INTERNATIONAL JOURNAL OF INNOVATIVE RESEARCH & DEVELOPMENT

ISSN 2278 – 0211 (Online)

Clinical Profile of Epistaxis in a Tertiary Health Centre: A Retrospective Study

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Abstract:
The study conducted, retrospectively analysed epistaxis cases, examined between January 2011 and December 2013 in Karpaga Vinayaga Institute of Medical Sciences & Research Centre, Tamil Nadu, India. The objective was to identify and categorize etiological factors & treatment modalities of epistaxis, and to analyse the significance of age and gender factors in the occurrence of epistaxis by statistical correlation. Of total 230 epistaxis cases, Idiopathic (n=52 cases) accounted for merely 22.6%. Males outnumbered females. Trauma was the most common factor responsible for epistaxis. Age group 21-30 years was most commonly affected (25%). Two cohorts were categorized in this study, Group I (Idiopathic) and Group II (non-idiopathic). The groups were correlated with the age and gender factors and tested for significance with P Value < 0.05 using Chi-Square test. Age is a highly significant factor responsible in determining the etiology of epistaxis.

Keywords*: Epistaxis; Idiopathic; Trauma; Hypertention; Observation*

1. Introduction

Epistaxis (derived from Greek), which means bleeding from the nose or a nosebleed, is relatively common occurrence of hemorrhage from the nose. Pathophysiology of epistaxis lies in the fact that blood vessels rupture within the richly perfused nasal mucosa. Rupture may be spontaneous or initiated by trauma. Nosebleeds are reported in up to 60% of the population with peak incidences in those under the age of ten and over the age of 50 and appear to occur in males more than females. An increase in blood pressure (e.g. due to systemic hypertension) tends to increase the duration of spontaneous epistaxis.[1] Spontaneous epistaxis is more common in elderly as the nasal mucosa (lining) becomes dry and thin with blood pressure being high.

Depending on the site of origin, epistaxis is commonly divided into anterior and posterior. Anterior epistaxis is far more common than posterior, accounting for more than 80% of cases. Anterior nosebleeds arise from damage to Kiesselbach's plexus on the lower portion of the anterior nasal septum, known as the Little's area, whereas, posterior nosebleeds arise from damage to the posterior nasal septal artery. The aetiology of epistaxis can be broadly divided into local or systemic causes, and when the cause is undetermined, the term "Idiopathic epistaxis" is used. Local factors include Blunt trauma (usually a sharp blow to the face such as a punch, sometimes accompanying a nasal fracture), foreign bodies (such as fingers during nose-picking), inflammatory reaction (e.g. acute respiratory tract infections, chronic sinusitis). Other possible local factors include anatomical deformities (e.g. septal spurs or hereditary hemorrhagic telangiectasia), insufflated drugs (particularly tobacco sniffing), intranasal tumors (e.g. Sinonasal tumours, Nasopharyngeal carcinoma), low relative humidity of inhaled air (particularly during cold winter seasons), nasal sprays (particularly prolonged or improper use of nasal steroids), otic barotrauma (such as from descent in aircraft or ascent in scuba diving), consumption of tainted whey protein supplements that contain arsenic.[2] Surgeries like septoplasty and Functional Endoscopic Sinus Surgery (FESS) also contribute to local causes. *Systemic factors mainly include Hypertension*. Other possible systemic factors include drugs like aspirin, Fexofenadine, warfarin, ibuprofen, clopidogrel, prasugrel, isotretinoin, desmopressin, ginseng. Alcohol, anemia, liver diseases, connective tissue disease, blood dyscrasias, hematological malignancies, idiopathic thrombocytopenic purpura, vascular disorders, vitamin C and vitamin K deficiencies, von Willebrand's disease, etc also account for possible systemic factors.[2-6]

