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Original Research Article

Aetiology and Management of Epistaxis: A Study from a Tertiary Care Hospital in North Karnataka

Hiran Ramanan[1], Hazna Hameed[2]

[1]Assistant Professor, Department of ENT, Travancore Medical College, Kollam, Kerala, India.
[2]Consultant ENT Surgeon, Pearl Hospital, Karunagappally, Kollam, Kerala, India.

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Corresponding author: Dr. Hiran Ramanan
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Abstract:

Background: Epistaxis is one of the most common emergencies that otorhinolaryngologists see in the out-patient department as well as in casualties. Causes of epistaxis can range from a simple self-limiting condition to a more sinister malignant lesion that needs a radical approach. Epistaxis can be managed medically, with nasal packing or surgically, depending on the situation and cause of bleeding.

Methods: The study was conducted in the Department of ENT, VIMS, Ballari, during the period from December 2014 to May 2016. The prospective study included 75 patients attending the department of ENT and also patients referred from other departments of VIMS Hospital, Ballari. Once the diagnosis was made, they were managed medically (conservatively), with anterior or posterior nasal packing and if needed, surgically, and the patients were followed up for a period of 6 months. The collected data was tabulated and subjected to statistical analysis.

Results: In our study, epistaxis was more common in males in the age group of more than 40 years, with 41.2% suffering from trauma, followed by hypertension as the second most common case. 40% of the patients needed combined modalities, including medical, anterior nasal packing and surgical management, 29% were managed medically. 18.6% required anterior nasal packing along with pharmacotherapy, 12% got controlled only when both anterior and posterior nasal packing were done. 97.3% of the patients had no recurrence on follow up for 6 months.

Conclusion: The study shows that epistaxis is more common in trauma patients, followed by hypertension with the combined modality of medical, anterior nasal packing and surgical management being the most effective mode of management with minimum recurrence.

Keywords: Epistaxis, Nasal Bleeding.

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Introduction

Epistaxis can be due to primary, secondary systemic, or idiopathic causes. Primary or local causes include congenital, traumatic, inflammatory, anatomical (deviated nasal septum, septal spur), iatrogenic, neoplasia, vascular, drugs, chemical, or climatic changes, and foreign bodies. Similarly, the systemic causes of epistaxis are haematological diseases causing coagulopathy, hypertension, liver disease, cardiovascular disease, renal disease, and anticoagulant drugs.[1]

In order to diagnose the cause of epistaxis, the patient's examination should start with anterior rhinoscopy, which usually reveals the bleeding site, dilated septal vessels or ulceration with or without crust. Posterior bleeding needs to be considered if there is anterior bleeding from both nostrils or if there is post nasal dripping of blood to the pharynx. Nasal endoscopic examination using a flexible or rigid scope after applying decongestion and topical anaesthesia is helpful in identifying the site of bleeding.[2] Multiple bleeding sites with diffuse ooze or recurrent bleeding may indicate a secondary cause such as hypertension, anticoagulation, or coagulopathy. In such cases, a hematologic evaluation should be performed, including a complete blood count, anticoagulant levels, prothrombin time, partial thromboplastin time, platelet count and, if indicated, blood typing and crossmatching8. Routine radiologic studies have little role in the initial diagnosis of epistaxis. Computed tomography (CT) or magnetic resonance imaging is not typically indicated for the investigation of epistaxis unless tumours or other local diseases are suspected as an underlying cause.[3]

Primary epistaxis should be managed first by identification of the bleeding point, and then haemostasis can be achieved using a small medicated plegdet, chemical, electrocautery or bipolar diathermy. Secondary epistaxis should be managed by identification of the cause and application of corrective systemic medical management.[4,5] Even in this modern era of all these technological advancements, we still find some cases difficult to

diagnose and even more difficult to manage. Moreover, posterior epistaxis, bleeding from sites not visible through anterior rhinoscopy, still eludes the otolaryngologist. A major advance in the management of posterior epistaxis has been the development of the technique of endoscopic ligation.[6] Recently, idiopathic intractable epistaxis has been managed by endovascular therapy with embolization of the internal maxillary artery. Preoperative embolization proves beneficial in a patient with juvenile nasopharyngeal angiofibroma by decreasing blood loss during surgery.[7]

Materials & Methods

A detailed history was obtained from the patients. Past and family history were also evaluated for further information. A meticulous and thorough general physical examination was conducted and the findings were noted, which was followed by a systemic examination irrespective of the cases, age, or sex.

A complete ear, nose, throat and neck examination was carried out on these patients. This approach was followed by further management of the patients depending on their general condition and the presence of active bleeding. Whenever general conditions permitted, a thorough investigation was performed. If other major problems like head injuries or chest injuries were present, patients were managed on a priority basis. In patients with active bleeding, first importance was given to the control of active bleeding, to be followed by investigations that were thought to be necessary, depending on the clinical assessment.

