

An International Survey on the pragmatic management of epistaxis

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Abstract. Epistaxis is one of the most common ear, nose and throat emergencies. The management of epistaxis has evolved significantly in recent years, including the use of nasal cautery and packs. However, a correct treatment requires the knowledge of nasal anatomy, potential risks, and complications of treatment. Epistaxis is often a simple and readily treatable condition, even though a significant bleed may have potentially severe consequences. At present, there are very few guidelines concerning this topic. The current Survey explored the pragmatic approach in managing epistaxis. A questionnaire, including 7 practical questions has been used. The current International Survey on epistaxis management reported a relevant prevalence (21.7%), mainly during childhood and senescence, an important hospitalization rate (11.8%), the common use of anterior packing and electrocoagulation, and the popular prescription of a vitamin supplement and intranasal creams.(www.actabiomedica.it)

Key words: epistaxis, otorhinolaryngology, emergency, medical treatment, surgery

Introduction

Epistaxis is one of the most common otorhinolaryngology (ORL) emergencies. The management of epistaxis has evolved significantly in recent years, including the use of nasal cautery and packs. However, a correct treatment requires the knowledge of nasal anatomy, potential risks, and complications of treatment. Epistaxis is often a simple and readily treatable condition, even though a significant bleed may have potentially severe consequences.

From an epidemiological point of view, the lifetime incidence of epistaxis has been reported to be as high as

60% (1-3). However, a real number is difficult to be estimated as only a very small proportion requires specialist management and therefore many cases escape to evaluation. Only 10% of patients with epistaxis will present to a physician, but only a very few are ever seen by an otorhinolaryngologist. Noteworthy, although epistaxis can occur at any age, there is a bimodal distribution of children up to age 10 and adults greater than age 50. Individuals older than age 50 represent 40% of those requiring medical attention and tend to have more serious bleeds. Children younger than 10 years of age with a nosebleed tend to have an uncomplicated course because their nosebleeds are usually from the anterior nasal

blood supply and require limited intervention. Children under the age of 2 with nosebleeds are rare and warrant consideration of trauma (accidental and nonaccidental), nasal foreign body, and/or a systemic medical condition (coagulation disorder).

It has to be underlined that epistaxis accounts for the 33% of all emergent admissions for ear, nose, and throat problems and the median age for hospital admission is 70 years (4). Interestingly, anterior epistaxis is more common in the winter months in all age groups secondary to air from heating systems drying out the nasal mucosa thus making it more prone to irritation and bleeding (5, 6).

From a clinical point of view, epistaxis is most commonly classified into anterior or posterior bleeds. This division lies at the piriform aperture anatomically. More than 90% of episodes of epistaxis occur along the anterior nasal septum, which is supplied by Keisselbach's plexus in a site known as the Little's area (6). The Keisselbach's plexus is an anastomotic network of vessels located on the anterior cartilaginous septum. It receives blood supply from both internal and external carotid arteries. Approximately 10% of episodes of epistaxis are posterior bleeds. Posterior bleeds are most commonly arterial in origin. It presents with a greater risk of airway compromise, aspiration and difficulty in controlling the haemorrhage.

Epistaxis can also be divided into primary or secondary. Primary causes account for 85% of episodes and are idiopathic, spontaneous bleeds without any notable precipitant. Bleeds are considered secondary if there is a clear and definite cause (eg trauma, anticoagulant use, post-surgical).

About the aetiology, the cause of epistaxis can be divided into local, systemic, environmental, medications or, in the majority of cases, idiopathic. Local causes of epistaxis include trauma, neoplasia, septal abnormality, inflammatory diseases and iatrogenic causes. Local trauma is common among children who present with post-digital trauma or irritation. Causes such as neoplasia are uncommon. Examples of the systemic causes of epistaxis include age, hypertension, bleeding diathesis and alcohol. The association between hypertension and epistaxis is often misunderstood. Hypertension is rarely the direct cause of epistaxis and is perhaps related to underlying vasculopathy in this group of patients (7).