Epistaxis is known to be one of the most common otorhinolaryngological emergencies worldwide. It not only affects the hemodynamics, but may also cause great anxiety to patients and their relatives. It is estimated to occur in 60% of persons worldwide

during their lifetime, and approximately 6% of those with nosebleeds seek medical treatment. The prevalence is increased for children less than 10 years of age and then rises again after the age of 35 years. Generally, males are slightly more affected until the age of 50. The etiological profile of epistaxis has been reported to vary with age and anatomical location. 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. Non-traumatic 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). Epistaxis that occurs in children younger than 10 years is usually mild and originates in the anterior nose, whereas epistaxis that occurs in individuals older than 50 years is more likely to be severe and originates posteriorly. It poses a greater risk in elderly people in whom clinical deterioration may progress rapidly if the blood loss is significant. The treatment of epistaxis requires a systematic and methodical approach, and options vary according to the cause, location, and severity of the hemorrhage. Both conservative and surgical treatment modalities have been used in the treatment of epistaxis [7-9].

A clear understanding of the causes, treatment and outcome of these patients is essential for establishment of preventive strategies as well as treatment guidelines. This study was conducted to identify the etiological profile and to statistically analyze the strength of significance of age and gender factors in the occurrence of idiopathic and non-idiopathic epistaxis. The results of this study will provide basis for planning of preventive strategies and establishment of treatment guidelines.

2. Material and Methods

The study conducted retrospectively analysed epistaxis cases examined between January 2011 and December 2013 in Karpaga Vinayaga Institute of Medical Sciences & Research Centre, Tamil Nadu, India. A total of 230 cases of epistaxis were identified by data received from the medical records department of the institution. These patients were received through Accident & Emergency department, Otolaryngology (ENT) clinic and as referral from other departments. The study included patients (n=230) who presented with nasal bleeding (epistaxis) at Karpaga vinayaga institute of medical sciences & research centre (KIMS) over the three-year period. Postoperative nasal bleeding cases were excluded from the study. The diagnosis of epistaxis was based on clinical examination (including endoscopic techniques), general physical & systemic examination, laboratory and radiological investigations with examination under anaesthesia of the nose, nasopharynx and biopsy. Conservative (non-surgical) treatment included observation, anterior and posterior nasal packing. Surgical treatment included fractured nasal bone reduction, septal surgeries, FESS (Functional endoscopic sinus surgery) and resection of bleeding intranasal tumors.

Collected data included patients' demographics, various causes of epistaxis and management modalities. Patients were separated into two cohorts. *Group I included idiopathic epistaxis cases, and Group II non-idiopathic*. There were 52(n) cases in Group I, and 178 in Group II. Age and gender were statistically correlated with the two cohorts.

In descriptive analysis, the mean and standard deviation of continuous variables and percentages of categorical variables were computed. Chi-square test was used wherever applicable. Significance level was assessed with P value<0.05.

3. Results

Of total 230 epistaxis cases, Idiopathic (n=52 cases) accounted for merely 22.6% (Table1). Males outnumbered females, accounting for 55.7% of the cases (Fig1). Trauma was the most common factor responsible for epistaxis in 40.4% of the cases, followed by idiopathic (22.6%) and systemic hypertention in 16.9 % of the cases (Table2). Age group 21-30 years was most commonly affected (25%), followed by less than 10years age group (18%) and 10-20 years age group (17%) as detailed in table3. Trauma cases showed an increased incidence over the 3 years period (Fig2). Unilateral epistaxis was 4 times the bilateral variety (Fig3). Observation topped the treatment modalities by accounting for 64% of the cases. Epistaxis was handled by non-surgical means in 86% of the cases (Table4).

Two cohorts were categorized in this study, Group I (Idiopathic) and Group II (non-idiopathic). The groups were correlated with the age and gender factors and tested for significance with P Value < 0.05 using Chi-Square test (Table5 & table6). The result was assessed as either significant, or not-significant.

