Case Report

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Lifesaving Maneuver In Full Airway Obstruction Caused By Foreign Body Aspiration: Pushing The Foreign Body To The Right Main Bronchus

Mehmet Ali Oktay[1], Selin Akyüz Oktay[1], Merve Çelenk[2]

[1]Department of Child Health and Diseases, Kara Musta Pasa State Hospital, Amasya, Turkey.

[2]Department of Child Health and Diseases Suluova State Hospital, Amasya, Turkey.

[3]Department of Pediatric Surgery, Ondokuz Mayıs University Samsun, Turkey.

Abstract

Foreign body aspiration (FBA) is one of the leading causes of accidental death in children. Patients with severe respiratory failure and upper airway obstruction who need resuscitation due to FBA, admit to emergency services. In this case report, we present a 22-month-old male patient who admitted to the pediatric emergency department due to foreign body aspiration, whose oxygen saturation increased by providing unilateral lung ventilation by pushing the foreign body from the subglottic area into the right bronchus during intubation to obtain advanced airway.

Keywords: Foreign body, aspiration

Introduction

Foreign body aspiration (FBA) is a life-threatening emergency that is most common in children younger than 5 years of age (1). It is one of the leading causes of accidental death in children. FBA patients may present with signs of acute respiratory failure as well as simple, non-specific respiratory symptoms. This makes it difficult to recognise in some cases (2). In this article, we present a case of a patient who presented to the emergency department with a complete airway obstruction, whose respiratory failure was resolved by pushing the foreign body into the right main bronchus during endotracheal intubation.

Case Report

A 22-month-old male patient was brought to the emergency room due to sudden onset of respiratory distress, cough and cyanosis while eating chestnuts at home. The patient's family tried to remove the foreign body by applying back blow, but it was unsuccessful. The vital signs at the moment of admission to the emergency room were unstable. Oxygen saturation was 40%, respiratory rate was 70/min, heart rate was 150/min, blood pressure was 100/65 mmHg, and he was lethargic. On physical examination, he had stridor and cyanosis. The respiratory sounds were decreased on both lungs on auscultation and the patient had subcostal and suprasternal retractions which showed severe respiratory distress. Although 10-15 liters/minute oxygen was administered with a reservoired oxygen mask, the oxygen saturation did not increase. In Blood gas analyze, the values were: pH: 7.23 pCO2: 67 mmHg pO2: 50 mmHg hco3: 19 mEq/L. Given the sudden development of the event, history of foreign body aspiration and the patient's poor general condition, an emergency endotracheal intubation was decided in order to provide an advanced airway even before obtaining a chest X-ray image. While intubation, the foreign body has seen at the entrance of the subglottic area and it was tried to be removed with the help of a magill forceps. However it could not be removed. To ensure airway patency, the foreign body was pushed into the right main bronchus with the endotracheal tube and endotracheal intubation was performed. After the airway was ensured, the patient's oxygen saturation increased to 88%. In the postero-anterior chest X-ray image taken after endotracheal intubation; it was observed that there was complete atelectasis in the left lung and intubation was selective in the right bronchus (Figure 1). The endotracheal tube has retracted slightly, and oxygen saturation increased to 93%, however another X-ray couldn't managed to be performed before the patient's

Corresponding Author: Mehmet Ali Oktay
e-mail: malii-71@hotmail.com
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referral. Post-intubation blood gas values were: pH: 7.34 pCO2: 45 mmHG p02: 70 mmHG hco3: 23 mEq/L. After that manuever, the patient was referred to a center in which there was a pediatric surgery department who could perform bronchoscopy. The patient was transferred successfully, intubated.

A giant piece of chestnut was seen at the entrance of the right main bronchus in the pediatric bronchoscope performed by the pediatric surgeon. The foreign body was removed with the help of forceps in 2 pieces. After the secretions were aspirated, the right main bronchus branches were clearly seen distally. No foreign body was found in the examination performed on the left bronchus. It was observed that there was no difference in aeration and no pneumothorax in PA chest X-ray image after bronchoscopy (figure 2). After the procedure, the patient was intubated and taken to the pediatric intensive care unit. He was extubated after one day of intubation. No anoxic or hypoxic findings were detected. Hoarseness persisted for one week. It was evaluated as transient stridor due to bronchoscopy. The total hospitalization period was 5 days and the patient was discharged in a healthy condition without any complications.