It has been suggested that hypertension may be related to anxiety, but studies have failed to find conclusive evidence. About the environmental cause, the number of presentations of epistaxis has been found to increase during the dry winter months, often associated with changes in temperature and humidity. The incidence of epistaxis is also related to circadian rhythm, with peaks in the morning and late afternoon. About medications involved in epistaxis, the use of many over-the-counter and prescribed medications can alter coagulation. Non-steroidal anti-inflammatory drugs (NSAIDs), warfarin, clopidogrel and the increasingly popular oral factor X inhibitors are commonly used medications that can affect clotting. It is imperative, therefore to take a thorough medication history. The use of complementary and alternative medicine must also be considered. Their use is increasing and can interfere with regular medications and clotting. Another practical classification of the causes of epistaxis has been proposed by Diamond (8) and reported in Table 1.

About the management, an algorithm could be useful in common practice. In 65% to 70% of cases of

Table 1. Causes of epistaxis in clinical practice

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- Traumatic
 - Digital manipulation
 - Nasal fracture/contusion
 - Foreign body in the nose
 - Iatrogenic (e.g., nasogastric tube, surgical interventions)
 - Neoplastic
 - Juvenile nasopharyngeal angiofibroma– Tumours of the nasal cavity and paranasal sinuses
 - Haematological
 - Thrombocytopenia
 - Hemophilia A and B
 - Von Willebrand disease – Liver failure
 - Structural
 - Mucosal dryness
 - Septal perforation
 - Osler–Weber–Rendu disease (hereditary hemorrhagic telangiectasia)
 - Drug-related
 - Anticoagulants and antiplatelet drugs – Glucocorticoid nasal sprays
 - Nasal consumption of drugs
 - Inflammatory
 - Allergic rhinitis
 - Acute infectious diseases
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epistaxis, simple first aid measures provided by the primary care physician or emergency physician are effective, including the use of tranexamic acid (9,10). If the direct application of pressure for approximately fifteen to twenty minutes fails, there are other methods available to achieve hemostasis. Vasoconstrictive agents and silver nitrate cautery may be useful. If epistaxis remains unresolved at that stage, anterior nasal packing may be necessary (11).

If bleeding persists, patients should be urgently referred to the ENT Department. So long as the source of the bleeding is visible, most cases of epistaxis can be successfully treated using electrical or chemical cautery. For posterior epistaxis, surgical intervention is markedly superior to packing.

Surprisingly, there are only three recent national guidelines (British, French, and German) on the management of epistaxis (12-14). Therefore, the aim of the present Survey was conducted to evaluate the most common approach to manage epistaxis in clinical practice.

Materials and Methods

The current Survey was performed using a questionnaire administered and completed in 43 Countries, including Albania, Angola, Armenia, Azerbaijan, Brazil, Chile, China, Cyprus, Colombia, Croatia, Czech, Egypt, El Salvador, Philippines, France, Germany, Japan, Guatemala, Hong Kong, Hungary, Italy, Guatemala, Kazakhstan, South Korea, Lebanon, Lithuania, Macedonia, Malaysia, Mexico, Moldova, New Zealand, Oman, Peru, Poland, Romania, Russia, Serbia,

Table 2. Questions included in the worldwide questionnaire

- 1) What is the current prevalence of nose bleeding in your Country?
- 2) What is the age distribution (in percentage) of nose bleeding in your Country? (0-6 years, 6-12, 12-18, 18-40, 40-60, >60)
- 3) What is the sex distribution (in percentage) of nose bleeding in your Country?
- 4) What is the hospitalization rate for nose bleeding in your Country?
- 5) What is the most commonly used treatment for nose bleeding in children in your Country?
- 6) What is the most commonly used treatment for nose bleeding in adults in your Country?
- 7) What is the most commonly used treatment to prevent nose bleeding in your Country?

Slovakia, Spain, South Africa, Sweden, Ukraine, Venezuela.

The questionnaire included 7 queries, reported in detail in Table 2. The International Survey was performed in August 2019.

The analysis of the data was descriptive. Data were expressed as absolute numbers or frequency.

Results

The current mean prevalence of epistaxis was 21.7% worldwide. It ranged between 3% in New Zealand and Moldavia and 60% in Russia.

The mean age distribution of nose bleeding was 18.2% in the age range 0-5 years, 21.9% in 6-12, 14.6% in 13-17, 13.1% in 18-40, 16.8% in 41-60, and 21% >60, as reported in Figure 1.

About the sex distribution of nose bleeding, there was a higher frequency in males: 53.2%.