4. Tables & Figures

	n	**%**
Idiopathic	52	22.6
Non-Idiopathic	178	77.4
Total	230	100

Table 1: Idiopathic and non-idiopathic cases statistics

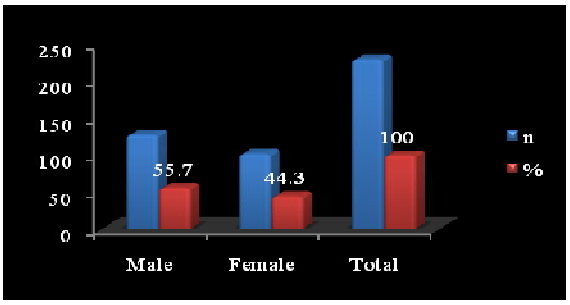

*Figure 1: Gender distribution amongst cases. (*Mean=115, Standard Deviation=18.4, Population standard deviation=13)*

	n	%
Trauma	93	40.4
Idiopathic	52	22.6
Systemic Hypertention	39	16.9
Inflammatory	19	8.3
Neoplastic (Benign + Malignant)	18	7.9
Neglected foreign body	5	2.2
Rhinolith	1	0.44
Drug abuse (tobacco sniffer)	1	0.44
Nasal myiasis	1	0.44
Blood dyscrasias	1	0.44
Total	230	100

*Table 2: Etiological factor distribution (*Mean=23, Standard Deviation=30.4, Population standard deviation=28.8)*

	0-10 n,%	11-20 n,%	21-30 n,%	31-40 n,%	41-50 n,%	> 50 n,%
Trauma	23,10	11,4.8%	31,13.5%	16,6.9%	9,3.9%	3,1.3%
Idiopathic	11,4.8%	22,9.6%	15,6.5%	4,1.7%	0,%	0,%
Systemic Hypertention	0,0%	0,%	1,0.43%	6,2.6%	6,2.6%	26,11.3%
Inflammatory	1,0.43%	2,0.9%	9,3.9%	5,2.2%	2,0.9%	0,%
Neoplastic (Benign + Malignant)	0,%	2,0.9%	1,0.43%	2,0.9%	1,0.43%	12,5.2%
Neglected foreign body	5,2.2%	0,%	0,%	0,%	0,%	0,%
Rhinolith	1,0.43%	0,%	0,%	0,%	0,%	0,%
Drug abuse (tobacco sniffer)	0,%	0,%	0,%	0,%	1,0.43%	0,%
Nasal myiasis	0,%	0,%	0,%	0,%	0,%	1,0.43%
Blood dyscrasias	0,%	1,0.43%	0,%	0,%	0,%	0,%

*Table 3: Etiological factor distribution at various ages amongst cases (*Mean age=38.3years, Standard Deviation=12.4, Population standard deviation=11.3)*

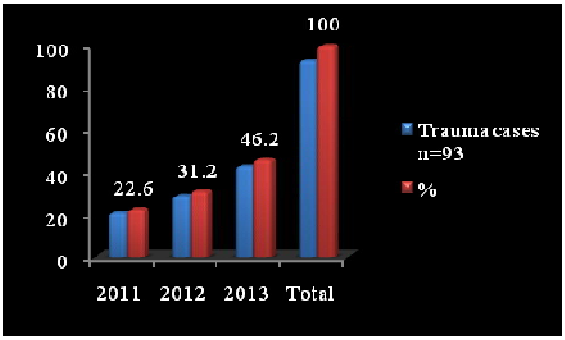

*Figure 2: Trauma factor showing increased incidence. (*Mean=31, Standard Deviation=11.1, Population standard deviation=9.1)*

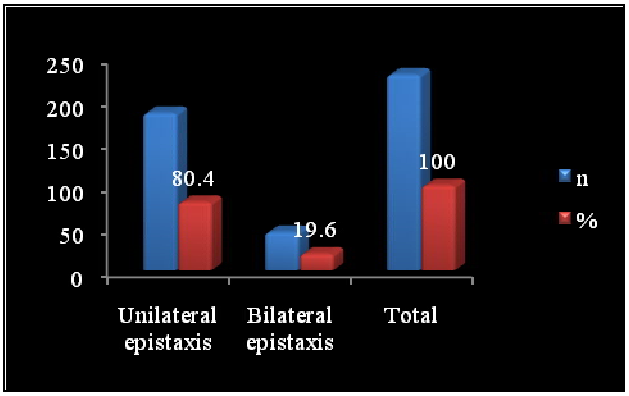

*Figure 3: Unilateral & Bilateral epistaxis statistics. (*Mean=115, Standard Deviation=99, Population standard deviation=70)*

