

Review Article

Evaluation and management of acute epistaxis in the emergency department

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ABSTRACT

Acute epistaxis, or nosebleed, is a common presentation in the emergency department (ED) that requires a systematic evaluation and prompt management. The assessment involves considering the severity of bleeding, identifying underlying causes, and implementing appropriate interventions. Modifiable risk factors, such as medication review, nasal hygiene, avoidance of nasal trauma, and humidification, should be addressed to prevent recurrence. Referral to specialists is necessary for cases of recurrent or severe bleeding, suspected underlying causes, or inadequate response to initial management. Collaboration between ED healthcare providers and specialists ensures comprehensive evaluation, specialized interventions, and long-term management. Regular follow-up appointments and patient education are essential for monitoring progress, adjusting treatment, and preventing complications. By employing a comprehensive approach, healthcare providers aim to alleviate distress, achieve hemostasis, identify underlying etiologies, and optimize patient outcomes in the ED.

Keywords: Acute epistaxis, Nosebleed, ED, Evaluation, Management

INTRODUCTION

Acute epistaxis, commonly known as a nosebleed, is a frequently encountered presentation in the realm of emergency medicine. Characterized by the sudden onset of nasal hemorrhage, this condition necessitates a

comprehensive evaluation and prompt management to mitigate the distress caused to patients and prevent potential complications. Within the ED setting, a multidimensional approach is employed to assess the severity of the bleeding, identify the underlying etiology, and institute appropriate therapeutic interventions.

Epistaxis has varying prevalence rates reported across different populations. It is believed to affect nearly 60% of people globally at least once in their lives.¹ Although it can occur at any age, there are some notable patterns.² Epistaxis is more prevalent in children and older adults. In children, it is often related to trauma or nose picking, while in older adults, it can be associated with underlying medical conditions and age-related changes in blood vessels.³ Further, there is a slight seasonal variation in the occurrence of epistaxis, with higher rates reported during the winter months.⁴ This is attributed to the drier air and increased respiratory infections during this time. With respect to gender predilection, epistaxis appears to be more common in males than females, especially in younger age groups.⁵

Acute epistaxis can arise from various etiologies, and understanding the underlying causes is essential for effective management. Trauma to the nose, such as from picking, blowing the nose forcefully, or facial injury, is a frequent cause of epistaxis.⁶ The delicate blood vessels in the nasal mucosa can be easily disrupted, leading to bleeding. Dry air, especially in arid climates or heated indoor environments, can cause the nasal mucosa to become dry and prone to bleeding.⁷ Irritants like pollutants, chemical fumes, or excessive use of nasal sprays can also irritate the nasal lining and trigger nosebleeds.⁸ Infections such as sinusitis or upper respiratory tract infections can lead to inflammation and congestion of the nasal mucosa.⁹ The resulting nasal congestion, along with repeated blowing of the nose, can contribute to nasal bleeding. Structural abnormalities within the nose, such as nasal polyps, a deviated septum, or tumors, can disrupt normal blood flow and cause localized bleeding.¹⁰ Certain medical conditions and medications can increase the risk of epistaxis. These include hypertension (high blood pressure), bleeding disorders (e.g., von Willebrand disease, hemophilia), liver disease, kidney disease, clotting factor deficiencies, and use of anticoagulant medications or antiplatelet drugs.¹¹

LITERATURE SEARCH

This study is based on a comprehensive literature search conducted on July 2, 2023, in the Medline and Cochrane databases, utilizing the medical topic headings (MeSH) and a combination of all available related terms, according to the database. To prevent missing any possible research, a manual search for publications was conducted through Google Scholar, using the reference lists of the previously listed papers as a starting point. We looked for valuable information in papers that discussed the evaluation and management of acute epistaxis in the ED. There were no restrictions on date, language, participant age, or type of publication.

DISCUSSION

The evaluation of acute epistaxis encompasses a systematic and comprehensive approach aimed at

assessing the severity of bleeding, identifying potential underlying causes, and guiding appropriate management strategies.² This process begins with a thorough history-taking to elicit relevant details from the patient. Inquiring about the duration, frequency, and severity of the nosebleeds helps gauge the extent of the problem. Additionally, information regarding recent trauma, the use of medications (especially anticoagulants or antiplatelet drugs), and any history of bleeding disorders provides valuable insights into potential precipitating factors.

Following the history, a meticulous physical examination is crucial. Vital signs should be assessed to identify any signs of hemodynamic instability.¹² Visual inspection of the nasal cavity allows for the direct assessment of active bleeding or evidence of recent bleeding, such as the presence of dried blood. Furthermore, the examination should include an evaluation of the nasal septum and mucosa for any visible abnormalities, such as nasal polyps, septal deviations, or tumors.¹³ General appearance and signs of anemia, such as pallor, should also be assessed.

To determine the severity of bleeding, an assessment of the patient's overall clinical presentation is necessary.¹⁴ This includes evaluating vital signs for signs of significant blood loss, such as hypotension or tachycardia. The duration and volume of bleeding, as well as any impact on the patient's hemodynamic stability, are key factors to consider.¹⁵ These evaluations aid in determining the need for immediate interventions and guide the urgency of further management.

