated nasal septum, 10 (6.54%) had foreign body, 4 (2.61%) each had polyp and growth and 44 (28.76%) had external deformity (Table 5).

Table 4: Descriptive analysis of chief complaints and type of epistaxis in the study population (n=153).

	No. of patients	Percentage (%)
Chief complaints		
Epistaxis	78	50.98
Epistaxis, nasal obstruction	13	8.50
Epistaxis, trauma	62	40.52
Type of epistaxis		
Epistaxis with trauma	62	40.00
Anterior epistaxis	46	29.67
Anterior epistaxis with foreign body	10	6.45
Anterior epistaxis with oral anti-coagulants	33	21.29
Anterior epistaxis with posterior epistaxis	4	2.58

An examination of subjects with diagnostic nasal endoscopy revealed that 90 (58.82%) had deviated nasal septum to the left, and 55 (35.94%) had to the right. In 112 (73.20%) and 41 (26.80%) subjects, the cause of bleeding was found to be local and generalized, respectively (Table 6).

The majority of subjects, i.e., 86 (56.21%), were managed conservatively, followed by 52 (33.99%), 5 (3.27%), and 1 (0.65%) patients were treated with anterior nasal packing, anterior and posterior nasal packing, and cauterization respectively. Whereas 9 (5.88%) subjects needed a surgical mode of treatment to manage their epistaxis (Table 7).

Table 5: Descriptive analysis of ENT examination/anterior rhinoscopic examination in the study population (n=153).

ENT examination/ anterior rhinoscopic examination	No. of patients	Percentage
Anterior epistaxis		
Yes	153	100.00
Posterior epistaxis		
Yes	5	3.27
No	148	96.73
Deviated nasal septum		
Yes	143	93.46
No	10	6.54
Foreign body		
Yes	10	6.54
No	143	93.46
Polyp		
Yes	4	2.61
No	149	97.39
Growth		
Yes	4	2.61
No	149	97.39
External deformity		
Yes	44	28.76
No	109	71.24

Table 6: Descriptive analysis of diagnostic nasal endoscopy and actual causes of epistaxis in the study population (n=153).

	No. of patients	Percentage (%)
Diagnostic nasal endoscopy		
Deviated nasal septum to left	90	58.82
Deviated nasal septum to right	55	35.94
No deviated nasal septum	8	5.23
Cause of bleeding		
Local	112	73.20
Generalized	41	26.80

Table 7: Descriptive analysis of treatment in the study population (n=153).

Treatment	No of patients	Percentage (%)
Anterior nasal packing	52	33.99
Anterior nasal packing, posterior nasal packing	5	3.27
Cauterization	1	0.65
Conservative management	86	56.21
Surgery	9	5.88

DISCUSSION

Epistaxis is a clinical ailment which is common and can range from minor inconvenience to a life-threatening emergency. In the present study, a total of 153 subjects were enrolled, and among them, females were less frequently affected compared to males, with a male-female ratio of 1.68:1. These results were in concurrence with various other studies reported in the literature.^{9,18,19} However, in contrast to our findings, some other research studies reported there was no significant sex difference.^{20,21} In after 50 years of age, no considerable difference between gender was revealed; the ratio was close to 1:1.^{22,23} Tomkinson et al delineated that the female pre-menopausal condition has been identified as a significant protective factor against this disease. The mechanism is, however, unclear for this, but it could be secondary to an oestrogen's direct effect on the vasculature or nasal mucosa or vessels' healing in this area.²² In this research, distribution of age widely vary, the youngest subject was of age 2 years, and the eldest was 88 years old. In this series, the patients' mean age was 47 years old; in another research study, it is 35.06 and 40 years.^{24,25}