The mean rate of hospitalization for epistaxis was 11.8% worldwide, with wide differences ranging from 1% in Colombia, Moldavia, and Slovakia, to 35% in Macedonia.

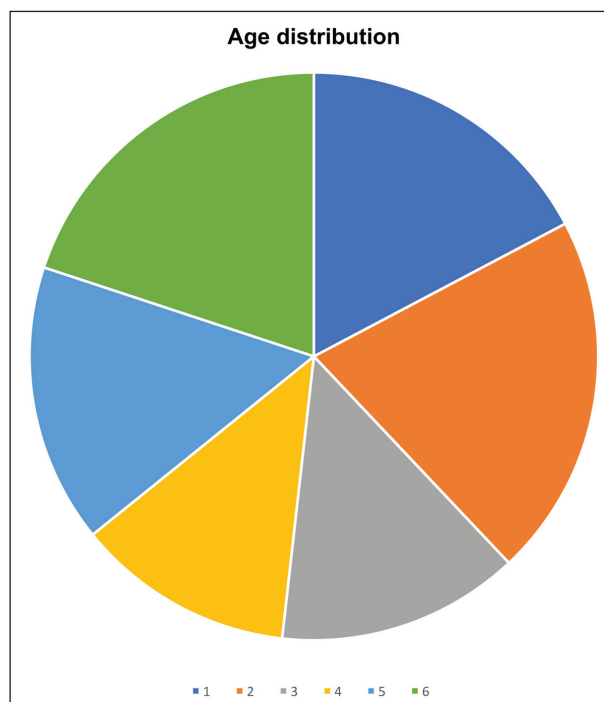


Figure 1. Age distribution: 1= 0-5 years; 2= 6-12 y; 3=13-17 y; 4=18-40 y; 5= 41-60 y; 6= >60 y

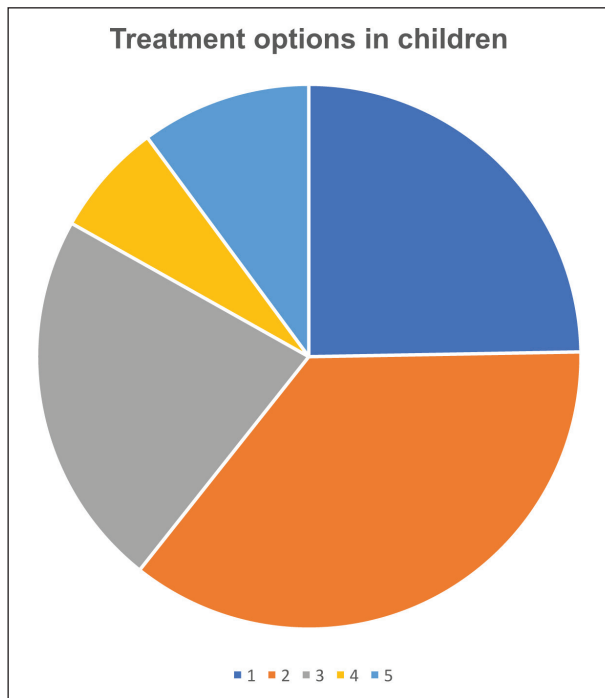


Figure 2. Treatment options in children: 1= electrocoagulation; 2= anterior packing; 3= nasal creams; 4= topical vasoconstrictors; 5= silver nitrate

The most commonly used treatment for nose bleeding in children were: anterior packing used in 32 countries, electrocoagulation in 22, nasal creams in 20, silver nitrate in 9, and vasoconstrictors in 6, as reported in Figure 2.

The most commonly used treatment for nose bleeding in adults were: electrocoagulation in 40 countries, anterior packing in 37, and oral drugs, including tranexamic acid, Vitamin C, E, and K, as shown in Figure 3.

The most common used treatment and/or measure to prevent nose bleeding were: treatment of arterial hypertension in 19 countries, nasal creams in 16, coagulation monitoring in 14, oral drugs, including tranexamic acid, Vitamin C, E, and K, in 11, otorhinolaryngological clinical follow-up in 10, and nasal lavage in 3, as reported in Figure 4.

