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Original Research Article

Study of etiopathogenesis and management of epistaxis in tertiary care centre

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ABSTRACT

Background: Epistaxis is one of the most commonly addressed complaints in patients visiting outpatient department of ENT. This study aimed to determine common etiologies and management of epistaxis in a Tertiary care centre.
Methods: This prospective descriptive study was conducted with 60 patients selected by consecutive sampling presented to our hospital with epistaxis between the years 2021-2022.
Results: Incidence of epistaxis was more in males (58.33%) with male to female ratio of 1.4:1. Most common age group was between 10-49 years (68.33%). The commonest etiology was idiopathic (30%). When the cause was present, trauma was the most common reason mainly in young adults (13.33%) followed by hypertension (11.67%). The most common site of epistaxis was noted in the anterior nasal cavity (45%) where Little's area (20%) was the most common location. Most cases were managed by conservative non-surgical treatments alone (55%) like anterior and, or posterior nasal packing, chemical/ electro-cauterization, foreign body removal, and blood components transfusion. Almost an equal number of patients underwent Surgical management in our hospital (45%) as it is a tertiary care centre.
Conclusions: Epistaxis is an ENT emergency seen in all age groups, more common in adolescents and young adults, males are affected more than females. The cause of epistaxis was not known in most cases, i.e., Idiopathic. Most of the cases can be managed by non-surgical treatment. It is necessary for the treating doctor to accurately diagnose the etiology of the case, and bleeding site and treat accordingly.

Keywords: Epistaxis, Little's area, Etiopathogenesis

INTRODUCTION

Epistaxis is one of the most common presenting symptoms to primary care centre, Tertiary care centre, accident and emergency departments. Stedman's medical dictionary as well as Scott-Brown's text book of Otorhinolaryngology Head and neck Surgery defines Epistaxis as "bleeding from the Nose".[1] It is derived from the Greek word" Epistazo", Epi means 'above' and stazo means 'fall in drops'.[2] It thought to affect 10-12% of population, although most of the cases are self-limiting and manageable in emergency department, some need intervention by otorhinolaryngologist and it is a challenging entity.

Key clinical area of Epistaxis are Little's area (kiesselbach plexus) (Branches of external and internal carotid system) and Woodruff's plexus. Little's area lies in anteroinferior part of nasal septum and is the most common site for anterior epistaxis in children and young adults.[3] "Woodruff's plexus" lies just inferior to the posterior end of the inferior turbinate is the common site of posterior epistaxis in adults.[4] The causes of epistaxis are broadly classified as Local (in the nose or nasopharynx), General and Idiopathic. Common local causes are trauma, infection, foreign bodies, Neoplasm of nose and paranasal sinuses, Deviated nasal septum and atmospheric changes. General causes are cardiovascular cause such as

Hypertension, mitral stenosis, arteriosclerosis, Blood dyscrasias; Chronic liver diseases, chronic kidney diseases, over use of salicylates and anticoagulants, Acute general infections. Many times, the causes are idiopathic.[3]

Each patient with epistaxis must be clinically assessed and managed on individual merits. Sometimes based on investigation. The management of epistaxis is diverse, it requires a systematic and methodical approach, and options vary according to the cause, location and severity of the haemorrhage. Both conservative and surgical treatment modalities have been used in the treatment of epistaxis. Conservative (non-surgical) treatment included cauterization of the bleeding site using electrocautery, anterior nasal packing and posterior nasal packing. Surgical treatment included resection of intranasal tumours, arterial ligation, nasal septal surgery and arterial embolization.[4] The current work has been shouldered to study etiopathogenesis and management of epistaxis in tertiary care Centre by different approaches such as medical line of management, anterior and posterior nasal packing, endoscopy guided electric and chemical cauterization, endoscopy guided arterial ligation, endovascular embolization and surgical methods.

METHODS

It is prospective descriptive study undertaken to know etiopathogenesis and management of epistaxis at DR. B. R. Ambedkar medical college and hospital from January 2021 to June 2022 (18 months).

Study design

This study was Prospective descriptive study.

Inclusion criteria

Inclusion criteria for current study were; Both males and females presenting with epistaxis, No age bar was kept in inclusion criteria and written and informed consent obtained prior to study entry.

Exclusion criteria

Exclusion criteria for current study were; Patient who are not giving consent for study, A psychiatric or substance abuse problem that is expected to interfere with study compliance, Patients with life threatening emergencies like myocardial infarction, Incomplete follow-up and Allergy to any of the active treatment agents or their spray additives.