Most of the subjects in our research were in the 6th decade (21.57%), followed by the 5th (16.99%) and 4th (15.03%) decade. Whereas as per studies reported by Watkinson majority of patients were in the 2nd decade (21.15%), followed by the 6th (19.23%) and 3rd decade (17.31%). The reports stated that a pronounced bimodal distribution in the age of onset of epistaxis was from North America and Europe.^{21,26} In older men, the greater prevalence is most likely to be associated with vascular pathology and hypertension. Some researchers represent epistaxis as a young person's disease, while others claim that epistaxis is much more common among older people.¹⁹ The findings reported by Shaheen et al revealed an increased occurrence between 15 to 25 years and then from 45-65 years of age with not one sex predilection evidence.²⁷

In the present research, 4 (2.61%) subjects had a prior history of nasal bleeding, and 10 (6.54%) subjects had a past history of nasal bleeding with hypertension. This is in accordance with a previous article from Nigeria of some subjects who developed epistaxis after their hypertension became uncontrolled due to the discontinuation of anti-hypertensive medication treatment.²⁸ In Thailand and India, hypertension was recorded as the 2nd most common epistaxis causes next to the idiopathic cause.^{18,29} It is crucial to emphasize the importance of regular BP (blood pressure) assessments and adherence to anti-hypertensive drugs. Arterial hypertension and epistaxis are common in the general population, more noticeable in severe epistaxis patients with 24 per cent to 64 per cent prevalence.²

In our study, the majority of subjects, i.e., 78 (50.98%), had presented with chief complaints of epistaxis, followed by 62 (40.52%) who had epistaxis and trauma, and 13 (8.50%) had epistaxis with nasal obstruction. Furthermore, most of the subjects, i.e., 108 (70.59%), had anterior

epistaxis type followed by 33 (21.57%) who had anterior epistaxis with oral anti-coagulants, 10 (6.54%) had anterior epistaxis with foreign body, and 4 (2.61%) had anterior and posterior epistaxis. These findings are comparable with findings reported by Hussain et al.³⁰

In our study, anterior rhinoscopic examination of subjects revealed that all 153 (100%) subjects had anterior epistaxis and 5 (32.7%) had posterior epistaxis. 143 (93.46%) had deviated nasal septum, 10 (6.54%) had foreign body, 4 (2.61%) each had polyp and growth and 44 (28.76%) had external deformity. The majority of subjects, i.e. 86 (56.21%), were managed conservatively. Another 52 (33.99%) and 5 (3.27%) patients were treated with anterior nasal packing, anterior and posterior nasal packing. Only 1 (0.65%) underwent cauterization. 9 (5.88%) subjects needed a surgical mode of treatment to manage their epistaxis. These findings were in accordance with the study conducted by Pollice et al wherein 83% of the patients were treated successfully by non-interventional means.³¹ In addition, another research study reported by Razdan et al revealed that almost 99% of cases were managed by conservative measures like cauterization, anterior and posterior nasal packing.¹⁷ Nasal packing has the added benefit of being able to have easy placement and removal; no anaesthetic or theatre space was needed for the procedure. It also is cost-effective for subjects. However, Razdan et al reported few nasal packing complications viz. septal hematoma, toxic shock syndrome, sinusitis, pressure necrosis of the alae nasi, syncope during insertion of the nasal pack. But the majority of these complications could be avoided by necessary provisions like the technique of insertion of the pack, antibiotic use and nasal decongestants.³² In our research, 9 subjects were treated surgically. A comparable outcome was also recorded in Nigeria, in Tanzania and Bangladesh.^{9,25,27} According to the study of Islam et al., by using the direct method, controlled bleeding was achievable in eleven (10.57%) subjects. Eighty-six (82.69%) subjects were treated with anterior nasal packing, postnasal packing was given in 3 (2.89%) subjects, and 3.85% of subjects were treated surgically as they presented with bleeding intranasal tumour.²⁵

CONCLUSION

Epistaxis is a common otolaryngological emergency and is often owing to lesions around or within the nose and because of systemic conditions. The findings of our study revealed that in old age people, the incidence was reported to be high with male predominance over females. Compared to posterior epistaxis, anterior epistaxis is far more common. Our research supports conservative management methods' credibility in the epistaxis treatment. The practice of simple nasal packing is the commonest conservative approach that has a high rate of success. As a result, this method will be the best choice for epistaxis management.

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