Discussion

Currently, the most common first-line ORL-specialty-based treatment of idiopathic epistaxis is nasal

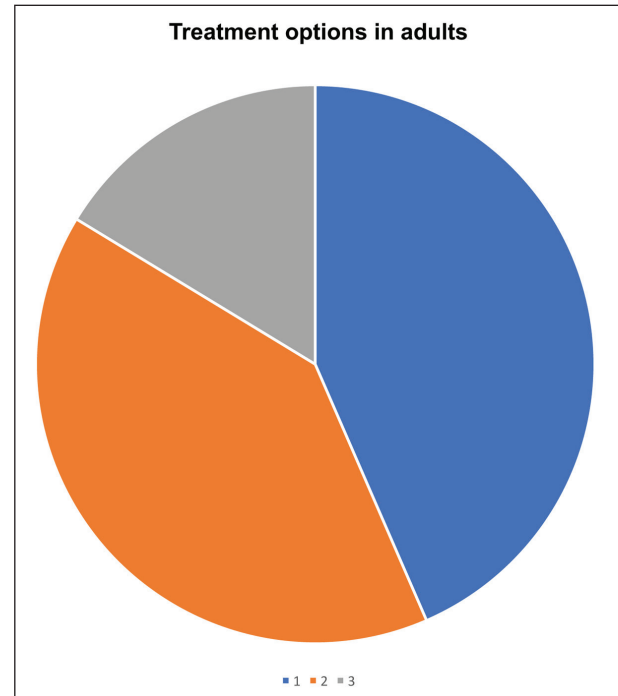


Figure 3. Treatment options in adults: 1= electrocoagulation; 2= anterior packing; 3= oral medications

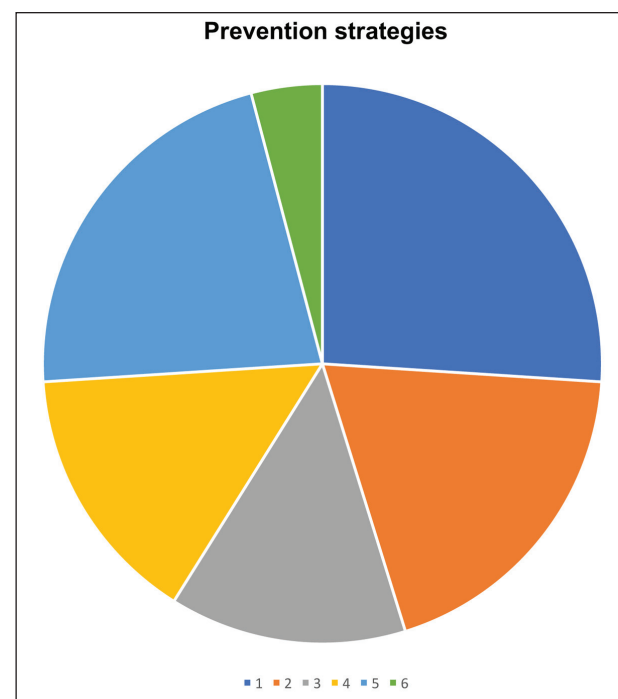


Figure 4. Prevention strategies: 1=management of arterial hypertension; 2= control of coagulation dysfunction; 3= ORL follow-up; 4= oral medications; 5= nasal creams; 6= nasal lavage

packing, although there is a clear trend away from the use of nasal packs. Although it is a quick and easy to learn technique, emerging evidence show that cauterization provides economic advantages and is easy to teach, especially for anterior epistaxis, to non-otolaryngologists. In this regard, the current survey explored the worldwide pragmatic approach in managing epistaxis in the ORL setting. The current prevalence of epistaxis was 21.7%, but with wide inter-countries variations ranging from 3 to 60. This large variability could depend on different factors, including climatic difference and socio-economic-cultural factors. Turning to medical aid may vary significantly between countries, so many cases of epistaxis might be in-house self-treated. Childhood and ageing are mostly affected by epistaxis: the current finding is consistent with the literature data. The current Survey shows that there is a slight preponderance for males. The hospitalization rate is about 12%, but the variability is rather large as it ranges from 1 to 35%. This finding could also depend on peculiar aspects typical for every country, mainly concerning socio-economic factors. About the treatment of epistaxis, anterior packing and electrocoagulation are very popular worldwide both for children and adults. However, topical treatments are more frequently prescribed in children, whereas oral medications are preferred in adults. About the management, different approaches are used: particular attention is given to potential comorbidity, mainly concerning arterial hypertension and coagulation dysfunction, including iatrogenic causes. Vitamin supplement and tranexamic acid are commonly prescribed to prevent epistaxis recurrence as well as topical creams.

