Case Report

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Tracheobronchial Metallic Foreign Body Aspiration in an African Child during Magic Game

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Abstract

A significant proportion of cases of tracheobronchial foreign body aspiration due to life-threatening condition is observed during childhood and still one of the most common pediatric emergencies. We report the case of a 4 year-old male child who aspirated a shaped metallic foreign body placed in his mouth while playing magic in school, highlighting prevention via parental education and avoidance of objects that produce the greatest risk with children. The clinical presentation was cough, sputum and chest pain which was relieved almost instantly after aspiration. Early diagnosis and treatment with rigid bronchoscopy under general anesthesia should be performed by experienced personnel in patients suspected of foreign body aspiration to avoid life threatening respiratory sequelae. There is a need of exercise caution by parents in the handling of their children.

Keywords: Aspiration, Foreign body, Children, Prevention

Abbreviations: TFB: Tracheo Bronchial Foreign body; CT: Computed Tomography

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Introduction

Tracheobronchial metallic foreign bodies are very serious injuries. It occurs more commonly in children under the age of five, owing to their insufficient airway protection reflex, poor chewing ability, and harmful habits of exploring objects with mouth as well as eating while crying or playing. The current mortality rate from foreign body aspiration according to a reported study is between 0 to 1.8% [1]. The management of aspirated foreign bodies is still by radiological means and the use of bronchoscopes either rigid or flexible fibreoptic. Tracheobronchial metallic foreign bodies early detection and removal is necessary to avoid life threatening respiratory sequelae such as atelectasis, pneumonia, pulmonary hyperinflation and pneumomediastinum [2]. Reduction of these injuries by prevention can be achieved via parental education and avoidance of objects that produce the greatest risk [3]. We present an unusual aspiration of metallic foreign body placed in his mouth while playing magic by a child with a tracheobronchial shaped radio-opaque foreign body, highlighting prevention with the exercise of caution by parents in the handling of their children.

Case Presentation

A 4-year-old male child was referred from the rural medical center, on account of an aspirated foreign body he had placed in his mouth while playing magic in school. Immediately the patient had bouts of coughing followed by right-sided and retrosternal chest pain which was relieved almost instantly. Teachers and classmate of the boy were reassured by the father at school making them believe after playing another magic gesture that the foreign body was removed. His father for financial needs was used to play magic making the boy follow him to learn magic gestures by using a spikes, nail, pens trying to hold them between teeth, making them disappeared and highlighted from the mouth. He presented to us 2 days following aspiration. He was found to be calm and not dyspnoeic at admission. The parents denied any history of allergy, atopy, hemoptysis, abdominal pain or loss of appetite. His vitals were: blood pressure: 100/70 mm of Hg, pulse rate of 124/min, respiratory rate of 25/min, and oxygen saturation on breathing room air 97%. Chest examination revealed decreased air entry in the right hemithorax. Chest x-ray (anterior-posterior and lateral views) taken in our hospital confirmed the presence of a shaped

radio-opaque object in the right tracheobronchial tree (**Figure 1**). He was prepared for a bronchoscopy and had rigid bronchoscopy with the removal of a metallic shaped foreign body (**Figure 2**) at our hospital. The patient did well post-operatively with antibiotic therapy. He was discharged on the second post-operative day. The 3 month follow-up was uneventful.

