



Cardiac arrest after severe epistaxis

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Abstract

Nasal bleeding frequently leads to admissions to the Emergency Department (ED), with anterior nasal packing being a common treatment approach. Our patient was transferred to the ED from a nursing home due to epistaxis, which was already initially managed by nasal packing. Upon arrival at the ED he suffered Cardiopulmonary Arrest (CA) with an initial CA rhythm of Pulseless Electrical Activity (PEA). Advanced Life Support (ALS) was initiated immediately according to the ERC guidelines. Upon intubation, a nasal gauze was aspirated from the endotracheal tube, and approximately ten minutes later, Return of Spontaneous Circulation (ROSC) was achieved. Subsequently, the patient was transferred to the Intensive Care Unit (ICU). Unfortunately, despite medical intervention, the patient succumbed to complications days later. The dislodgement of nasal packing leading to asphyxiation represents a rare but potentially fatal complication of this procedure. Healthcare providers should be vigilant and prepared to promptly address such complications as they arise.

Introduction

Epistaxis defined as bleeding originating from the nostril, nasal cavity, or nasopharynx is a medical condition commonly necessitating attention or intervention. This encompasses instances of severe, persistent, or recurrent bleeding, as well as those instances where bleeding adversely affects the patient's quality of life. Treatment modalities for nosebleeds encompass a spectrum ranging from self-administered home care to more intensive procedural interventions conducted in emergency departments, hospitals, and operating rooms in about 6% of patients [1].

Epistaxis, or nosebleeds, has been estimated to represent approximately 0.5% of all visits to emergency departments and up to one-third of all emergency department encounters relat-

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ed to otolaryngology. Hospitalization for inpatient care aimed at aggressive management of severe nosebleeds has been documented in approximately 0.2% of patients presenting with such conditions [1].

The majority of instances of epistaxis are non-life-threatening, especially with the utilization of contemporary diagnostic and therapeutic techniques. However, adverse outcomes may occasionally arise due to the presence of comorbid conditions, treatment-related complications, and physiological responses inherent to the condition [2].

The aim of the present review is to describe a case of Cardiopulmonary Arrest (CA) after initial management of severe epistaxis.

Case presentation

A 63-year-old male was transferred by emergency medical services from a nursing home to the Emergency Department (ED) due to severe nasal bleeding that proved unmanageable by initial treatment approach of the attending physician at the facility. The referral note confirmed that external compression failed to control the bleeding and anterior nasal packing has been performed unsuccessfully. Topical vasoconstrictors had not been applied.

Upon arrival, the patient was found to be unresponsive, and ED staff confirmed cardiac arrest. Immediately, Advanced Life Support (ALS) protocol was initiated according to the European Resuscitation Council (ERC) guidelines. Initial recorded rhythm was Pulseless Electrical Activity (PEA [Sinus Tachycardia-SR]). There were profuse amounts of blood in patient's oropharynx, so continuous aspirations were performed. Throughout the ALS resuscitation process, adherence to relevant guidelines was maintained, with particular emphasis on addressing relevant reversible causes due to the CA rhythm. Consequently, the patient underwent intubation, and a massive transfusion protocol was started, which consisted of administration of Tranexamic Acid (TXA), blood and blood products. Aspirations were performed through the tracheal tube. More than 1 lt of bloody content, blood clots and a large cotton pack were aspirated.

The resuscitation process lasted for 10 minutes, when Return of Spontaneous Circulation (ROSC) was achieved. Following ROSC, the patient presented with blood pressure of 230/130 mmHg and hemoglobin level of 8.8 g/dl. The rest of the vital signs were within the normal levels. Laboratory assessments of his electrolytes, liver function, and renal function were normal. Electrocardiogram (ECG) findings indicated SR, and a bedside echocardiogram revealed normal cardiac function. Nasal packing was conducted as part of the treatment regimen. Subsequently, the patient underwent whole-body Computed Tomography (CT) imaging, which revealed infiltrates and ground glass opacities in the lower lung lobes.