After relevant investigations, a definitive diagnosis was arrived at, and further management was planned depending on the requirements. The patients were treated either medically, surgically, or both. The medical line of management included conservative management, anterior nasal packing and post nasal packing. Surgical management included surgical procedures like cauterisation, endoscopic ligation, fracture reduction, and septal correction.

After the management of the bleeding and its causes, the patients were followed up for six months.

Results

Cause of Epistaxis

Table 1: Distribution of Study Subject based on Causes of Epistaxis

Causes	Frequency	Percentage
Primary	5	7%
Secondary	70	93%
Total	75	100%

As shown in Table 1, secondary causes predominate (93%) in the aetiology of epistaxis. Only 7% of the cases were of the primary variety. Of the 93% of cases that were due to secondary causes, as shown in Table 2, hypertension formed 24%, DNS with spur and nasal mass formed 2.9%, and foreign bodies, aplastic anaemia and nasal myasis constituted 1.47%. Febrile thrombocytopenia constituted 14.7%, while trauma became the single most common cause (41.2%). This explains why the majority of the cases in our study had an acute onset. Other minor aetiologies together constituted the rest of the 6%.

Secondary Causes of Epistaxis

Table 2: Distribution of Study Subjects based on Secondary Causes of Epistaxis

Diagnosis	Frequency	Percentage
Trauma	28	41.2%
Hypertension	24	35.3%
Febrile Thrombocytopenia	10	14.7%
Mass	02	2.9%
DNS with Spur	02	2.9%
Foreign Body	01	1.47%
Nasal Myasis	01	1.47%
Aplastic Anaemia	01	1.47
Atrophic Rhinitis	01	
Total	70	100%

In our study, 70 patients had secondary epistaxis, the causes of which were trauma (40%), hypertension (34.2%), and febrile thrombocytopenia (14.2%). The benign nasal mass and deviated nasal septum with a spur were 3%. Foreign bodies, aplastic anaemia, atrophic rhinitis, and nasal myiasis constituted 1.4% each.

Associated Diseases

Table 3: Distribution of Study Subjects based on Associated Disease

Associated Disease	Frequency	Percentage
Hypertension	24	32%
Diabetes Mellitus	09	12%
Fever	12	16%
Benign Nasal Mass	02	2.7%
Aplastic Anaemia	01	1.3
No associated disease	34	45.3%

Table 3 shows the distribution of study subjects based on associated disease. In our study, the majority i.e., 45.3% of the cases were not associated with any other disease. 9.3% of the cases had diabetes mellitus along with hypertension. 16% of cases had fever and most of them had thrombocytopenia. 2.7% of the cases had an associated benign nasal mass. 1.3% had bleeding diathesis, like aplastic anaemia.

Seasonal Variation

Table 4: Distribution of Study Subjects based on Seasonal Variation

Seasonal Variation	Frequency	Percentage
Summer	05	7%
Winter	00	00
No Variation	70	93%

Table 4 shows the distribution of study subjects based on seasonal variation. 7% of the study group had seasonal variation, i.e., during the summer season, their symptoms either recurred or increased. Most of the cases were idiopathic in nature, and the majority of cases with seasonal variation were children. As Ballari is a hot, humid region, symptoms of epistaxis tend to increase or recur during the summer season. A case of idiopathic origin can only be diagnosed once all other aetiologies have been ruled out.

Investigations

Table 5: Distribution of Study Subjects based on Investigations

Investigations	Done	Not done
Radiology	32 (42.7%)	43 (57.3%)
Biopsy	02 (2.7%)	73 (97.3%)
Diagnostic Nasal Endoscopy	47 (62.7%)	28 (37.3%)

In our study, as shown in Table 5, 42.7% underwent radiological investigations like x-rays and CT scans, while 62.7% underwent diagnostic nasal endoscopic examinations and 2.7% underwent biopsy and histopathological examinations.

Management

Table 6: Distribution of Study Subjects based on Management

Management	Frequency	Percentage
Medical alone	22	29%
Medical + Anterior Nasal Packing	14	18.6%
Anterior & Posterior Nasal Packing + Medical	09	12%
Anterior & Posterior Nasal packing +Surgical	30	40%
Total	75	100%

Table 6 shows the various modalities of management. 21.3% of study subjects underwent a combined modality of treatment, including medical, surgical and anterior nasal packing. 16% of cases were able to be managed on medical lines alone, while 61.4% required anterior nasal packing along with medical management and 1.3% required anterior and posterior nasal packing with medical treatment. The medical line of management included conservative management of trauma, upper respiratory tract infections, atrophic rhinitis, aplastic anaemia and hypertension. Aplastic anaemia management included packed red cell and fresh frozen plasma transfusions. Surgical management included endoscopic sphenoplalatine artery ligation, cauterisation, excisional biopsies, nasal bone fracture reduction and septal correction. Following anterior nasal packing no major complications or complaints were reported except for mild headaches, fullness of the ears, watering of the eyes and dryness of the mouth, which were noticed in a few patients. So we concluded that the dreaded and feared complications won't really occur in patients who are actually under continuous medical supervision and that the anterior nasal packing continues to be an effective management tool. Postnasal packing was required in one case for 48 hours for control of bleeding that was not getting controlled with anterior nasal packing. No major complications were observed.