Sample size

60 cases were included in this study from the ENT ward, outpatient department, Accident and emergency department and also patients referred from other departments.

Sampling method

The study was done with the patients presenting to Department of ENT and also patient referred from other departments of Dr. B. R. Ambedkar medical college and hospital, Bangalore. Informed written consent was taken from the study subjects after explaining them the plan and intention of the study in the language best known to them. The sampling method was consecutive sampling.

Statistical methods and tools

Statistical methods and tools included context chart and analysis tables. In present study,60 patient presented to emergency department, ENT OPD and referred from other department are studied in detail. The patient's detailed history was taken so as to rule out systemic, hereditary causes of epistaxis. A detailed systemic and local examination was done to find an etiological factor for epistaxis. Relevant investigations which included complete hemogram, complete urine examination, coagulation profile, blood grouping and RH typing, Diagnostic nasal endoscopy, radiology (CT and X- ray) of the nose and PNS, nasopharynx and chest, ECG, FNAC-Fine needle aspiration cytology and biopsy were done.

As soon as the patient presented to hospital, action was taken to arrest the bleeding. Suction was done to localize the site of bleeding, when the site of bleeding was localized with or without endoscope chemical or electrocauterization was done. When site was not visualized and the patient presented with profuse anterior epistaxis anterior nasal packing was done and posterior nasal packing with ribbon gauze or foley's catheter was performed for posterior epistaxis. Once the etiology was established the patient was provided definitive treatment like foreign body removal, Fracture nasal bone correction, Functional endoscopic sinus surgery, Septoplasty, Excision of nasal mass, control of hypertension and fresh blood or platelet transfusion. Regular follow up of the patient to rule out recurrence and ensure cure was done for one year on monthly basis.

RESULTS

In this study the age of the patients varied from 4 to 75 years, majority of cases 68.33% (41/60) were in age group of 10-49 emphasizing that epistaxis is a problem more common among adolescents and young adults. In our study males were affected more than females (58.33%), male to female ratio is 1.4:1. The most common etiology of epistaxis was not known in our study i.e., Idiopathic in 18 (30%) cases. The second most common etiology was trauma, 8 (13.33%) of cases. Hypertension was the cause in 7 (11.67%) cases. Blood dyscrasias in 2 (3.33%) of cases that included one case each of epistaxis secondary to low platelet Count (idiopathic), drug induced thrombocytopenia. The local causes detected in our study were deviated nasal septum (8.33%), foreign body nostril (6.67%), haemangioma septum (5%), Nasal cavity mass

(3.33%), Angiofibroma (3.33%), fungal rhinosinusitis (3.33%), Bilateral sinonasal polyposis (3.33%), Nasal myiasis (1.67%), rhinosporidiosis (1.67%), Rhinolith (1.67%) and Mass in nasopharynx (1.67%).

Table 1: Age and sex variation.

Age group (years)	Male	Female	Total
0-9	5	1	6
10-19	4	9	13
20-29	6	4	10
30-39	6	2	8
40-49	5	5	10
50 - 59	4	1	5
60-69	5	2	7
70-79	-	1	1
80 & above	-	-	-
Total	35	25	60

Table 2: Etiological distribution.

Etiology	N	%
Traumatic	8	13.33
Hypertension	7	11.67
Rhinosporidiosis	1	1.67
Angiofibroma	2	3.33
Foreign body nostril	4	6.67
Idiopathic	18	30
Myiasis	1	1.67
Hemangioma septum	3	5
Mass nasal cavity	2	3.33
Mass nasopharynx	1	1.67
Secondary to DNS	5	8.33
Blood dyscrasias	2	3.33
Rhinolith	1	1.67
Acute febrile illness	1	1.67
Sinonasal polposis	2	3.33
Fungal rhinosinusitis	2	3.33
Total	60	100

Table 3: Bleeding sites among 60 cases of present study.

Bleeding site	N	%
Anterior	27	45
Ant septum	5	8.33
Lateral wall	6	10
Little's area	]12	20
Ant floor	4	6.67
Posterior	4	6.67
Post septum	3	5
Post lateral wall	1	1.67
Undetermined	26	43.33
Nasopharynx	3	5
Total	60	100

Most of the patients of our study had anterior nasal bleeding (27) 45% in that little's area was the most common site (20%).

Figure 1: Left nasal septum haemangioma.

