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Original Article

A Clinical Study on Etiological Factors and Management of Epistaxis at a Tertiary Level Hospital

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Abstract:

Background*: Epistaxis is a common otolaryngological emergency worldwide affecting up to 60% of the population in their lifetime. This study was conducted to describe the etiological profile and treatment outcome of epistaxis at Dhaka Medical College Hospital, a tertiary care hospital in BANGLADESH.*

Objective*: The study is carried out with an objective to evaluate on etiological profile and management of epistaxis.*

Methods*: This cross sectional study was conducted among the emergency and admitted patient with epistaxis at Dhaka Medical College Hospital from 1st November 2013 to 30th April 2014.*

Results*: During the period under study, a total 104 patients were studied. The etiology of the cause of epistaxis was grouped into traumatic and non- traumatic. Among them 46 (44.23%) patient were in traumatic epistaxis and 58 (55.77%) patient were in non traumatic epistaxis. Male were affected more frequently than female in this study. There were 74 (71.15%) male and 30 (28.85%) females with a male female ratio of 2.47:1 Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). Among the 104 patients with epistaxis 78 (75%) were urban habitat and 26 (25%) were rural habitat. Significantly more patients were from urban resident. Regarding etiology and sex distribution there were no significant differences between urban and rural habitat. The present study shows that the most common cause of epistaxis was trauma (44.23%) followed by idiopathic (25%) and hypertension (17.31%). Local pain (41.31%), nasal obstruction (13.04%),*

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nasal deformity (17.39%) associated other injury (13.04%) was more frequent in traumatic patient. Significant raise of blood pressure (Systoloic BP >160 mm Hg and diastolic BP > 100 mm Hg) were found in 58 (55.77%) non-traumatic patient. Severity of the nasal bleeding was mild to severe degree in both the groups. Significantly anterior epistaxis is common among the traumatic epistaxis group (69.57%) and posterior epistaxis in non-traumatic epistaxis group (46.55%). About 27.59% patient the exact site was not detected as there was diffuse bleeding. In case of nasal bleeding, bleeding from septum 42 (40.38%), from lateral wall 32 (30.76%) and from floor of the nose 23 (22.15%). Control of bleeding by the direct method was possible in 11 (10.57%) patients. Anterior nasal packing was given in 86 (82.69%) patients and post nasal packing was given in 3 (2.89%) patients.

***Conclusion**: A high incidence in young adults was reported with preponderance of males over females. Occurrence of different types of epistaxis was strongly related with the certain demographic factors like age, sex and habitat of the patient. This study supports the credibility of conservative management procedure in the treatment of epistaxis. Simple nasal packing is the commonly practice conservative method with high success. Hence, this approach should be the preferred option in the management of epistaxis especially in developing countries.*

***Keywords:** Epistaxis, Etiology, Management*

Introduction:

Epistaxis, active bleeding from the nose, is a common ear, nose and throat emergency and can be severe or even fatal. The causes can be from local or systemic illness. Epistaxis is classified as anterior or posterior on the basis of the primary bleeding site. Haemorrhage is most commonly anterior, originating from the nasal septum. A common source of anterior epistaxis is the kiesselbach's plexus, an anastomotic network of vessels on the anterior portion of the nasal septum.[1]

Epistaxis occurs in up to 60% of general population at some point in their life time. About 6% of these people will seek medical attention.[2] Usually it is spontaneous and stops by itself or may be controlled with home remedies. However at times it could be massive and may be fatal.[3,4]

