

Case Report

Delayed Diagnosis of Foreign Bodies in Esophagus and in Bronchus in Eight Month Duration Admitted in Paediatric Intensive Care Unit (PICU) of a Tertiary Care Centre

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Keywords: Foreign body; Children; Respiratory distress; Paediatric; ICU

Abstract

We present five cases of foreign body inhalation in eight month period (May -Dec 2016) admitted in P.I.C.U of Abbasi Shaheed Hospital. Age range was eleven months to four years. Male gender was predominant among the case series. All of the cases presented with sudden onset of respiratory distress along with fever and cough. On examination all patients were febrile, tachypneic, tachycardia with subcostal and intercostal recessions. A working diagnosis of severe pneumonia was made and children were put on intravenous antibiotics and nebulization, two children were on Continuous Positive Pressure Ventilation (CPAP) and one was on ventilator support. Within 48 hours of admission, there was no improvement clinically so suspicion of foreign body was made on the basis of clinical ground. Rigid bronchoscopy was done; foreign body in 1 patient chicken bone and in 4 patient's betel nut was found. All children showed rapid improvement after removal of foreign body and were discharged soon after. Parents were counselled regarding addiction of betel nut and avoidance of foreign body inhalation in growing children. In patient with foreign body in oesophagus the symptoms were more acute.

Foreign body inhalation should be kept as a differential diagnosis in every child presenting with sudden onset of respiratory distress without improvement despite treatment. Parents should also be counselled for being vigilant around their children.

Introduction

Foreign bodies are any object that originates outside of the human body. More often than not, foreign bodies will occur involuntarily as a result of an accident such as motor vehicle collisions, stepping on broken glass, gunshot wounds, or explosions. On occasions, foreign bodies can be voluntary, often inserted into natural and unnatural cavities [1], more so by children, who may not be adequately supervised by parents or other adults.

The most retrieved foreign body in our study was betel nut (46%), which was found by an earlier study to be 65.6%. Peanut was the most retrieved (45%) foreign body in one series, while another one found it to be 55%. Similarly, melon seed was the most retrieved (70%) foreign body in one series. Fisfis seed (33%); fish bone, 15%; and beans, 24%.

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Received: June 05 2017; **Accepted:** July 10 2017; **Published:** July 12 2017

Ingested foreign bodies range from children putting whatever they want in their mouth. Coins account for 70% of paediatric ingested foreign bodies; coins will typically become 'stuck' at the level of the cricopharyngeus muscle [2].

Sharp ingested foreign bodies can be potentially problematic when lodged in the oesophagus patients will often require emergency endoscopy, more often than not if the sharp object is within reach of endoscopy it will be removed before it progress further [3].

An important thing to consider when assessing coin like objects is button batteries, it may look like coins and can be potentially fatal when in contact with surrounding tissues they can generate an electric current that will break down fluid turning it hydroxide leading to severe, potentially fatal mucosal damage [4,5].

Metal, glass and stone can be visualised very well using conventional plain film radiography, yet more organic structures such as wood may require further imaging such as ultrasonography [6,7].

Commonly, aspirated foreign bodies will have a clear clinical correspondence: choking, coughing, neck pain or struggling to breathe. The right main bronchus is the most common site of obstruction due to the anatomy of the bronchial tree favouring the right side (larger diameter, more vertical orientation). Often two orthogonal plain radiographs are the primary investigation of choice [7]. The investigations of foreign bodies rely heavily on radiology, yet every foreign body will have an optimal modality for investigation. The radiological appearance in plain radiography of foreign bodies is dependent on two factors: the x-ray attenuation of the foreign object, the surrounding structures and any overlying structures that may veil the object.

The anatomical location will not only affect the radiopacity of the suspected foreign body, but the rate of magnification as the object is placed further or closer to the detector, lateral cervical radiographs can have a magnification rate of up to 21.6% [8].

In children depending upon the anatomical location of the foreign body symptoms can vary. Commonly in our local scenario it can be mistaken for pneumonia and treated as such, till symptoms do not improve and paediatrician then thinks of foreign body which leads to the actual diagnosis.

Foreign body inhalation is common in our part of the world. However, recently in our unit, an upsurge was seen, where in a time period of 6months, five foreign body inhalation cases were seen, of which three same aetiology (beetle nuts). Beetle nut is very common addiction of adult men and women in metropolitan city of Karachi, Pakistan. Children not supervised may take these beetle nuts copying parents, resulting foreign body inhalation. A delayed diagnosis in foreign body cases can be detrimental for the child. Hence, early diagnosis and management is essential. This centre does not do

paediatric bronchoscopy, despite this the high frequency cases is being reported. Also local published data from our region is meagre.