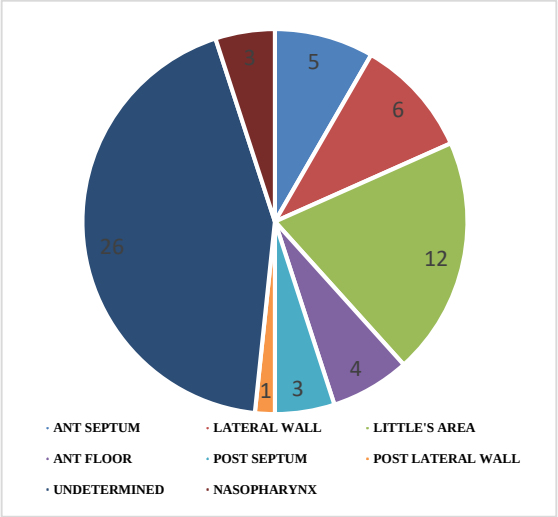

Figure 2: Bleeding sites among 60 cases of present study.

Figure 3: Endoscopic bipolar cauterization of bleeding point.

The site of bleeding remained undetermined in 43.33% of patients. In this study the management of epistaxis is divided in to nonsurgical/non interventional and Surgical/ interventional.

Table 4: Treatment modalities.

Types of treatment	N	%
Nonsurgical/noninterventional treatment	33	55
Anterior nasal packing alone	9	15
Anterior+Posterior nasal packing alone	3	5
DNE followed by Chemical cauterization	11	18.33
DNE followed by Electrocauterization	4	6.66
Foreign body removal	4	6.67
Observation	1	1.67
Topical nose drops and blood transfusion alone.	1	1.67
Surgical/interventional treatment	27	45
Endoscopic excision of mass followed by anterior nasal Packing.	9	15
Combined (endoscopic &lateral rhinotomy) excision of Angiofibroma	1	1.67
Functional endoscopic sinus surgery	4	6.67
Septoplasty	5	8.33
Fracture nasal bone correction	8	13.33

A total of 14 patients were treated by conservative medical treatment. This includes patients in whom anterior nasal pack was placed in casualty as an emergency procedure. The anterior nasal pack was placed for a period of 48 hours. The patient was given intravenous antibiotics, oral antibiotics, and antihistamines as long as the pack was in place. The patient was discharged with the advice to use saline nasal drops for a period of 1 week. Diagnostic nasal endoscopy was performed in these patients and no bleeding point was noted.

Figure 4: Epistaxis patient after anterior nasal packing.

Anterior nasal packing was done in 26 cases as an emergency procedure to control bleeding in casualty. This groups includes 10 cases of idiopathic epistaxis ,7 cases secondary to hypertension, 2 cases of blood dyscrasias,1 case of acute febrile illness causing low platelet count,5 cases of fracture nasal bone and 1 case of juvenile nasopharyngeal angiofibroma. Posterior nasal packing was done in 3 cases of epistaxis secondary to hypertension. Anterior nasal packing was also done in all these 3 patients. Hypertensive patients were managed with antihypertensive. Appropriate medical treatment was given to the case of bleeding disorder. Diagnostic nasal endoscopy followed by chemical cauterization was done in 11 patients in which bleeding site was noted in anterior aspect of nasal cavity. Diagnostic nasal endoscopy followed by bipolar cauterization was done in 4 patients with posterior epistaxis.

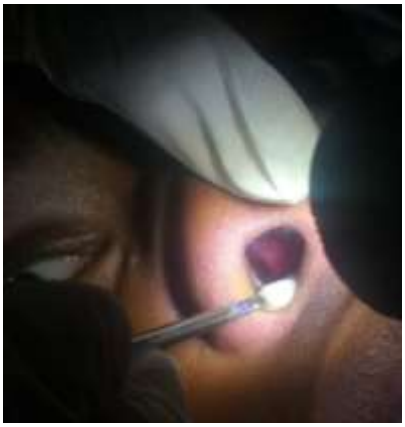

Figure 5: Chemical cauterization of right anterior septal bleeding point.

In our study most of the epistaxis cases were managed conservatively (55%). In that anterior nasal packing was the most common treatment modality used in emergency (43.3%). Endoscopic excision of the mass with anterior nasal packing was performed in 9 patients. Which included 3 cases of haemangioma septum,1 case of Angiofibroma,2 cases of nasal cavity mass, 1 case of Rhinolith,1 case of Rhinosporidiosis and 1 case of Nasopharynx mass. Fracture nasal bone reduction was done in 8 patients following initial management of epistaxis by anterior nasal packing. Septoplasty as definite management done in 5 patients.