Discussion

Foreign body aspirations constitute a reasonable percentage of respiratory emergencies in the pediatric age group, causing morbidity and mortality [4]. Additionally, children are highly interested in and tend to explore environmental objects with mouth [5]. These factors contribute to a high incidence of TFB (Tracheobronchial Foreign Bodies) in young children. Tracheobronchial metallic foreign bodies occur less frequently as compared to organic foreign bodies [6]. The clinical presentation is cough, sputum, dyspnea, wheezing, chest pain and fever [2,4]. They may lead to serious complications such as airway inflammation, hemoptysis, bronchiectasis, pulmonary atelectasis, and even asphyxia and death [7]. The diagnosis of foreign bodies is difficult to establish in patients with a non-characteristic medical history and discrete symptoms [6]. Accordingly, the authors were able to make a presumptive diagnosis of foreign body before bronchoscopy in only 55% of patients. This contrasts with 100% of children, in whom the suspicion of foreign body aspiration existed when referred to the hospital, according to Martinot et al. [8]. Possibly, more evident choking in children is an explanation. TFB can be removed in 97% of patients utilizing both types of bronchoscopes. Authors, who successfully removed 95% [9] of foreign bodies using the rigid bronchoscope only, obtained similar results. It is agreed that both flexible and rigid bronchoscopy should be used for the diagnosis and removal of foreign bodies. The authors are convinced that flexible and rigid bronchoscopes are complementary tools [10], however the best treatment in children is rigid bronchoscopy in order to prevent life threatening respiratory complications [11]. In children who have a narrower tracheobronchial tree, and who may have central, asphyxiating foreign bodies, the rigid bronchoscope under general anesthesia is preferentially indicated. Endobronchial foreign bodies can be very difficult to remove depending on the type and location of the foreign body, the experience of the bronchoscopist and the availability of the appropriate instruments for removal [12]. When removal of the foreign body from an endotracheal tube is difficult lesions can occured [7] However, in our case, we did not encounter any difficulty in removing by the rigid bronchoscopy .The patient usually show some chest signs or a change in ventilatory parameters which mimics a partial endotracheal tube obstruction, or increasing resistance to flow, or bronchospasm. Our case remained asymptomatic. This could have been because the foreign body may not have occupied enough of the internal diameter of the endotracheal tube to produce respiratory signs or increased airway resistance. Had it not been for the vigilance of the teachers, the event could have gone unnoticed until it developed empyema or others complications.

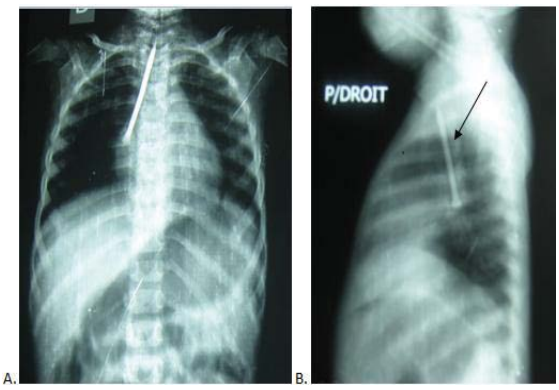

Figure 1 Chest x-ray showing the radio-opaque foreign body in the tracheobronchial tree.
A. anterior-posterior view; B. Lateral view.

Figure 2 The extracted metallic foreign body.

The most frequently aspirated objects were shelled nuts and seeds such as sunflower seeds, pistachio and hazelnuts [13]. Shaped metallic objects are relatively uncommon. The presenting symptoms are cough, sputum, dyspnea, wheezing and fever [6], but this also depends on the type of foreign body aspirated as evidenced by the calm presentation of our patient despite showing up in hospital two days following aspiration of the foreign body. The foreign body aspirated by our patient was a shaped metallic object (a spike) which was lying vertically in the right main bronchus and still allowed air into the lungs without complete obstruction. Our patient had plain x-rays which revealed the metallic foreign body, further highlighting the importance of plain radiographs in diagnosing aspirated metallic foreign bodies. In accordance with the data in children, definitely radio-opaque shadow was seen in only 20% of the foreign body aspiration cases [8]. In recent times, the management of pediatric foreign bodies has become refined both from a diagnostic and therapeutic standpoint [14]. New techniques like helical computerized tomographic (CT) virtual bronchoscopy are being used in the evaluation of children with suspected aspiration of foreign bodies [15]. Early diagnosis and treatment of tracheobronchial foreign bodies is of utmost importance to avoid life threatening respiratory sequelae which include pneumonia, atelectasis, pulmonary hyperinflation and pneumomediastinum [2]. A good working relationship among pneumonologist, otolaryngologist and thoracic surgeon should exist, in order to effectively manage the patient with a suspected foreign body [8].This therefore is a call to parents to a good behavior and for exercise caution in the handling of children to

avoid unnecessary risks which could endanger their lives. Parents should ensure that dangerous objects are kept away from their children in order to prevent such injuries.

Conclusion

Tracheobronchial foreign body aspiration is a significant cause of childhood morbidity and mortality. Early diagnosis and prompt treatment of aspirated foreign body with rigid bronchoscopy under general anesthesia are of significance in reducing complications and mortality in affected children. Prevention can be achieved via parental education and avoidance of objects that produce the greatest risk.

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Togo S. Ouattara MA, write the manuscript. All the authors contributed to the final work. Anyone named in the acknowledgments agrees to being so named.

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