The etiology of epistaxis is divided into local and systemic causes. Local causes: Inflammatory-infectious (rhinitis, rhinosinusitis) , traumatic (digital, fractures, nasal surgeries), anatomic (Septal deviation and perforation), foreign body, chemical or Climatic agents, and nasal tumors (nasopharyngeal angiofibroma , nasal polyposis, inverted papilloma, carcinoma). Systemic causes: The arterial hypertension in the most frequently associated clinical factor, blood dyscrasis, drugs (acetylsalicylic acid, anticoagulants, non hormonal anti-inflammatory, antibiotics), neoplasms etc. It is important to find the bleeding site and define its etiology (local or systemic) for indication of the best treatment. The severe epistaxis, associated to prevailing factors such as systemic arterial hypertension and coagulopathy may need a surgical approach in the cases refractory to conservative treatment, such as cauterization and nasal splint.[5] Traumatic epistaxis is more common in younger individual (under age 35 years) and is most often due to digital trauma, facial injury, or a foreign body in the nasal cavity.[6,7] 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).[7] 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.[8] Epistaxis and arterial hypertension are frequent in the population, but an association is still controversial, it occurs in patients with severe epistaxis and the pressure levels are higher when compared to other patients in emergency services.[9] In some studies the arterial hypertension would determine structural alterations of the nasal vessels similar to those verified in the cerebral circulation and retinal examination. The loss of the elastic layer and of contractile properties of the arteries in the elderly would explain a more severe bleeding than that of younger people with arterial hypertension: the dilation of the vessels would represent some degree of degeneration of the vessels wall that would favour bleeding. The association of epistaxis, hypertension and hypertrophy of the left ventricular would be a consequence of the long duration of hypertension.[10] The association with blood dyscrasia is more frequent with the use of non- hormonal anti inflammatory, drugs that alter the metabolism of the arachidonic acid and the function of the platelets which leads to bleeding. In hemophilia, Von willebrand's disease and thrombocytopenia there occurs intermittent nasal bleeding due to the abnormal coagulation function; epistaxis is the most common symptom in approximately 60% of the patient with Von willebrand's disease.[11]

The nasal trauma (digital, fractures and cranioencephalic traumatism) may cause epistaxis; the high prevalence in younger men probably regards the higher exposure to trauma in sports, traffic and urban violence.[15] Every case of epistaxis should be thoroughly examined and a possible haemorrhagic diathesis should be excluded as soon as possible. The patient should be carefully questioned about previous use of drugs for other diseases and about recent trauma to the nose. The wide uses of anticoagulants sometimes cause epistaxis in those using them. The initial otorhinolaryngological examination should be very thorough with the aim of finding the bleeding point at any cost.[12] The treatment of epistaxis requires a systematic and methodical approach, and options vary according to the cause, location, and severity of the hemorrhage.[6,8] Both conservative and surgical treatments modalities have been used in the treatment of epistaxis.[3] Most of the underlying causes of epistaxis are preventable. A clearer understanding of the cause, treatment and outcomes of the patients is essential for establishment of preventive strategies as well as treatment guidelines.[7]

The results of this study will provide to evaluate the main associated prevailing factors in patients with epistaxis and its treatment.

Rational of the Study:

The epistaxis is are of the most frequent otorhinolaryngologic emergencies in the medical practice, with prevalence of about 10 and 12% generally associated to prevailing factors such as systemic arterial hypertension, trauma and coagulopathy , Identification of etiologcal profiles is one of the most important parts for management of epistaxis.

Aims and Objectives of the study

General Objective:

To observe the common causes of epistaxis

Specific Objectives:

1. To observe the frequency of different factors causes epistaxis.
2. To see the site of epistaxis.
3. To evaluate the effective management of epistaxis.
4. To observe the different demographic factors related to epistaxis.

Materials and Methods:

Study design: This study was a cross-sectional observational study.

Place of study: The study was conducted at the Dept. of Otolaryngology and Head-Neck Surgery, Dhaka Medical College Hospital, Dhaka

Period of Study: The study was carried out from 1st November 2013 to 30th April 2014.

Sources of Materials: All the Patients of epistaxis who were admitted or attended in the department of otolaryngology and Head-Neck Surgery, Dhaka Medical College Hospital, Dhaka during the study period constituted the study population.

Sampling technique: Purposive sampling technique was used for collecting samples. A total number of 104 patients with epistaxis were included consecutively in this study.

Inclusion criteria: All Patients of epistaxis who will be admitted or attended in the department of otolaryngology and Head-Neck Surgery Dhaka medical College Hospital, Dhaka.

Exclusion criteria: Patients who are physically or mentally retarded. Patients unwilling to comply with study protocol.

Instrument: Standard, predetermined data collection sheet.

Data analysis: Data was processed and analyzed using computer software SPSS (Statistical Package for Social Sciences).

