Original Article* / *Çalışma - Araştırma

Epistaxis management: is medical intervention required for inactive epistaxis?

Burun kanaması tedavisi: Durmuş kanamaya bir tıbbi girişim gerekir mi?

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Objectives: This study aims to discuss the management and the follow-up approach in patients with epistaxis.

Patients and Methods: A total of 367 patients with epistaxis (209 males, 158 females; mean age 52.6±18.3 years; range 18 to 85 years) admitted to the Adult Emergency Department of a university hospital between January 2000 and December 2004 were retrospectively analyzed.

Results: Of patients, 56.7% had an idiopathic bleeding. A significantly higher number of patients aged >50 years had high blood pressure on admission. Of 141 patients (38.49%) presenting without bleeding on admission, 20 required medical intervention for recurrent epistaxis. Conservative approaches were effective in stopping bleeding in 97.8% patients. The hospitalization ratio was 5.7%.

Conclusion: Our study result show that endonasal endoscopic mucosal cauterization is an effective method for resistant-to-treatment cases and inactive bleeding on admission is not a restraint for further examination.

Keywords: Electrocoagulation; emergency service; endoscopy; epistaxis; hypertension.

Amaç: Bu çalışmada burun kanamalı hastaların tedavi ve izlem yaklaşımı tartışıldı.

Hastalar ve Yöntemler: Ocak 2000 - Aralık 2004 tarihleri arasında bir üniversite hastanesinin erişkin acil sevisine başvuran burun kanamalı toplam 367 hasta (209 erkek, 158 kadın; ort. yaş 52.6±18.3 yıl; dağılım 18-85 yıl) geriye dönük olarak incelendi.

Bulgular: Hastaların %56.7'sinde kanama idiyopatikti. Elli yaş üzerindeki anlamlı sayıda fazla hastada başvuru sırasında hipertansiyon mevcuttu. Başvuru sırasında kanama saptanmayan 141 hastanın (%38.49) 20'sine tekrarlayan burun kanaması nedeniyle tıbbi girişimde bulunuldu. Konservatif yaklaşım, hastaların %97.8'inde kanamanın durdurulmasıyla etkili bulundu. Hastaneye yatış oranı %5.7 idi.

Sonuç: Çalışma bulgularımız, tedaviye dirençli olgularda endonazal endoskopik mukoza koterizasyonunun etkili bir yöntem olduğunu ve başvuru sırasında kanama olmamasının ileri inceleme için engel olmadığını göstermektedir.

Anahtar Sözcükler: Electrokoagülasyon; acil servis; endoskopi; burun kanaması; hipertansiyon.

Available online at
www.kbbihtisas.org
doi: 10.5606/kbbihtisas.2014.78642
QR (Quick Response) Code

Received / *Geliş tarihi:* January 12, 2014 Accepted / *Kabul tarihi:* March 25, 2014

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The lifelong incidence of the epistaxis in the general population is about 60% with 6% seeking professional help. Epistaxis is classified on the basis of the primary bleeding site as anterior or posterior. Consistent with the well known vascular anatomy of the nasal mucosa, a common source of anterior epistaxis is the Kiesselbach plexus while posterior hemorrhage originates from the Woodruff plexus of the sphenopalatine artery.

Surgical or non-surgical managements are used to stop the bleeding.[1] The initial assessment of a patient with epistaxis usually begins in the emergency department (ED) with well-known algorithms.[2,3] However, community based surveys revealed that just 11% of people know the appropriate first aid approach. Also, only 33% of emergency physicians could apply the formal method of compression.[4,5]

Nevertheless, emergency physicians manage 90% of epistaxis cases successfully, unless originated from somewhere other than the Kiesselbach plexus.[6] Intractable posterior epistaxis generally needs surgical intervention.[1] Since their use became common, nasal endoscopes helped establish the point of bleeding and helped stop bleeding with effective intranasal approaches.[7,8] Besides shortening the duration of hospitalization, these endoscopic intranasal interventions are also cost effective.[9]

The aim of this study is to discuss the treatment and follow-up approach in patients admitted to the adult ED of the University Hospital with epistaxis and the ear, nose, and throat (ENT) approach in intractable cases.

PATIENTS AND METHODS

In this study, patients with epistaxis admitted to the adult ED of a University Hospital between January 2000 and December 2004 were retrospectively assessed. This study was approved with IRB number 45-GOA.