Follow-up

Table 6: Distribution of Study Subjects based on Management

Investigations	Frequency	Percentage
Recurrence	02	02.6%
No recurrence	73	97.3%
Total	75	100%

On follow-up, as shown in Table 6, 97.3% of the cases in the study showed no recurrence. 2.7% of cases showed recurrence of epistaxis, which was associated with nasal myasis and benign nasal masses. The cases that had recurrences of epistaxis (nasal myiasis and benign nasal masses) were managed medically, as shown in Table 7.

Table 8: Relation between Management and Recurrence in Follow-up

Management	Follow-up		Total
	Recurrence	Non Recurrence	
Medical alone	01 (50%)	21(28.7%)	22(29.3%)
Medical + anterior packing	00	14(19.1%)	14(18.6%)
Anterior & Posterior packing + medical	01(50%)	08(10.9%)	09(12%)
Anterior & Posterior packing + surgical	00	30 (41%)	30 (40%)
Total	02(100%)	73(100%)	75(100%)

In our study, the combined modality of anterior and posterior nasal packing with a surgical approach showed a lower recurrence rate compared to other modalities of treatment.

Discussion

In our study, secondary (93%) causes were more common than idiopathic (7%) causes, contrary to the study done by Parajouli R where idiopathic cases were more common.[8] The single most common cause of epistaxis was trauma, similar to the study by Gilyoma et al. followed by hypertension. This explains why the majority of the cases in our study had an acute onset. A study by Herkner H et al. showed patients with active epistaxis had higher blood pressure at presentation compared with controls (systolic blood pressure 165 vs. 153 mmHg, P < .001, diastolic blood pressure 85 vs. 77 mmHg, P < .001),[9] similar to the study done by Byun H et al.[10] and contrary to the study done by Sarhan N A et al. which showed no definite association between epistaxis and hypertension. In their study, epistaxis was not initiated by high BP but was more difficult to control in hypertensive patients.[11] Hypertension was closely followed by febrile thrombocytopenia. The rest of the aetiology included DNS with spurs and nasal masses, foreign bodies, aplastic anaemia and nasal myasis. Most of the patients had no associated disease, but around 12% of them had diabetes mellitus along with hypertension (32%), leading to degenerative changes in blood vessels making them fragile and causing them to bleed on abrupt pressure changes while straining for micturition and defecation in benign prostatic hyperplasia (BPH) and constipation respectively.

The evaluation of a patient coming in with epistaxis should begin with a general physical examination. In our study group, most of the patients had normal general physical findings. 40% had associated high blood pressure, which indicates the proportion of hypertensive cases involved. About 32% had pallor, which indicates that they had profuse bleeding, except for the case of aplastic anemia. A few of the patients had an associated fever, which, on further investigation showed thrombocytopenia.

Nasal examination of patients who had a history of trauma showed that most of them had skin abrasions and soft tissue injuries, many also had nasal bone fractures. All these injuries can lead to bleeding from the nose. The rest of the patients, mainly children gave a history of digital manipulation (nose picking). On examination, these patients showed crusting, ulceration or granulation with blood clots in the anterior nasal septum.

Investigations such as complete blood parameters, including mean platelet volume and coagulation profiles, including prothrombin time (PT), and activated partial thromboplastin time (APTT) are the most commonly used laboratory tests.[12] Anaemia was seen in the present study, with a few cases having haemoglobin levels of less than 7 g/dl reflecting the severity of bleeding. Mean platelet volume (MPV) is important, as certain studies show, as it is elevated in recurrent epistaxis cases.[13] The need for routine coagulation profile studies is still questionable, as multiple studies done previously concur, but should be considered if there is a firm indication found in history as well as clinically.[14,15] Blood parameters are usually followed by a diagnostic nasal endoscopy, both flexible and rigid. which helps in localising the bleeding point.[16] The majority of the cases in the present study underwent nasal endoscopy, which helped us detect some bleeding masses from which biopsies were taken and sent for further histopathological examination. However, in cases of active bleeding, there was no time to pass the endoscope. Hence, these patients underwent endoscopic evaluation once the bleeding

was controlled. Endoscopic evaluation requires a fully equipped endoscopic setup and good teamwork between the residents, faculty and clinical staff.