Laboratory investigations play a role in assessing the patient's coagulation status and identifying underlying bleeding disorders.¹⁶ A complete blood count (CBC) helps assess for anemia or thrombocytopenia. Coagulation profiles, including prothrombin time (PT)/international normalized ratio (INR), and partial thromboplastin time (PTT), can provide insights into the clotting mechanism. Platelet count is another important parameter to evaluate. Depending on the clinical scenario, additional tests such as liver function tests or von Willebrand factor levels may be considered.

In some cases, imaging studies may be warranted to elucidate underlying causes or assess for structural abnormalities.¹¹ Nasal endoscopy allows for direct visualization of the nasal cavity, aiding in the identification of anatomical abnormalities or sources of bleeding. Computed tomography (CT) scans may be indicated for cases of recurrent or severe epistaxis, suspected nasal fractures, or tumors.

The management of acute epistaxis in the ED involves a combination of immediate interventions to control bleeding and further measures to address the underlying cause and prevent recurrence. The immediate management of acute epistaxis in the ED focuses on

controlling bleeding and providing immediate relief to the patient.¹⁴ The first step is to address patient positioning.¹⁷ The patient is instructed to lean forward slightly to prevent blood from flowing down the throat and potentially causing aspiration. Leaning forward also helps minimize the amount of blood swallowed and reduces the risk of nausea or vomiting. Direct pressure is the primary intervention to control bleeding.¹⁸ The patient is instructed to pinch the soft lower part of the nose against the nasal septum using their thumb and index finger. Applying continuous and firm pressure for a sustained period of 10 to 15 minutes helps promote clot formation and hemostasis. The patient is encouraged to breathe through their mouth during this time to maintain a clear airway. Using a nasal decongestant spray, such as oxymetazoline, before applying direct pressure can aid in vasoconstriction of the blood vessels in the nasal mucosa.¹⁹ This helps reduce bleeding and makes it easier to achieve hemostasis. Nasal decongestants should be used in accordance with the product instructions and recommendations. If bleeding persists after direct pressure and nasal decongestant use, topical vasoconstrictors may be considered. Phenylephrine is commonly used for this purpose. It can be applied directly to the bleeding site as a nasal spray or by using soaked cotton pledgets inserted into the nasal cavity.²⁰ These vasoconstrictors help constrict the blood vessels and reduce bleeding. In cases where conservative measures fail to control bleeding, a silver nitrate cautery may be performed. This procedure involves applying a silver nitrate stick or solution to the bleeding site to chemically cauterize the blood vessels. Silver nitrate promotes coagulation and helps achieve hemostasis. Cautery should be performed by experienced personnel to minimize the risk of complications and mucosal damage.

It is important to note that the immediate management strategies mentioned above should be tailored to the individual patient's condition and the severity of bleeding.¹¹ The choice of interventions may vary based on the specific circumstances and institutional protocols. Additionally, it is crucial to monitor the patient's response and adjust the management approach accordingly. If bleeding persists or worsens despite these immediate measures, further interventions, specialist consultation, or consideration of hospital admission may be required.

Assessing the severity of bleeding is a critical aspect of managing acute epistaxis in the ED.¹ It helps determine the appropriate management approach and guides the urgency of intervention. Firstly, the patient is inquired about the duration of the nosebleed. A nosebleed that lasts longer than 20 minutes or recurs frequently despite initial management measures may indicate more significant bleeding.²¹ After that, the volume of blood loss is evaluated to determine the severity of the bleeding. It is assessed whether the bleeding is mild, moderate, or severe based on the amount of blood observed, such as a few drops, significant blood flow, or profuse bleeding. The patient's vital signs are monitored, including blood

pressure, heart rate, and perfusion status.²² Significant blood loss can lead to hemodynamic instability, manifesting as hypotension, tachycardia, or signs of poor tissue perfusion. Assess for symptoms of orthostatic hypotension or light-headedness when the patient changes positions. Observe for signs of significant blood loss beyond the immediate bleeding. These may include pallor, cool extremities, altered mental status, or delayed capillary refill time. These signs suggest ongoing or severe bleeding and may necessitate more aggressive interventions. The patient's symptoms and the impact of bleeding on their overall well-being are assessed. The patient is evaluated for any difficulty in breathing, swallowing, or speaking due to blood flow or clots.²³ It is determined if there is significant distress, anxiety, or fear associated with the bleeding. Incorporating the assessment of bleeding severity with the patient's clinical condition aids in determining the urgency of further interventions and the potential need for specialist consultation. Patients with severe bleeding, signs of hemodynamic instability, or significant blood loss may require more immediate and aggressive management measures, including advanced hemostatic techniques, packing, or consideration for emergent intervention. It is important to recognize that bleeding severity assessment should be an ongoing process. Regular monitoring of the patient's vital signs, re-evaluation of symptoms, and observation of the response to interventions allow for dynamic management adjustments. If bleeding persists or worsens, or if the patient's condition deteriorates, it may be necessary to escalate the level of care, involve specialists, or consider admission to the hospital for more intensive management and evaluation.⁶ Assessing the severity of bleeding in cases of acute epistaxis involves evaluating the duration, volume, impact on hemodynamic stability, patient symptoms, and overall clinical condition. This assessment guides the urgency and intensity of further management interventions, ensuring timely and appropriate care for patients presenting with acute epistaxis in the ED.