Case Series

Eleven month old child weight 10kg vaccinated presented in paediatric emergency with complaints of high grade fever of gradual onset, intermittent relieved by antipyretics and not associated with chills and was associated with non-productive cough. The child had two episodes of vomiting during this illness. Vomitus contained food particles half cup in quantity, non-foul smelling. Child was taken to local general physician and condition did not improve. Child developed difficulty in breathing for one day and was brought to Abbasi Shaheed hospital. There was no past history of hospitalizations. On examination heart rate was 180/minute, temperature 102 F, respiratory rate 65/ minute, oxygen saturation without oxygen was 75 %, and with ten litres of oxygen saturation was 90 %, child was irritable, on auscultation bilateral crepitation with subcostal recession was present. Abdominal examination showed liver palpable 4 cm below right costal margin, and total liver span was 11cm. Initial assessment was severe pneumonia so child managed accordingly. Workup done included baseline Complete Blood Count (CBC), Urea Creatinine Electrolytes (UCE), calcium, blood culture, X-ray Chest. CBC showed increased white blood cell count with leucocytosis, X-ray Chest shows consolidation right side. Management included keeping child nothing per oral, oxygen inhalation via nasal bubble Continuous Positive Airway Pressure Therapy (CPAP), pulse oximetry and vitals monitoring, intravenous antibiotics, nebulization with ipratropium bromide and ventolin. During stay child's condition did not improve both clinically and radiologically. As the child started deteriorating even on oxygen inhalation and subsequent chest examinations showed decreased air entry on right side of chest hence, child was taken for emergency bronchoscopy which retrieved 2 peanuts from right bronchus. The child subsequently improved and was discharged with detailed counselling of parents.

Four years old male 16 kg weight vaccinated came to ER with presenting complaint of cough, runny nose and fever 1 week high grade intermittent and having difficulty of breathing for 1 day child was vitally unstable with cyanosis, clinical findings included respiratory rate 170/minute, temperature 100 F, respiratory rate 60/ minute, oxygen saturation 70% without oxygen and with oxygen 80%. Glasgow coma scale 7/15. Child was cyanosed. On auscultation bilateral wheeze with subcostal, intercostal and suprasternal recession. Despite immediate emergency management child started gasping and dropping oxygen saturation and was intubated and shifted to PICU and put on Mechanical Ventilator (SIMV) mode. Initial impression was of foreign body inhalation/severe pneumonia/acute exacerbation of asthma. So the child was managed on these lines. Workup done included baseline CBC, UCE, Blood culture, X-ray chest. X-ray chest shows hyper inflated lungs. No signs of consolidation. CBC show normal reports and no growth in blood culture. Management done was as follows. Nothing per oral, oxygen inhalation, vitals monitoring, pulse oximetry, injection solucortef, Injection magnesium sulphate, nebulization with ipratropium and ventolin, intravenous ceftriaxone, injection terbutaline. Paediatric surgery consult to rule out the possibility of foreign body was done. Subsequent course during ICU stay included an improve event with ventilator support and eventually successful extubated. Chest examination done at this time showed decreased air entry on left side of chest. Emergency bronchoscopy done and retrieved 2 betel nuts from left bronchus. After which child improved and was successfully discharged home.

One year and six month old male child weight 8kg unvaccinated presented in ER with complaints of cough for 1 month, moderate in intensity, non-productive, more at day time, gradually its severity increased with bouts of coughing lasting a couple of minutes, After 15days child developed fever low to high grade, intermittent, relieved

by taking antipyretic, child developed difficulty of breathing over night with two episodes of vomiting. On examination irritable non co-operative child having subcostal recessions and nasal flaring, heart rate 130/minute, respiratory rate 68/minute, temperature 101f, oxygen saturation 84% on room air and 95% with oxygen, bilateral harsh vesicular breathing crepitation, and decreased air entry in left lower lobe and localized wheeze, On basis of history, examination, X-ray findings strong suspicion of foreign body inhalation was made. Bronchoscopy done and 2 pieces of beetle nuts removed from left lower bronchus, patient's condition improved after removing nuts and child discharged after 2-3days and on follow up child was stable.

Three years old child weight 13kg unvaccinated presented in emergency with complains of fever for twelve days, cough for ten days, maculopapular rash for six days, difficulty of breathing since night, vomiting 2 episode, child received in ER was irritable, having severe distress, nasal flaring and subcostal recessions, respiratory rate 60breath/ minute, temperature afebrile, oxygen saturation 60% without oxygen and 92% on 10litres of oxygen, patient was put on nasal bubble CPAP, and treating as measles with pneumonia, but child was having episodes of desaturation on and off. Due to further deterioration of condition and frequent episodes of apnoea, an assessment of foreign body aspiration was made and emergency bronchoscopy was planned following which 2 pieces of beetle nuts were removed from right lower bronchus, patient's condition improved and discharged.