Data collection: After taking informed consent of the subject, data was collected by the investigator through a structured questionnaire to collect the relevant information from the selected patient and clinical examination with certain investigations. In case of children, information were taken from patients/ guardians. One data sheet was used for each respondent for collection of data. The findings were recorded in the data sheet.

Ethical consideration: Proper explanation of the study was given to the parents. Written informed consent was taken. The right and health of the participants were safe guarded. The freedom of the participants was ensured and they were allowed to withdraw themselves from the study anytime they want. The confidentiality of subjects and findings were ensured. The interest and benefits of the study was explained. The adequate facilities to manage any risk or adverse condition developed by the participants during the study were ensured.

Results:

Table-I:
Age distribution of patients (n=104)

Age (yrs)	No. of patients	Percentage (%)
0-10	6	5.77
11-20	22	21.15
21-30	18	17.31
31-40	14	13.46
41-50	12	11.54
51-60	20	19.23
60+	12	11.54
Total	104	100.00

Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). (Table-I)

In this study among the patients with epistaxis were 71.15% male and 28.85% were female.

Thus male to female ratio was 2.47:1. (Fig-1)

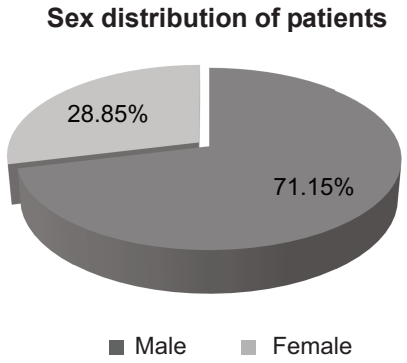

Fig .1: *Pie chart showing sex distribution of patient*

Distribution of patients according to occupation

Most of the patients with epistaxis in this series were students (26.92%), followed by industrial workers, house hold workers and service holder. (Fig-2)

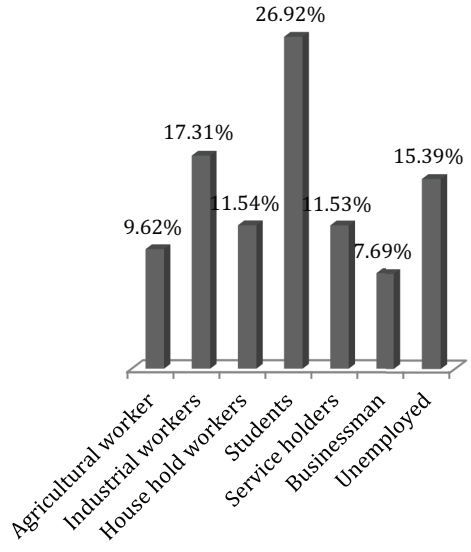

Fig.-2: *Distribution of patients according to occupation (n=104)*

Table II :
Etiological factors of Epistaxis (n=104)

Type	No of causes	%
Traumatic	**46**	**44.23**
Nose pricking	13	12.50
Nose blow	4	3.84
F. B. infection	6	5.77
RTA	10	9.62
Iatrogenic	8	7.69
Others	5	4.81
Non traumatic	**58**	**55.77**
Spontaneous (Idiopathic)	26	25
Hypertension	18	17.31
Bleeding disorders	6	5.77
Nasal tumours (Neoplastic)	5	4.81
Others	3	2.88

There was no significant difference in the proportions of traumatic and non traumatic etiological group among the patient with epistaxis. (Table II)

Table III:
Presentation of a patient with epistaxis

Presentation	No of cases	%
Traumatic		
Nasal pain	19	41.31
Nasal obstruction	6	13.04
Loss of consciousness	1	2.17
Nasal deformity	8	17.39
Other injury	6	13.04
Shock	2	4.35
Others	4	8.70
Total	46	100
Non traumatic		
Fever	4	6.90
Nasal obstruction	7	12.07
Hypertension	24	41.37
Loss of consciousness	2	3.45
Anaemia	10	17.24
Jaundice	2	3.45
Oedema	2	3.45
Shock	3	5.17
Others	4	6.90
Total	58	100.00

Nasal pain (41.31%), nasal deformity (17.39%), nasal obstruction (13.04%) associated other maxillofacial injury (13.04%) was more frequent in traumatic Patient. Hypertension was more frequent in non-traumatic epistaxis. (Table-III)