Functional endoscopic sinus surgery was performed in 4 patients. Preoperative embolization was done in 2 patients with angiofibroma. Combined approach of endoscopic and lateral rhinotomy was done in one patient of angiofibroma. Both patients of angiofibroma underwent fibrin glue injection before surgery. In our study almost same percentage of patient underwent surgical modality of treatment (45%).

DISCUSSION

Epistaxis remains the most common ENT emergency. The most common location of epistaxis in all age group is the anterior one, it is rarely serious as the bleeding point is anteriorly located and is easily identified. Its origin is usually arterial (kiesselbach's plexus) located at the little's area or occasionally venous (retrocolumellar vein).

Posterior epistaxis occurs predominantly in the elderly and the site of bleeding is difficult to access as the site of origin is located more posteriorly, so it poses a great challenge to arrest bleeding. Age related and cardiovascular diseases related angiopathy changes are probably responsible for the prolonged duration of bleeding.

In our study, the age range of the patients varied from 4 to 75 years. Epistaxis was found to be more common in adolescents and young adults of 10-49 years of age,41 out of 60 patients. Males were affected more often than females with a ratio of 1.4. Similar findings have been noted in other studies.[5,3] This may be because the males are more frequently involved in outdoor activities such as sports and interpersonal violence. The higher prevalence of epistaxis in younger children and adolescents are probably due to their habit of nose picking which causes injury to the kiesselbach's plexus in the anteroinferior part of the nasal septum, that results into anterior epistaxis.[6]

Similarly in the present era even the young adults commonly have comorbidities such as hypertension and diabetes mellitus which cause degenerative changes in blood vessels making them more fragile which bleed easily on abrupt pressure changes such as straining during micturition and defecation in BPH and constipation respectively; excessive coughing in COPD; and lifting heavy objects. Nasal allergy, Acute rhinitis, abrupt temperature changes, sinus diseases and dry heat produce hyperemic and fragile nasal mucosa which bleeds easily while blowing or picking nose or with very mild trauma leading to anterior epistaxis. Most cases of epistaxis don't have an easily identifiable cause. Both local and systemic causes can play a role in it. Most of our patients (18;30%) with epistaxis did not have an identifiable cause which is similar to the study by Christensen et al.[7] Second most common cause of the epistaxis in our patients is trauma (8,13.33%). Increased Incidence of trauma in our study was due to increased cases of road traffic accidents.

In our study hypertension was the third most common cause for epistaxis (7;11.67%). Almost similar to study by Varshney and Saxena where Hypertension was the second most common cause of the Epistaxis.[8] Some of our hypertensive patients with epistaxis were found to have uncontrolled hypertension due to cessation of antihypertensive medications and inadequate drug therapy because of infrequent check-up; hence the need of regular blood pressure check-up and compliance to the antihypertensive medications should be emphasized. The local causes detected in our study were deviated nasal septum (8.33%), foreign body nostril (6.67%), haemangioma septum (5%), Nasal cavity mass (3.33%), Angiofibroma (3.33%) fungal rhinosinusitis (3.33%), Bilateral sinonasal polyposis (3.33%), Nasal myiasis (1.67%), rhinosporidiosis (1.67%), Rhinolith (1.67%) and Mass in nasopharynx (1.67%).

Our study supports the view that there is no role for routine coagulation studies in patients admitted with epistaxis. However, history of use of any anticoagulant or aspirin use must be elicited in all the patients presenting with epistaxis. Also, history of recurrent epistaxis and bleeding from other sites of the body must be elicited. Only If the routine haematological investigations like bleeding time or clotting time are abnormal should one go for coagulation studies. In our study blood dyscrasias was the etiology of epistaxis in 3.33% of patient and acute febrile Illness was the cause in 1.67% of patient. In all these 3 cases low platelet count was the cause of epistaxis, which was identified by routine haematological investigations. Our study also showed a proportion of 45% anterior nasal bleed, 6.67% had posterior bleeding. A study done by Gilyoma (2011) have noted that in majority of the patients (88.7%) it was anterior nasal bleeding.[9] Basic blood investigation was done to all patients. X-Ray nasal bone was taken for the patients with history of trauma to nose when nasal bone fracture was suspected clinically. X-ray PNS, CT PNS was taken to patients with clinical suspicion of malignancy, adolescent males with suspicion of JNA, patients of chronic sinusitis and to other required patients. A variety of treatment methods have been used to control epistaxis which range from nose pinching to ligation of vessels. Method of treatment for epistaxis depends on site, severity, and etiology of bleeding. Treatment modalities can be broadly divided into nonsurgical and surgical approaches. The nonsurgical/conservative modalities include digital nasal compression, topical vasoconstrictor, local cauterization (chemical or electric), nasal packing (anterior or posterior), blood transfusion, and foreign body removal. If the bleeding point is visible the bleeding site may be sealed either with chemical cautery using silver nitrate, chromic acid, or trichloroacetic acid or with electrocautery using bipolar diathermy. We routinely use silver nitrate for chemical cautery at our institution once bleeding point is visualized. In most of our patient's profuse epistaxis cases were managed in casualty with anterior and/or posterior nasal packing. Anterior nasal packing can be done with nasal tampons such as Merocel and rapid rhino, ribbon gauze, bismuth iodoform paraffin paste impregnated pack (BIPP), or "(absorbable nasal packing materials). "In a study done by Corbridge et al Merocel nasal packing was found to be effective in 85% of cases, with no difference between the success rates when compared with conventional ribbon gauze.[10]