After stabilization, patient was transferred under mechanical ventilation, hemodynamically stable to the Intensive Care Unit (ICU), where ICU support was applied. Upon admission to the ICU patient was diagnosed with severe brain edema, indicating a poor prognosis.

Discussion

Epistaxis stands out as one of the most prevalent emergency conditions within the realm of otorhinolaryngology [3]. Initial management of bleeding in unstable patients begins with the assessment of airway, breathing, and circulation (the ABCs). Identifying the source of bleeding is paramount. Once identified, cauterization, employing either chemical or electrical methods, typically offers definitive treatment [4]. In instances where cauterization proves ineffective, anterior nasal packing becomes necessary. Nasal packing exerts direct pressure on the nasal septum, alleviates mucosal irritation, and facilitates clot formation to enhance hemostasis. Various materials, including antibiotic-soaked gauze packs and nasal tampons, with or without airways, are commonly employed for this purpose [5]. Given the urgent nature of epistaxis, physicians must possess comprehensive knowledge of nasal cavity anatomy, available modalities for hemorrhage control, and potential complications associated with these interventions.

Nasal packing is associated with various complications, with the most frequent being the dislodgement of healing tissue upon removal of the packing, resulting in recurrent bleeding. Additionally, nasal packing can pose challenges for patients who experience difficulty in breathing through their mouths, such as those with Chronic Obstructive Pulmonary Disease (COPD), potentially leading to decreased oxygen levels in the blood and increased carbon dioxide levels. Patients experiencing respiratory compromise may necessitate airway control and mechanical ventilation, while those with hemodynamic instability may require resuscitation with volume and blood products [6].

In cases of epistaxis-related cardiac arrest, immediate initiation of ALS combined with recognition and reversal of any relevant precipitating cardiac arrest factor, including dislodgement of the nasal packing with resultant aspiration and asphyxiation, are key components of successful resuscitation and good neurological outcome of the victims.

To our knowledge, this is the first described case of cardiac arrest due to asphyxiation from dislodgement of the nasal packing. Aspiration through the endotracheal tube during ALS resuscitation proved to be the cornerstone in patient's management which resulted in facilitating the delivery of air to the lungs and ultimately leading to successful ROSC. In a similar case, gauze packs for nasal packing migrated from the nasal cavity to the lower airway of a 78-year-old man diagnosed with Alzheimer's disease, resulting in atelectasis of the right lung. The patient underwent rigid bronchoscopy under general anesthesia and the foreign body obstructing the right main bronchus was removed [7]. Another case involving the migration of gauze ribbon resulting in partial obstruction of the glottis was reported in a patient with facial trauma and altered consciousness. Fortunately, the migrated nasal packing was promptly identified and removed without subsequent complications [8]. Unlike the presented case in this review, neither of the above patients suffered CA.

While epistaxis can present with the appearance of substantial blood loss the majority of episodes are not life-threatening [9]. In instances where death is associated with epistaxis, it is exceedingly rare for it to result from exsanguination [10]. More commonly, mortality associated with epistaxis is attributed to complications arising from treatment interventions or to the worsening of underlying comorbid conditions [11]. One case study that described death following epistaxis relates the death with trigeminocardiac reflex after anterior and posterior nasal packing [12].

Identifying and reversing of relevant CA precipitating factors is of major importance in cases of CA during ALS resuscitation. Especially in CA cases associated with epistaxis treatment, it is important to exclude dislodgement of nasal packing.

Abbreviations: ALS: Advanced Life Support; CA: Cardiopulmonary Arrest; COPD: Chronic Obstructive Pulmonary Disease; ECG: Electrocardiogram; ED: Emergency Department; ERC: European Resuscitation Council; ICU: Intensive Care Unit; PEA: Pulseless Electrical Activity; ROSC: Return of Spontaneous Circulation; SR: Sinus Rhythm; TXA: Tranexamic Acid.

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