Table-IV
Sites of different etiological types of epistaxis

Sites	Frequency	%
Traumatic		
Anterior epistaxis	32	69.56
Posterior epistaxis	2	4.35
Diffuse epistaxis	12	26.09
Total	46	100
Non traumatic		
Anterior epistaxis	15	25.86
Posterior epistaxis	27	46.55
Diffuse epistaxis	16	27.59
Total	58	100

Significantly anterior epistaxis is common among the traumatic epistaxis (69.57%). Posterior epistaxis is common in non-traumatic epistaxis (46.55%). (Table-IV)

Table V :
Distribution of patient according to site of bleeding (n=104)

Site of bleeding	Frequency	%
Septum	42	40.38
Lateral wall	32	30.75
Floor	23	22.15
Unknown	7	6.72
Total	104	100

Majority of the patient (40.38%) in this series presented with septal bleeding. (Table-V)

Table-VI:
Different methods applied for the control of epistaxis (n=104)

Methods	No of patients	%
Direct method		
Pressure	9	8.65
Cauterization	2	1.92
Indirect method		
ANS pack	86	82.69
PNS pack	3	2.89
Surgery	4	**3.85**
Total	104	100

Control of bleeding by the direct method was possible in 9 (8.65%) patients. Anterior nasal packing was given in 86 (82.69%) patient and Posterior nasal packing was given in 3 (2.89%). Definite Surgery needed among 4 (3.85%) patient, mostly due to neoplastic cause of bleeding. (Table- VI)

Discussion:

During the period under study, a total 104 patients were studied. The main etiology of the cause of epistaxis was grouped into traumatic and non- traumatic epistaxis patient group. Among them 46 (44.23%) patient were in traumatic and 58 (55.77%) patient were in non traumatic epistaxis patient group. Male were affected more frequently than female in this study. There were 74 (71.15%) male and 30 (28.85%) females with a male female ratio of 2.47:1.

In different studies, it was shown that epistaxis affected more male than female.[2,12,16,19,21,23,26,33] In some studies where no significant sex difference exists.[27,28] In after the 50 years in geriatric age no significant deference between sex as reported, the ratio is close to 1:1.[14,17] It is possible that the female pre-menopausal state may provide a significant protection from this disease. The

mechanism for this is unknown, but may be secondary to a direct effect of oestrogen on the nasal mucosa or vasculature, or the healing of vessels in this region. Alternatively, this observation may simply be a reflection of protection the pre-menopausal state provides against cardiovascular disease in general.[14] In this study, age distribution vary widely, the youngest patient was 4 years of age and the oldest was 92 years old. Mean age of the patients in this series was 40 years, which is in accordance with other study 35.06 years.[19]

Majority of the patients in this study were in 2nd decade (21.15%) followed by 6th decade (19.23%) and 3rd decade (17.31%). According to another study, the maximum number of patient were in 3rd decade (26.61), followed by 4th and 2nd decade. There is a pronounced bimodal distribution in the age of onset of epistaxis were reported from north America[28],Europe[29]and in this subcontinent.[30,31]

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 group vascular pathology and hypertension are responsible in the majority. Some authors portray epistaxis as a disease of the young, whereas others have noted epistaxis to be more common in the elderly.[16] The study, Shaheen[32] shows an increase frequency between the age of 15-25 years and later from 45 to 65 years with no evidence of sex predilection. At Dehradun in India reported most of their patients to be older than 40 years (63.64%) with a mean age of 47.8 years which correlates with other reports which showed that epistaxis is a geriatric problem.[12]

Among the 104 patients with epistaxis 78 (75%) were urban habitat and 26 (25%) were rural habitat. Significantly more patients were from urban resident.

Regarding etiology and sex distribution there were no significant differences between urban and rural habitat. In another study in Iraq, there were 72(84.7%) patients were urban inhabitant, and the remainder 13 patients (15.20%) were rural inhabitant .[22] In India, majority of the patients were from urban area 68 (77.27%).[12] This may due to the difficulties in transportation in addition to that most patients from rural areas are managed by local health centers and not referred to the hospital especially if one remember that, in general nose bleed in the young person either are easy to treat or stop spontaneously.