	Non-Surgical n,%	**Surgical n,%**	**Total n,%**
Observation	147,64%	0	147,64%
Anterior nasal packing	46,20%	0	46,20%
Posterior nasal packing	1,0.4%	0	1,0.4%
Conservative treatment for atrophic rhinitis	2,0.9%	0	2,0.9%
Maggots removal by instillation of turpentine oil	1,0.4%	0	1,0.4%
Fractured nasal bone reduction	0	2,0.9%	2,0.9%
Septal surgery	0	12,5.2%	12,5.2%
FESS	0	4,1.7%	4,1.7%
Surgical excision of bleeding intracranial tumour	0	14,6%	14,6%
Rhinolith excision	0	1,0.4%	1,0.4%
Total	197,85.7%	33,14.3%	230,100%

*Table 4: Treatment modality statistics (*Mean age=23, Standard Deviation=45.7, Population standard deviation=43.4)*

	Group I n=52	**Group II n=178**	**Total**
Male	28	100	128
Female	24	78	102
Total	52	178	230

*Table 5: The Groups & Genders Chi-square test. (*The Chi-square statistic is 0.0888. The P value is 0.765711. This result is not significant at $p < 0.05$.)*

	Group I n=52	Group II n=178	Total
<20 years	32	47	79
>20 years	20	131	151
Total	52	178	230

Table 6: The Groups & Age groups Chi-square test (The Chi-square statistic is 22.0293. The P value is 3E-06. This result is significant at p < 0.05.)*

5. Discussion

Our study had a higher incidence of non-idiopathic epistaxis (78%), similar to study done by Pino et al[10] from Spain. But, older study by Stell[11]from England found a reverse proportion. This means, with advancement of diagnostic modalities, incidence of idiopathic epistaxis is decreasing. Mean age of presentation was 38.3 years in our study. Similar finding was obtained by Akinpelu et al [12], while in some studies [13, 14], most of the patients were more than 50years. 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 epistaxis. Pallin et al [15] obtained bimodal presentation (<10years and and>70 years). Infection in children and trauma in adult are common causes. In our study, there were 128 male patients and 102 female patients. Male predominance is supported by Padghum[16]**.** Possible explanation is hormonal. Oestrogen in females provides protection to the nasal vasculature as they do to other areas of the vascular tree. [17, 18] Unilateral bleeding being more common is also supported by Razdan et al [19]. Unilateral predominance signifies probability of local causes. There is no clear evidence of an association between septal abnormalities and epistaxis. Due to high prevalence of septal deviation, the perceived association of epistaxis and septal abnormalities could be coincidental. In our study, trauma was the most common etiological factor responsible (40%). There was also increase in its incidence over the years. This could be because of the location of our institution, alongside a very busy national highway, being recipient of ever increasing road traffic accidents. Hypertension (BP>140/90mmHg) at presentation was seen in 39 (16.9%) patients. In Vaamonde study [20], epistaxis due to hypertension was 22.9%. Increased blood pressure at presentation may be due to apprehension. Hypertension has long been considered a cause of epistaxis. However, a large number of studies have failed to show a causal relationship between hypertension and epistaxis. Most of the other studies compared include epistaxis with definite cause also. There is need for further research to find out association between deviated nasal septum with epistaxis. Therefore, before labeling as idiopathic, we should ideally do CT scan nose and paranasal sinuses.

Two cohorts were categorized in this study, Group I (Idiopathic, n=52) and Group II (non-idiopathic, n=178). The most common etiology in Group II was trauma. The two groups were correlated with the age and gender factors and tested for significance with P Value < 0.05 using Chi-Square test. *The result was significant with age factor, which meant, age was significant in determining epistaxis as idiopathic or non-idiopathic, leading to rejection of null hypothesis.*

6. Conclusion

We, the authors conclude by quoting that age is a highly significant factor responsible in determining the etiology of epistaxis. In children, it is idiopathic epistaxis which is most common. Hypertention is most common etiological factor in elderly. And in middle aged, trauma is the most common etiological factor.

7. Acknowledgements

I thank Dr. T. Rathinam, Professor & head, for sharing his valuable advice whenever required.

I also thank Dr. B. Sundararajan, Professor, for his moral support during the study.

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