The cases were evaluated for age, gender, site of bleeding, blood pressure at the time of admission, treatment modalities, ENT consultation rates and interventions. Blood pressure values of >160/90 mmHg were recorded as hypertensive. There were 571 medical records coded as epistaxis in the adult ED; however, it was found that 140 records had been miscoded and 64 records could not be reached. The total examined number of records was 367 (209 males, 158 females; mean age 52.6±18.3 years; range 18 to 85 years). The treatment modalities were classified into two groups; conservative treatment (nasal irrigation, compression, chemical cauterization, anterior or posterior nasal packing) and invasive treatment (internal maxillary artery ligation, endoscopic intranasal cauterization, angiographic embolization and anterior/posterior ethmoidal artery ligation).

Chi-squared test and the Student's t test were used for statistical analyses. Data were installed and analyzed using the SPSS for Windows 11.0 version software program (SPSS Inc. Chicago, IL, USA).

RESULTS

Because no etiological reason could be detected in 56.7% of the patients, their epistaxis was accepted as idiopathic bleeding. The etiological factors for bleeding are presented in Table 1. Two hundred and fifty patients (68.1%) were normotensive at the time of admission. Among the 91 patients (24.8%) with a present history of hypertension, 39 (43%) were normotensive while 52 (57%) had elevated levels of blood pressure at the time of admission.

There was no bleeding at the time of admission in 38.4% of the patients. The interventions in the ED and ENT department are shown in Table 2. The ENT consultation rate was 27.8% and 21 patients (5.7%) were hospitalized. One patient underwent angiographic embolization while seven (2.2%) required endoscopic bipolar cauterization. The mean duration of hospitalization for patients in the ENT clinic

Table 1. Etiologies in patients presenting to the emergency department with epistaxis

	Number of patient	%
Idiopathic	208	56.7
Hypertension	126	34.3
Recurring bleeding	10	3.2
Trauma	8	2.2
Infection	6	1.6
Digital trauma	3	0.8
No record	3	0.8
Hemorrhagic diathesis	1	0.3
Total	367	100.0

Table 2. Interventions in emergency and ENT departments on patients presenting with epistaxis

	n	%
Emergency intervention (n=367)		
No bleeding	141	38.4
Conservative	226	61.6
ENT intervention (n=102)		
No bleeding	3	2.9
Conservative	91	89.2
Invasive	8	7.8

ENT: Ear, nose and throat.

was 3.56±3.5 days (range 1-15 days). Three patients received two units and one patient received six units of blood transfusion. The comparison between stopping bleeding with anterior or posterior packing in the ED and ENT department are presented in Table 3.

There were 142 patients (38.7%) ≤50 years of age and 225 patients (61.3%) over 50 years of age. At the time of admission, 21 patients in the first group (less than 50 years of age) and 95 patients in the second group (>50 years of age) were hypertensive and the difference between groups was statistically significant ($p<0.05$). There was no significant difference between the anterior packing rates of the ED and the ENT department in both age groups (Table 4).

Endoscopic cauterization was performed in seven patients. The endoscopically detected sites of bleeding were the dorsal region of anterior septum in four patients, the lateral wall below the anterior part of the inferior turbinate in one patient and the posterior part of the septum crest in two patients.

Initially, there was no active bleeding in 141 patients (38%) admitted to the ED with

Table 3. Assessment of patients who had their initial intervention in the emergency department and were then referred to ENT for control of bleeding by anterior packing

	ENT intervention		
	Without packing	With packing	*Total*
	n	n	n
Emergency intervention			
Without packing	42	52	94
With packing	1	4	5
Total	43	56	99

ENT: Ear, nose and throat.

epistaxis. Of these cases, 22 were referred to the ENT department, and coincidentally 20 of them experienced re-bleeding during this period. As result, they underwent conservative intervention (nasal packing in eight patients) to stop re-bleeding.

DISCUSSION

Epistaxis is the most frequent complaint in the ENT-related ED admissions.[10] Cost effective management of this frequent problem is important in primary care. It is widely accepted that family medicine, emergency care and ENT practices should be integrated. It has been reported that simple changes in the guidelines and reorganization for the patient with epistaxis can provide more effective and less expensive treatment.[11,12] It is known that patient awareness reduces the frequency of hospital admissions with epistaxis.[13]

Cardiovascular diseases usually accompany epistaxis. Pollice and Yoder[1] reported the association ratio for hypertension and cardiac disease at 47% and 41% respectively. A report

Table 4. Distribution of interventions by the emergency and ENT departments for patients less than 50 and over 50 years of age

Age group (years)	Emergency intervention		ENT intervention	
	Without packing	With packing	Without packing	With packing
	n	n	n	n
≤50 (n=142)	139	3	19	17
>50 (n=225)	213	12	25	38

ENT: Ear, nose and throat.