The etiological profile of epistaxis has been reported to vary with age and anatomical location.[7]

Among the study patient, 46 (44.23%) patient were in traumatic epistaxis patient group and 58 (55.77%) patient were in non-traumatic epistaxis patient group. The present study shows that the most common cause of epistaxis was trauma (44.23%) followed by idiopathic (25%) and hypertension (17.31%) which is consistent with other studies in developing countries.[2,4,12]

This trauma varied from minor injury such as digital trauma to varying degrees of nasal injury from road traffic injury. The nose being a prominent feature on the face is highly susceptible in craniofacial injury. Most of our patients with epistaxis from trauma were actually victims of road traffic injury. Trauma being the most common cause of epistaxis can partly explain the frequency of this problem in males. This group is the adventurous group in our community. They are often on the road in search of economic well-being thereby making them prone to such accidents. High incidence of traumatic

epistaxis resulting from road traffic crashes in our study calls for urgent preventive measures targeting at reducing the occurrence of road traffic accidents in order to reduce the incidence of epistaxis in this region.

Hypertension being the third commonest cause in this report (17.31%) 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 antihypertensive drug therapy.[20] In India recorded hypertension as the second commonest cause of epistaxis after idiopathic causes , in Thailand reported hypertension to be the commonest cause of epistaxis followed by idiopathic causes.[4,12] The need for regular blood pressure check and compliance to antihypertensive medications must be emphasized. Epistaxis and arterial hypertension are frequent in the population, more evident in patients with severe epistaxis, with prevalence of 24% to 64%.[10]

Local pain (41.31%), nasal obstruction (13.04%), nasal deformity (17.39%) associated other injury (13.04%) was more frequent in traumatic patient.

Significant raise of blood pressure (Systolic BP >160 mm Hg and diastolic BP> 100 mm Hg) were found in 58 (55.77%) non-traumatic patient. Severity of the nasal bleeding was mild to severe degree in both the groups. Significantly anterior epistaxis is common among the traumatic epistaxis group (69.57%) and posterior epistaxis in non-traumatic epistaxis group (46.55%).

About 27.59% patient the exact site was not detected as there was diffuse bleeding. In case of nasal bleeding, bleeding from septum 42 (40.38%), from lateral wall 32 (30.76%) and from floor of the nose 23 (22.15%).Control of bleeding by the direct method was possible in 11 (10.57%) patients. Anterior nasal packing was given in 86 (82.69%) patients and post nasal packing was given in 3 (2.89%) patients. 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.

Anterior nasal packing with gauze was the most frequent modality of treatment in this study. The few patients that had posterior nasal packing were mainly patients with hypertension, massive trauma and recurrent bleeding. Posterior nasal packing was performed using gauze pack (triangular shape) inserted in the nasopharynx.

Complications of nasal packing include septal hematoma, sinusitis, syncope during insertion of nasal pack, pressure necrosis of the alae nasi, toxic shock syndrome.[18] 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.

In this study, surgical treatment was done only in 3.85% of patients who presented with bleeding intranasal tumor. Similar finding was also reported in Nigeria[20] and in Tanzenia.[2]

There was no mortality in this study.

Limitation of the study:

Considering significant outcome of the study, it had tried to overcome the limitations as far as possible. Beyond the scope, following limitations were encountered in the study.

Regarding demographic profile of the patient:

1. Most of the patient could not properly tell the exact age of them. Most of the elderly

and people of rural habitat express their age more than their true age.

2. Habitats of sub-urban area were considered rural and habitat of industrial area was considered as urban.

Regarding presentation of the patient:

1. Proper history was sometimes difficult to take.
2. Clinical examination found difficult due to lack of proper instruments (naso-endoscope) and the patient compliances.

Conclusion:

Epistaxis is a common otolaryngological emergency and is often due to lesions within or around the nose and systemic conditions. A high incidence in young adults was reported with preponderance of males over females. Occurrence of different types of epistaxis was strongly related with the certain demographic factors like age, sex and habitat of the patient. This study supports the credibility of conservative management procedure in the treatment of epistaxis. Simple nasal packing is the commonly practice conservative method with high success.

Hence, this approach should be the preferred option in the management of epistaxis especially in developing countries.

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