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Angioembolization in intractable epistaxis — a tertiary care experience

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Abstract

Objective: To review the role of angioembolization in the control of intractable epistaxis at our institution.

Methods: A retrospective review of the charts of the patients between Jan 2001 to June 2010 at Aga Khan University Hospital, Karachi was done. All patients who underwent angioembolization for intractable epistaxis were included in the study. Patients with nasal or nasopharyngeal mass were excluded. Data was analyzed by using SPSS version 16.

Results: Total numbers of the patients were 16. Fourteen (87.5%) patients were male and 2(12.5%) were female with mean age 51.2 ± 12.922 years (range 26-71 years). In 11(68.75%) patients there were no associated risk factors for epistaxis, 3(18.75%) patients had uncontrolled hypertension, 1(6.25%) patient had road traffic accident and 1(6.25%) patient had bleeding after nasal surgery. All patients were initially treated by anterior and posterior nasal packing for 48 to 72 hours. Angioembolization successfully controlled epistaxis in all 16 (100%) patients initially. However, in 2(12.5%) cases embolization had to be repeated; in 1 patient on the same day and in another patient after one month of initial procedure. The average length of stay after angioembolization was 1.9 ± 0.854 days. No major or permanent complication was observed.

Two (12.5%) patients developed minor complications (1 patient experienced facial pain for 7 days and another patient developed haematoma at the site of femoral artery).

Conclusion: Angioembolization is a safe and effective treatment option for intractable epistaxis.

Keywords: Angioembolization, Intractable epistaxis, Nasopharyngeal mass, Karachi (JPMA 62: 254; 2012).

Introduction

Epistaxis is defined as acute haemorrhage from nostril, nasal cavity, or nasopharynx. It is one of the commonest emergency in ENT practice and often causes significant anxiety in patients and clinicians. Epistaxis has been reported to occur in up to 60 percent of the general population. The condition has a bimodal distribution, with incidence peaks at ages younger than 10 years and older than 50 years. Epistaxis appears to occur more often in males than in females. Although 60% of population experience epistaxis in their life time but only 6% need any treatment.¹ In majority of the cases, only conservative measures such as local pressure, vasoconstrictor drugs and anterior and posterior nasal packing (AP packing) are needed. Epistaxis not responding to these conservative measures is known as intractable epistaxis. Such cases can be treated surgically by ligating internal maxillary, external carotid or ethmoidal arteries but with the emergence of interventional radiology these cases can also be managed by embolizing the bleeding vessels. Sokoloff was the first one who described the use of embolization in epistaxis.² Since then, over the period of time this technique has been standardized and became a viable option in the management of intractable epistaxis. However, angioembolization is not

entirely a risk free procedure and carries potential for some serious kinds of complications such as facial nerve paralysis, blindness and soft tissue necrosis.³ At our institution, embolization is the primary method for uncontrolled nasal bleeds. Therefore, this paper outlines our experience of angioembolization for the treatment of intractable epistaxis.

Methods

It was a retrospective review of cases of epistaxis that underwent angioembolization between Jan 2001 to June 2010 at this institution. All the patients, embolized for epistaxis, were included in the study while those who had epistaxis due to nasal or nasopharyngeal mass were excluded. The chart review included demographic details, investigations performed and treatment provided before deciding for angioembolization. All the data was recorded on a performa and analysed using SPSS 16.0. Total numbers of the patients were 16. All patients underwent a complete set of investigations including history, physical examination and nasal endoscopy to look for any bleeding point. If the bleeding did not stop by conservative means, anterior and posterior nasal packing was done for 48 to 72 hours in these patients and they were admitted. Nasal bleeds not responding

to anterior and posterior nasal packing were then embolized after obtaining the written consent from the patient.

Diagnostic as well as therapeutic angiography was performed under local anaesthesia in an angiographic suite by the interventional radiologists. The femoral approach was used in all cases. Usually 4 Fr catheter was used and advanced over the guide wire to selectively cannulate the common carotid, external carotid, internal maxillary and facial arteries. Non ionic water soluble contrast was used for the extravasation. Then microcatheters were utilized to selectively cannulate the bleeding vessels. Embolization was done with polyvinyle alcohol (PVA) or with gelfoam. Post embolization run was given to confirm the cessation of bleeding. Later on nasal packs were removed. Patients were followed in ENT clinic after a week. Follow up was also taken on the phone from all the patients during the study.

Results

Sixteen patients were studied. there were 14 (87.5%) males and 2 (12.5%) females with a mean age of 51.2 ± 12.92 years (range: 26-71 years).

Eleven (68.75%) patients had idiopathic epistaxis and 5 patients had associated risk factors for epistaxis which are shown in Table-1.