observed that one-third (33%) of patients were being treated with anticoagulant therapy during their epistaxis. The association between epistaxis and hypertension is controversial. Although it has been reported that the incidence of epistaxis and hypertension are not associated[14,15] high blood pressure levels have been determined more frequently in patients admitted to the ED with active nose bleeding rather than controls.[16] In this study, hypertension was the most common accompanying systemic disease with epistaxis. The rate was significantly higher in patients over 50 years of age compared to patients ≤50 years of age ($p<0.05$). No significant difference was realized between hypertensive and normotensive patients in terms of the percentage of anterior packing carried out in the ED or ENT department ($p>0.05$). This questions the relationship of hypertension and the packing requirement during epistaxis. Further studies are needed to accept epistaxis as an end-organ damage caused by hypertension and to research on other potential target organ involvements.[17] The most frequent etiological type of the epistaxis was idiopathic bleeding in our study, maybe in consequence of inadequate medical recordings.

Endoscopic bipolar cauterization has been suggested as an efficient and cost-effective modality for management of adult epistaxis.[18,19] Nasal endoscopy is an effective approach, which has been known to cause fewer complications than other invasive methods, especially in sphenopalatine bleedings resistant to conservative treatment.[20] Durr[7] reported that endoscopic examination and cauterization might be used before artery ligation in cases with bleeding in spite of packing. It was reported that performing this technique preferably on initial admission would increase the comfort of the patient.[7] However, limitations of studies favoring an endoscopic approach for epistaxis patient selection criteria include their being prospective studies for a limited time or duration, or their involving a limited number of consecutive patients admitted to the ED.[7,9,18,19] Consequently, the results for this particular design could be appropriate but should be tested for ordinary daily practice. In this study, all patients underwent endoscopic bipolar cauterization owing to continued bleeding in spite of packing or conservative approaches except for those treated with angiographic embolization methods. It was noticed that the pressure provided by anterior packing could not affect these particular-bleeding locations. No further intervention was required in our study for the patients who underwent endoscopic bipolar cauterization. Therefore, we suggest that endoscopic examination is essential to decide the virtual localization of the bleeding before attempting artery ligation and bipolar cauterization. In our study, experienced specialists in the operating room performed the whole endoscopic cauterization operations. In our opinion, at least a moderate experience in endoscopic sinus surgery is necessary to perform endoscopic cauterization techniques during active nose bleeding.

Epistaxis causes severe anxiety in patients. It has been reported that use of drugs that resolve this anxiety increases the achievement of the treatment.[21] In our study, 141 patients (38%) presented to the ED, although their bleeding had stopped. Among them, 22 patients were referred to the ENT department and 20 patients required an intervention for re-bleeding. The reason why ED caregivers referred patients with no bleeding to the ENT department were not clear but probably based on such kinds of unpredictable individual preferences. Surprisingly, however, eight of these patients were treated with anterior packing during their ENT follow-up and 14% of these patients with only a history of previous bleeding were shown to require intervention during clinical follow-up. Therefore, we advise that patients with no active bleeding at the time of admission should be monitored for a while.

Considering the algorithm, first step management for epistaxis should include digital compression and chemical cauterization, the second step should comprise anterior packing, with surgical methods preferred as the third stage. It is debatable what step and to what extent should be the responsibility of the ED physician in practice and at what stage the patient should be referred to the ENT specialist, although there is no disagreement on such referral. Although ED physicians are well experienced in the first aid methods for nose bleeding, the lack of headlight illumination, nasal speculum or a suction device in the ED limits them.[22] Anterior packing is more frequently used in the ED and this may induce ENT interventions due to the recurrence of bleeding.[23] It was proposed

that referring the patients with posterior epistaxis to the ENT department was quite cost-effective. In our study, 52 out of 94 patients who had been referred to the ENT specialists without packing at the ED underwent anterior packing performed by ENT specialists while the other patients were treated with conservative approaches. It was also realized that four out of five patients whose bleeding had stopped after anterior packing performed by an ED physician required renewal of the anterior pack by an ENT specialist. For this reason, in our study it is recommended that training ED physicians on the essentials of ENT and the use of nasal speculum, headlight illumination and suction device will prevent insufficient initial management and lessen unnecessary ENT referrals while ensuring and enhancing the success of the interventions.

Conclusion

Of patients presenting with epistaxis, 62.2% can be managed at the ED. The primary care interventions performed by ED physicians and the conservative approaches carried out by ENT specialists are sufficient to control 97.8% of nose bleedings. Hypertension is an apparent comorbidity in patients over 50 years of age, but has no effect on the severity of bleeding. Having no bleeding at the time of admission is not a reason to skip medical assessment. When monitored, 14% of these patients required ENT interventions due to re-bleeding.