If the bleeding is profuse and not controlled by anterior nasal packing, posterior nasal packing is done. It can be done either by using conventional ribbon gauze pack or Foley's catheter or by using commercially available balloon such as triluminal nasal balloon catheter (Invotec) and Epistat nasal catheter. In our study (26;43.3%) cases of active epistaxis were managed in casualty by anterior nasal packing and 3 patients among these 26 cases required posterior nasal packing after failed anterior nasal packing, which was done either with ribbon gauze or with Foley's catheter followed by anterior nasal packing as well. We used antibiotic soaked ribbon gauze for nasal packing in most of our patients. In our study after 48 hours of nasal packing, nasal packs were removed followed by

Diagnostic nasal endoscopy to identify the bleeding site, if bleeding site is anterior treated with chemical cauterization and bipolar electrocauterization preferred for posterior site. With this single instrument clots can be removed with suctioning which will localize bleeder that can be cauterized easily. Ahmed and Woolford reported 89% success rate with endoscopic electrocautery in patients with epistaxis.[11]

Surgical/interventional methods are usually the last resort for refractory epistaxis which does not stop after other means of conservative treatment such as posterior nasal packing. The surgical treatment options include selective arterial embolization or arterial ligation. Angiographic embolization uses coils, gel foam, or polyvinyl alcohol to embolise the bleeding vessel. This technique is found to have a success rate as high as 87%.[12]However, arterial embolization has risk of complications such as cerebrovascular accident, hemiplegia, ophthalmoplegia, facial nerve palsy, and soft tissue necrosis.[13] In our study 2 patients of juvenile nasopharyngeal angiofibroma underwent Preoperative sphenopalatine artery embolization using polyvinyl alcohol to control Intractable epistaxis. Various surgical techniques exist for ligation of vessels, that is, anterior/posterior ethmoidal artery ligation, internal maxillary artery, or external carotid artery ligation. Ligation of external carotid artery is considered a last resort in uncontrolled bleeding when other interventional methods fail. No case of arterial ligation was required in our study.

Nowadays the surgical treatment method which has gained popularity among the Rhinologists is endoscopic SPA ligation (with clip and electrocauterization or both), which is thought to be more ideal surgical treatment method, as it ligates a major arterial supply and therefore minimizes the risk of refractory epistaxis from collateral circulation. Success rate of 92% to 100% has been achieved with endoscopic SPA ligation.[14]None of the patient underwent SPA ligation in our study. There are other newer treatment methods for controlling bleeding such as fibrin glue, which is developed from human plasma cryoprecipitate that binds to the damaged vessels and arrests the bleeding. Randomized controlled trial has found that the local complications due to fibrin glue were lower than that of electrocautery, chemical cautery, and nasal packing. The rebleed rate of fibrin glue was 15% which is comparable to electrocautery.[15] In our study 2 patients of angiofibroma underwent local injection of fibrin glue for control bleeding before surgical excision.

Laser has also been introduced in the management of epistaxis that is found to be useful in cases of recurrent bleeds due to vascular abnormalities such as hereditary haemorrhagic telangiectasia.[16] Definite causes of epistaxis in our study were managed by definitive treatment like reduction of fracture nasal bone, septoplasty for deviated nasal septum, endoscopic excision of nasal mass, foreign body removal, Functional endoscopic sinus surgery and excision of angiofibroma.

CONCLUSION

Various etiologies of epistaxis were noted in our study and the most common was idiopathic. Other comorbidities of the patients were ruled out. The most common age group of epistaxis was found to be adolescents and young adults. The most common site of bleeding identified as anterior nasal cavity (Little's area). Majority of the patients were managed conservatively. It is necessary for the treating doctor to find out the etiology, site of bleeding and treat accordingly.

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