As per multiple studies, diagnostic imaging approaches that are non-invasive, such as computed tomography (CT) with and without contrast of the paranasal sinuses, are usually not necessary but may be done in order to detect unidentified causes of the bleeding, e.g., neoplastic diseases.[17,18,19] In the present study, we did CT PNS for patients with a history of trauma to the face involved in a road traffic accident and those with recurrent nasal bleeding. Most of the patients with trauma histories had multiple facial bone, nasal bone and maxilla fractures. In the rest of the patients with recurrent nasal bleeding who underwent radiological imaging, only two patients had a nasal mass that was later found to be a bleeding polyp. In the present study, out of the 4 patients with recurrent epistaxis of unknown origin, after endoscopy and radiological imaging, 2 had sino-nasal pathology. A study done by van Horn et al. showed no related pathology in 98% of the CT images.

Management of epistaxis ranges from first aid to a surgical approach. The first line method of treatment for a patient with a non-life-threatening nasal bleed is Trotter's method, wherein the patient has to pinch both nostrils while he remains in a bent-down position for about 20 minutes, after which the patient should be reassessed.[20] Nasal decongestants such as oxymetazoline or xylometazoline as nasal drops or cotton pledgets can be used for haemostatic control along with manual pressure. Systemic as well as topical tranexamic acid can also be tried as first-line management.[21] If there is persistent bleeding or the bleeding is profuse, anterior nasal packing and, if needed, posterior nasal packing should be done. Once packed, the patient should be admitted, and an IV assessment should be established. Posterior epistaxis is usually not controlled with packing and will require surgical intervention.

Treatment options in the current study were pharmacotherapy, anterior and posterior nasal packing and surgery. As first-line management, topical vasoconstrictors, topical or systemic tranexamic acid and antihypertensive drugs were used. However, pharmacotherapy played a role only as initial supportive management and most of our study subjects required anterior nasal packing. In more than half of our patients, we were able to control the bleeding with pharmacotherapy and an anterior nasal pack. Children with a history of trauma to the nose were controlled with topical decongestants, the rest of our patients with trauma histories needed both anterior and posterior nasal packing and some required surgical intervention such as nasal bone fracture reduction, wound exploration and suturing, and OMFS intervention.

No major complications or complaints were reported except for mild headaches, fullness of the ears, watering of the eyes and dryness of the mouth in a few of our patients following anterior and posterior packing. Complications of nasal packing are mucosal laceration, worsening bleeding, obstruction of the airway, sinus infection, posterior dislocation with possible aspiration, discomfort in the ear due to negative middle ear pressure, and toxic shock syndrome.[22]

Prophylactic antibiotic therapy is advocated in certain literature, as done in our study, but some authors prefer the use of antibiotics only if the pack is kept for more than 48 hours. Although, most of the studies showed no clear evidence of reduction of infection in cases of prophylactic antibiotic use,[23,24] it is recommended in all posterior nasal packing cases.[25] Literature shows different timelines for removal of the nasal pack, varying from 12 or 24 hours to 3 to 5 days after insertion.[26,27] We recommend removing the nasal pack after 48 hours.

Most of the elderly hypertensive patients (83%) required post-nasal packing, endoscopic evaluation, cauterization of the bleeding point and sphenopalatine artery ligation, as posterior epistaxis in these cases was difficult to control even after anterior and posterior nasal packing was done. Since cauterization of the bleeding point also entails less duration of hospitalization, a good success rate and negligible complications, it should be the preferred modality of treatment wherever the bleeding site can be visualized. Surgical intervention should be the last resort, as most patients respond well to non-surgical measures.[28] The rest of our hypertensive patients (16%) were controlled with post nasal packing and antihypertensives. Two of the patients came back to our outpatient department with recurrent nasal bleeding. On follow-up, both had bleeding masses and were managed accordingly.

We recommend the use of a proper treatment algorithm and a plan for the prompt diagnosis and management of epistaxis. Numerous studies have suggested the need for a proper stepwise management plan with the help of endoscopes. This has helped in actively managing epistaxis, which should limit patient complications and the need for prolonged admission.[29]

Conclusion

In the present study, the majority of the cases of epistaxis were due to secondary causes. Of these, trauma, which included RTA, nose picking and other self-inflicted injuries, was the single most common aetiology, followed by hypertension, febrile thrombocytopenia, deviated nasal septum with spur, aplastic anemia, benign nasal mass, foreign body, nasal myiasis and other diseases. In children, idiopathic upper respiratory tract infections, nose picking, and foreign bodies were the common causes.

The management was mainly combined modality including medical and anterior nasal packing followed by medical alone. Anterior nasal packing is an effective method of controlling active bleeding under supervision. No severe complications were observed following anterior or posterior nasal packing. On follow-up, only a few cases, especially those of nasal myiasis and nasal mass reported recurrence. One patient (with aplastic anemia) died during the follow-up period.

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