Declaration of conflicting interests

The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.

Funding

The authors received no financial support for the research and/or authorship of this article.

REFERENCES

1. Pollice PA, Yoder MG. Epistaxis: a retrospective review of hospitalized patients. Otolaryngol Head Neck Surg 1997;117:49-53.
2. Mahmood S, Lowe T. Management of epistaxis in the oral and maxillofacial surgery setting: An update on current practice. Oral Surg Oral Med Oral Pathol Oral Radiol Endod 2003;95:23-9.
3. Pope LE, Hobbs CG. Epistaxis: an update on current management. Postgrad Med J 2005;81:309-14.
4. Strachan D, England J. First-aid treatment of epistaxis--confirmation of widespread ignorance. Postgrad Med J 1998;74:113-4.
5. McGarry GW, Moulton C. The first aid management of epistaxis by accident and emergency department staff. Arch Emerg Med 1993;10:298-300.
6. Tomkinson A, Roblin DG, Flanagan P, Quine SM, Backhouse S. Patterns of hospital attendance with epistaxis. Rhinology 1997;35:129-31.
7. Durr DG. Endoscopic electrosurgical management of posterior epistaxis: shifting paradigm. J Otolaryngol 2004;33:211-6.
8. Almeida GS, Diógenes CA, Pinheiro SD. Nasal endoscopy and localization of the bleeding source in epistaxis: last decade's revolution. Braz J Otorhinolaryngol 2005;71:146-8.
9. O'Donnell M, Robertson G, McGarry GW. A new bipolar diathermy probe for the outpatient management of adult acute epistaxis. Clin Otolaryngol Allied Sci 1999;24:537-41.
10. Rourke T, Tassone P, Philpott C, Bath A. ENT cases seen at a local 'walk-in centre': a one year review. J Laryngol Otol 2009;123:339-42.
11. Upile T, Jerjes W, Sipaul F, Maaytah ME, Singh S, Hopper C, et al. A change in UK epistaxis management. Eur Arch Otorhinolaryngol 2008;265:1349-54.
12. Tam S, Rotenberg B. Contemporary perspectives on the management of posterior epistaxis: survey of canadian otolaryngologists. J Otolaryngol Head Neck Surg 2011;40:249-55.
13. Eze N, Lo S, Toma A. Advice given to patients with epistaxis by A&E doctors. Emerg Med J 2005;22:724-5.
14. Knopfholz J, Lima-Junior E, Précoma-Neto D, Faria-Neto JR. Association between epistaxis and hypertension: a one year follow-up after an index episode of nose bleeding in hypertensive patients. Int J Cardiol 2009;134:e107-9.
15. Page C, Biet A, Liabeuf S, Strunski V, Fournier A. Serious spontaneous epistaxis and hypertension in hospitalized patients. Eur Arch Otorhinolaryngol 2011;268:1749-53.
16. Herkner H, Havel C, Müllner M, Gamper G, Bur A, Temmel AF, et al. Active epistaxis at ED presentation is associated with arterial hypertension. Am J Emerg Med 2002;20:92-5.
17. Lubianca Neto JF, Fuchs FD, Facco SR, Gus M, Fasolo L, Mafessoni R, et al. Is epistaxis evidence of end-organ damage in patients with hypertension? Laryngoscope 1999;109:1111-5.
18. Sharp HR, Rowe-Jones JM, Biring GS, Mackay IS. Endoscopic ligation or diathermy of the sphenopalatine artery in persistent epistaxis. J Laryngol Otol 1997;111:1047-50.
19. Ahmed A, Woolford TJ. Endoscopic bipolar diathermy in the management of epistaxis: an effective and cost-efficient treatment. Clin Otolaryngol Allied Sci 2003;28:273-5.
20. Elwany S, Abdel-Fatah H. Endoscopic control of posterior epistaxis. J Laryngol Otol 1996;110:432-4.
21. Thong JF, Lo S, Houghton R, Moore-Gillon V. A prospective comparative study to examine the effects

of oral diazepam on blood pressure and anxiety levels in patients with acute epistaxis. J Laryngol Otol 2007;121:124-9.
22. Ho EC, Chan JY. Front-line epistaxis management: let's not forget the basics. J Laryngol Otol 2008;122:696-9.
23. Evans AS, Young D, Adamson R. Is the nasal tampon a suitable treatment for epistaxis in Accident & Emergency? A comparison of outcomes for ENT and A&E packed patients. J Laryngol Otol 2004;118:12-4.
24. Monte ED, Belmont MJ, Wax MK. Management paradigms for posterior epistaxis: A comparison of costs and complications. Otolaryngol Head Neck Surg 1999;121:103-6.