Four year and six month old male child weight 14 kg partially vaccinated presented in emergency due to sudden onset of difficulty of breathing and choking for 2-3 hours and complaints of cough, vomiting and chest pain. Child was irritable, having stridor, distress with respiratory rate 64breath/minute, and heart rate 120beats/minute. On auscultations bilateral harsh vesicular breathing was present. Nebulization was done with epinephrine, Injection Dexamethasone given, but choking and stridor continued, Considering the sudden onset of symptoms a strong suspicion of foreign body was entertained and both bronchoscopy and endoscopy was planned, chicken bone was removed from oesophagus, child's condition improved after removing it and patient was discharged.

The case series have been summarized in Table 1 with symptoms, clinical examination, chest X-Ray and requirement of Continuous Positive Airway Pressure (CPAP) and ventilator support in paediatric patients admitted in ICU.

Discussion

Foreign body aspiration is a more common issue in children than adults [9]. Usually patient presents with non-specific symptoms due to this reason, it is difficult to assess its true incidence. Patients having



Figure 1: Shows chest X-Ray of the patient diagnosed as foreign body.

	Case 1	Case 2	Case 3	Case 4	Case 5
Symptoms	Fever, cough, respiratory distress	Fever, cough, respiratory distress	Fever, cough, respiratory distress	Fever, cough, respiratory distress	Choking, stridor, respiratory distress
Examination	Bilateral crepitation, subcostal recessions	Bilateral wheeze, subcostal recessions	Decreased air entry, localized wheeze	Bilateral crepitation,	Stridor, Bilateral harsh vesicular breathing
Chest x-ray	Consolidation on right side	Hyper inflated lungs	Bilateral infiltrations	Bilateral infiltrations	Normal
CPAP	YES	No	NO	YES	No
Ventilatory support	No	YES	NO	No	No

Table 1: Summarized case series with symptoms, clinical examination, chest X-Ray and requirement of Continuous Positive Airway Pressure (CPAP) and ventilator support in paediatric patients admitted in ICU.

short history usually present as aspiration but those who are having chronic history do not present as aspiration [10].

The case series of foreign body aspiration suggests that most cases presented amongst children under 3 years of age [11-15]. In this case series almost all patients were under 3 years of age which showed that children usually have habit of putting objects in their mouth, can't chew some of the objects because of absence of molars and lack in the swallowing mechanism resulting in inhalation of foreign bodies [11].

Most patients presented with fever and cough as an initial presentation followed by respiratory distress. Poor history taking can be one the reason of delaying in diagnosis. No deaths were recorded in our series of patients referred for foreign body extraction through bronchoscopy from other hospital. All patients presented in our hospital were male, may be due to their adventurous nature [12-15]. Chest X-Rays are frequently used in the assessment of patients with respiratory complaints. Diagnosis is more obvious in patient with radiopaque foreign body. However radiolucent foreign body may pose a problem as they are often missed. In this series there was no radiopaque foreign body, so it was missed on chest X-ray [16]. The procedure of choice for initial evaluation is fiberoptic bronchoscopy, it can be performed under local anaesthesia with few risk and complications, and it allows the exact site of lodgement to be determined. Smaller airways can also be examined by this technique [17]. Foreign bodies are predominantly impacted on the right side. Previously, rigid bronchoscopy has been the gold standard for the removal of tracheobronchial foreign body, especially in children. However, recent improvement in technique and equipment for flexible fiberoptic bronchoscopy make it valuable tool for removal of foreign body. Both flexible and rigid bronchoscopy was done in the case series for localizing and removal of the foreign body and it was a team work including support of other hospital doctors for paediatric bronchoscopy which resulted in success of prompt diagnosis, early decision of removing and saving the child's life.

This case series highlight includes a warning and an education of knowledge for parents, role of hospital and the public. In case of radiology, X-Rays have a high rate of false negative and hence, bronchoscopy is a gold standard technique for assessment and management of foreign body. In case of public, an aspiration of foreign bodies is a preventable, life threatening condition that calls for increase parent education and awareness.

Conclusion

Foreign body aspiration should be suspected especially in young boys presenting with choking, respiratory distress, and especially localized wheeze in the chest. The commonest foreign bodies are beetle nuts commonly used material in our country as an addiction and hence easily accessible to young children to grab and put in their mouth. Foreign body can be lodged in left bronchus. The outcome of patients with foreign body inhalation, there is no deaths recorded in our patients.

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