The nasal packing still represents the first-line approach to epistaxis, although, at present, it appears that there is clear evidence in the literature suggesting that it is less effective and associated with more admissions and longer hospital stays than endoscopic electrocoagulation-based management of epistaxis. In 65% to 70% of cases of epistaxis, simple first aid measures provided by the primary care physician or emergency physician are effective. If bleeding persists, patients should be urgently referred to the ORL Department. So long as the source of the bleeding is visible, most cases of epistaxis can be successfully treated using electrical or chemical cautery. For posterior epistaxis, surgical in-

tervention is markedly superior to packing. The method of choice is endoscopic clipping or coagulation of the sphenopalatine artery, which controls bleeding in 98% of cases.

A recent review analyzed the most common treatments of idiopathic epistaxis, including nasal packing, electrocoagulation, Floseal, tranexamic acid, silver nitrate, endoscopic surgical procedure, endovascular embolization, and laser (6). However, only three national guidelines have published still now.

The British Consensus on Epistaxis recommended a five-management-domain-flow: initial assessment, cautery, intranasal agents, haematological factors, and surgery and radiological intervention (12). The British consensus recommendations combined a wide-ranging review of the relevant literature with established and rigorous methods of guideline generation. Given the lack of high-level evidence supporting the recommendations, an element of caution should be used when implementing these findings.

The French guidelines stated that arterial embolization should be performed by an experienced interventional neuroradiologist with adequate technical facilities, to reduce the risk of complications (13). Cerebral and supra-aortic vessel CT angiography should be performed in case of post-traumatic epistaxis with a suspected internal carotid injury. In case of persistent bleeding despite endoscopic hemostasis of the sphenopalatine artery, anterior ethmoidal artery hemostasis should be performed via a medial canthal incision, with endoscopic assistance as needed. In case of persistent epistaxis despite the usual surgical and neuroradiological procedures, surgical exploration of the sinonasal cavities should be performed, with elective coagulation in case of bleeding from secondary branches, and/or ethmoidectomy in case of diffuse bleeding. A decision-tree was drawn up for the management of second-line treatment of epistaxis.

The German guidelines stated that 65–75% of the patients who require treatment can be adequately cared for by their primary care physician or by an emergency physician with baseline measures (14). If there is persistent anterior epistaxis, an otorhinolaryngologist can control the bleeding satisfactorily in 78–88% of cases with chemical or electrical cauterization. Nasal packing is used if this treatment fails, or for posterior epistaxis.

In a retrospective study, surgical treatment was found to be more effective than nasal packing in the treatment of posterior epistaxis (97% versus 62% treatment success). Percutaneous embolization is an alternative treatment for patients whose general anaesthesia would put at high risk. The German guidelines concluded that the treatment of severe or recurrent epistaxis requires the interdisciplinary collaboration of the primary care physician, the emergency physician, the practice-based otolaryngologist, and the hospital otolaryngology service. Therefore, uniform guidelines and epidemiological studies on this topic would be desirable.

On the other hand, epistaxis management is frequently in-house self-made or in a primary care setting. In this regard, the use of intranasal creams is popular. Many compounds are available, including hemostatic ointment. In particular, a mix of saturated fatty acids, yeast protein extract (vegetal collagen), phosphatidylcholine, tocopheryl acetate, beeswax, soya oil, stearyl alcohol, calcium, potassium, magnesium chlorides, glyceryl monostearate (Emofix, DMG, Italy) has been evaluated in a study conducted in 100 patients affected by epistaxis (15). The haemostatic ointment significantly reduced the percentage of patients affected by epistaxis and the number and severity of bleeding episodes. Therefore, the therapeutic and preventive use of ointment medical device is favourably accepted in clinical practice.

In conclusion, the current International Survey on epistaxis management reported a relevant prevalence, mainly during childhood and senescence, an important hospitalization rate, the common use of anterior packing and electrocoagulation, and the popular prescription of a vitamin supplement and intranasal creams.

Conflict of interest: all the authors, but DV employee of DMG, have no conflict of interest about this matter.

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