Addressing modifiable risk factors is a crucial component of managing acute epistaxis in the ED.¹¹ Identifying and modifying these factors can help prevent recurrent episodes and improve overall patient outcomes. Firstly, the patient's medication list is reviewed to identify any anticoagulant medications or antiplatelet drugs that may contribute to bleeding.²⁴ An assessment of the indication for these medications and consultation with the appropriate healthcare providers, such as cardiologists or hematologists, are done to determine if modification or temporary discontinuation is appropriate.²⁵ The decision to adjust or discontinue medication should be based on balancing the risk of bleeding with the risk of thromboembolic events. The patients are educated on proper nasal hygiene practices to minimize the risk of nasal irritation and subsequent epistaxis. They are advised against excessive or forceful blowing of the nose, as it can damage the delicate nasal mucosa. They are encouraged to perform gentle blowing of one nostril at a

time, and the importance of using a soft tissue or clean handkerchief for this purpose is emphasized. The patient is instructed to avoid activities that may lead to nasal trauma, such as vigorous nose picking, inserting objects into the nostrils, or engaging in contact sports without appropriate protective gear.²⁶ Trauma to the nasal mucosa can cause bleeding and increase the risk of recurrent episodes. The use of humidifiers or saline nasal sprays is recommended to help maintain optimal nasal moisture.²⁷ Dry air can contribute to nasal dryness and mucosal irritation, increasing the likelihood of epistaxis. Moisturizing the nasal passages can help prevent drying and subsequent bleeding. The patients are encouraged to make lifestyle changes that promote overall vascular health, as healthy blood vessels are less prone to bleeding. This may include adopting a balanced diet rich in fruits, vegetables, and whole grains, maintaining a healthy weight, engaging in regular physical activity, and managing underlying conditions such as hypertension or diabetes.⁹ The patient is then provided comprehensive education regarding the nature of acute epistaxis, including its causes, risk factors, and preventive measures. The importance of recognizing early signs of bleeding, prompt seeking of medical attention if bleeding is persistent or worsening, and adhering to prescribed management strategies is explained. Addressing modifiable risk factors requires a collaborative approach involving healthcare providers, patients, and, in some cases, specialists. Individualized care plans should be developed, taking into consideration the patient's specific risk factors, underlying medical conditions, and preferences.¹¹ By addressing modifiable risk factors, patients can actively participate in the prevention of recurrent episodes of acute epistaxis. This approach not only improves immediate outcomes by reducing the frequency and severity of bleeding but also promotes long-term nasal health and overall well-being.

Referral from the ED for the management of cases of acute epistaxis plays a crucial role in ensuring comprehensive care and addressing complex or persistent bleeding episodes. The decision to refer a patient with acute epistaxis to a specialist, usually an otolaryngologist or ENT specialist, is based on several factors.²⁸ Firstly, when a patient presents with recurrent episodes of epistaxis despite initial management attempts, referral to a specialist is considered.²⁹ Recurrent epistaxis may indicate an underlying structural abnormality or require specialized interventions for long-term management. Further, cases of severe epistaxis, characterized by uncontrolled bleeding or significant blood loss, warrant prompt referral. Severe epistaxis may necessitate advanced interventions or procedures that are best performed by specialists. If there is suspicion of underlying causes such as nasal polyps, tumors, or other structural abnormalities, referral to a specialist is essential for further evaluation and management.³⁰ Moreover, when initial measures, including direct pressure, nasal packing, and local vasoconstrictors, fail to control bleeding adequately, referral to a specialist is warranted.

Specialist expertise is necessary to explore alternative management options and address the underlying cause. Referral from the ED involves establishing effective communication and collaboration between the emergency healthcare provider and the specialist. Sharing comprehensive patient information, including medical history, assessment findings, interventions performed, and response to initial management, allows for a seamless transition of care.

It is essential to tailor the management approach to the specific needs of each patient. Factors such as the patient's age, comorbidities, bleeding severity, and underlying etiology should be taken into account. For example, children may require additional education and parental involvement to minimize the risk of recurrent epistaxis.³¹

CONCLUSION

The evaluation and management of acute epistaxis in the ED involve a systematic approach to identify the underlying cause, control bleeding, and prevent recurrence. Immediate interventions, such as direct pressure, topical vasoconstrictors, and silver nitrate cautery, aim to achieve hemostasis. Addressing modifiable risk factors, referring patients to specialists, and providing patient education contribute to long-term management and prevention of complications. By employing this comprehensive approach, healthcare providers strive to optimize patient outcomes and quality of care in the acute setting.

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