Discussion

The diagnosis of FBA can be made according to the symptoms, clinical and radiological findings, and clinical suspicion. Patients typically present with a history of sudden onset of cough and respiratory distress while eating or playing with toys (3). Foreign bodies are more likely to fall into the right lung and lower lobe, but coughing and changes in body position can cause foreign bodies to change position in the trachea (4).

In a study conducted in Turkey, it was observed that the most frequently aspirated foods were peanuts, followed by sunflower seeds (3) and hazelnut and sunflower seeds in another study (5). When the foreign body has a large diameter, it is more likely to obstruct the upper airway, such as the trachea. In upper airway obstruction, symptoms present with signs of suffocation soon after aspiration. In such a case, first aid maneuvers against the foreign body must be applied quickly. If the diameter of the foreign body is smaller, it is more likely to cause obstruction in the lower lung and inclined parts of the bronchial tree. In such a situation, the most common symptoms and signs are cough, localized wheezing, and uneven breath sounds (6).

The case discussed in this article, presented with cough, which is one of the the most common presenting symptoms in the literature (3). In the literature, the most common physical examination finding in FBA patients was reported as unilateral decrease in breath sounds (1, 3, 4). In our case, respiratory sounds could not be obtained bilaterally because the foreign body was in the trachea causing a complete airway obstruction.

Findings such as atelectasis and aeration difference due to radiolucent foreign bodies may be detected on the chest X-ray, or no findings may be detected (3, 4). In our case, atelectasis was observed after intubation due to right selective intubation.

FBA can lead to partial or complete airway obstruction, resulting in pneumonia, anoxic brain injury, bronchiectasis or death (7). Complications may be due to delays in diagnosis, and it is thought that most of them would not have occurred if physicians had trusted the history (7). In our case, intubation was decided without X-ray in line with the history given and asphyxia and serious complications were prevented.

The definitive diagnosis of FBA can only be made by flexible or rigid bronchoscopy (8). Rigid bronchoscopy has been shown to be safe in children after FBA (7, 8). Children may die before, during and after bronchoscopy (9). Although asphyxia on admission or initial emergency bronchoscopy may cause some deaths, hypoxic cardiac arrest and bronchial rupture during object removal account for the majority of in-hospital deaths (9).

In upper airway obstruction patients who apply to the emergency department with severe respiratory failure due to FBA and require resuscitation, pushing the objects from the trachea into the bronchi during the intubation can be life-saving, even if unilaterally. Our case, who had bilateral low aeration in the lungs and severe desaturation at the time of admission, and whose saturation value returned to normal with unilateral aeration by pushing the foreign body into the right main bronchus, supports this proposition.

Figure 1. Left lung atelectasis after right selective intubation after the foreign body was pushed into the bronchi

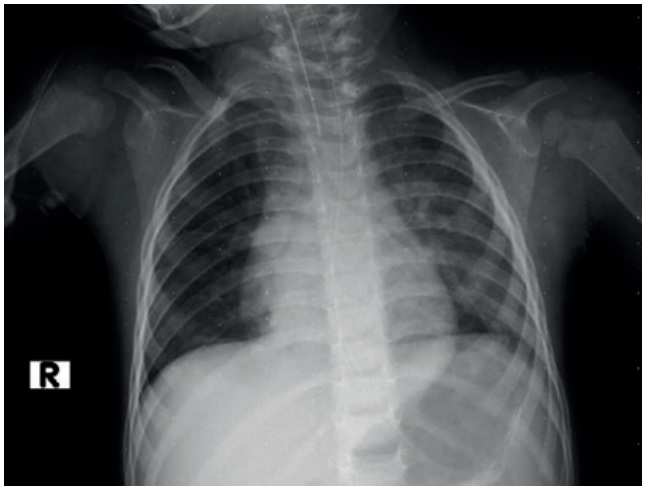

Figure 2. Posterior anterior chest X-ray after bronchoscopy

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