After the embolization, the immediate cessation of bleed was achieved in all the 16 (100%) patients. However, in 2 (12.5%) cases angioembolization had to be repeated; in 1 patient on the same day and in another patient after a month. So the overall success rate was 87.5%. In majority of the cases (56.25%), ipsilateral internal maxillary artery (IMA) was the bleeding source and was embolized. Distribution of the vessels occluded is shown in Table-2.

In 14 patients permanent embolizing agent, PVA was

Table-1: Causes of Epistaxis.

Cause	Patients (n)
Idiopathic	11 (68.75%)
Hypertension	3 (18.75%)
Trauma	1 (6.25%)
Iatrogenic	1 (6.25%)

Table-2: Distribution of vascular embolization.

Artery Embolized	Cases(n)
Ipsilateral IMA	9 (56.25%)
Bilateral IMA	3 (18.75%)
Ipsilateral IMA and facial artery	2 (12.5%)
Bilateral IMA ipsilateral facial artery	1 (6.25%)
Bilateral IMA bilateral facial artery	1 (6.25%)

used while in 2 patient gelfoam was used which is a temporary embolizing material. The average total hospital stay was 3.9 days, and the average stay after embolization was 1.9 ± 0.85 days. All patients were followed in ENT clinic after a week of discharge.

No major or permanent complications were observed. 2 (12.5%) patients developed minor complications; 1 patient experienced facial pain for 7 days and was treated with mild analgesics and 1 patient developed haematoma at the site of femoral artery which resolved spontaneously.

Discussion

Epistaxis is one of the otolaryngological emergency⁴ which may prove life threatening if not managed appropriately. There may be many etiological factors responsible for the nasal bleeding but in most of the cases these bleeds are idiopathic. In this study 68.75% patients had idiopathic epistaxis and only 31.25% had associated risk factors for nasal bleed.

Majority of the nasal bleeds are managed easily with anterior and/or posterior (AP) nasal packing. However, the failure rate of AP packing is about 0%-52%.⁵ The optimal treatment of nasal bleeds refractory to the AP packing is still controversial.⁶ Traditionally the standard treatment for uncontrolled nasal bleeds was the surgical ligation of the bleeding vessels.⁷ In 1974, Sokoloff² was the first one who introduced the embolization technique for the treatment of epistaxis. Then over the period of time, technology as well as the level of experience improved in the field of interventional radiology and embolization became one of the accepted treatment option for epistaxis.

Our institution is among a few in the country where this facility is available. Here the primary method to deal with intractable epistaxis is angioembolization. We achieved overall success rate of 87.5%, comparable to the international literature, which ranges from 71 to 100%.⁸ This is also comparable with the average success rate of trans-antral ligation of internal maxillary artery (IMA), which is 87%.⁹ Reembolization was done in 2 cases. In 1 patient it was repeated on the same day, initially ipsilateral IMA and facial artery were embolized but on 2nd attempt contralateral IMA was also occluded, this could be a contribution from the contralateral IMA. The second patient in which embolization was repeated after a month had uncontrolled hypertension and then bilateral IMA and bilateral facial artery were embolized.

In 14 patients polyvinyle alcohol (PVA) particles and in 2 patients gelfoam were used as an embolizing material. The PVA particles vary in their size, from 45 to

150 and even up to 700 micron. In our series PVA size was between 250 to 350 micron. These particles must be directed in antegrade fashion to the arteriolar bed and care must be taken to avoid the reflux to the proximal arterial branches.¹⁰

No major complications were observed. Potential major complications in the literature are grand mal seizure, facial palsy, blindness and cerebrovascular accident.¹¹⁻¹³ These complications usually result from the reflux of the particles into the internal carotid system. Minor complications include temporofacial pain, headache, soft tissue swelling, facial numbness, mental status changes, groin pain and haematoma formation at the site of femoral vessels. Vokes DE¹⁴ reported 21% rate of minor complications and we observed only 12.5% which resolved over the period of few days. During the study, follow up was also taken from all the patients on phone and no one developed any complication.

In this series, the average hospital stay was 1.9 ± 0.854 days after the embolization but Christensen NP¹¹ reported 2.5 days average hospital stay after embolization. Hypertension, aspirin and other anticoagulant drugs did not influence the length of stay after the embolization in our patients.

The treatment of epistaxis may need the otolaryngologist to use many therapies. Nasal bleed refractory to conservative management can be treated either surgically or by embolization. But angioembolization may be the treatment of choice for intractable nasal bleeding due to high success rate without any serious complications, short hospital stay, avoidance of general anaesthesia and

less discomfort to the patients.

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