Neglected Airway foreign body aspiration: Case Series and Experience in a Rural Nigeria Hospital.

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Abstract

Foreign body aspiration is relatively less common in school-aged-children. Majority of patients are less than three years of age with decreasing frequency in the older age group. The incidence of major complications is higher when there is delay in diagnosis over weeks. This case series reviews three cases who had foreign body aspiration for a duration of nine years, six and five months respectively, with a mean age of 8.3 years. They all had been managed for pneumonia before referral. They all had bronchoscopies and removal of foreign bodies. The diagnosis of foreign body aspiration can be neglected for months to years due to the lack of classical symptoms and failure of patients to give a history of foreign body aspiration. We highlight that it should be considered in children with chronic cough, recurrent or non-resolving pneumonia.

Keyword*: Neglected, airway foreign body, aspiration*

Introduction

Foreign body aspiration (FBA) is relatively less common in school-aged-children. Majority of patients with airway foreign body (FB) were between one and three years of age with decreasing frequency in older age group.[1] Foreign body aspiration is a life-threatening condition. It is one of the most common causes of mortality in infants.[2,3] Late diagnosis of FBA were defined as occurring beyond three days between the time of aspiration of the foreign body, or onset of symptoms, and correct diagnosis.[4] The incidence of major complications was 95% in cases with a delay in diagnosis of over 30 days after aspirating the foreign bodies.[5]

Complications associated with tracheobronchial foreign bodies depend on the nature, size, shape and duration of impact of the foreign body. A long-standing foreign body elicits inflammation around it leading to oedema and formation of granulation tissue in the surrounding mucosa making the foreign body removal difficult.[6]

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Poor health sicking behavior of the care giver as well as the quality is an important contributory factor in the delay to access health care.[7]

Case One

A15-year-old boy presented to the paediatrician with a history of recurrent productive cough and hemoptysis for nine years duration. The current episode has lasted for two weeks at the time of review. He has had several treatments for respiratory tract infection and tuberculosis; had first line medication of 9 months. At presentation, he was chronically ill looking, febrile, with digital clubbing and mildly tachycardic. He had left apical flatting but not in respiratory distress and had no wheezing heard. Lung auscultation revealed absent breath sounds on the left hemithorax. Other systematic examination reveals normal findings.

Chest x-ray showed a radiopaque foreign body seen at the left perihilar region. Mediastinal shift to the left, opacity seen on the lower 2/3rd of the left hemithorax. The left hemidiaphragm is elevated with rib crowding (Figure 1). Based on these findings, further tailored interrogation uncovered a report of accidently ingested a 'metal nail' nine years ago while playing which was assumed to have been passed out in stool. Rigid bronschoscopy was performed and a foreign body (Figure 4) was successfully removed from the left main bronchus with 120mls of purulent effluent.

Figure 1 chest radiograph pre and post bronchoscopy

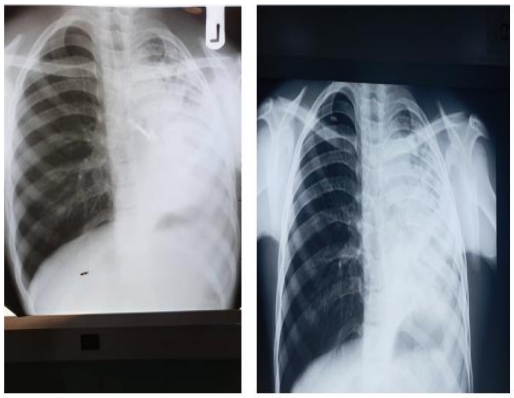
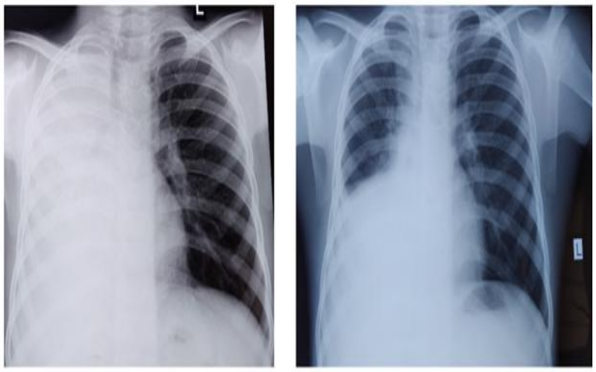


Figure 2 Rusty nail retrieved from the first case with the picture on a white background

Case Two

A 9-year-old boy presented to the paediatrician with dry cough of 6 months duration which later became productive and associated with fever a month prior to presentation. He commenced on a course of antibiotics a week prior to presentation but the symptoms persisted. There was a history of him inhaling the cover of his writing pen while in school 6 months ago. For which he presented to a clinic where they were reassured as he was asymptomatic. Examination revealed the child was toxic looking, febrile and tachycardic. He was in respiratory distress. Lung auscultation revealed a reduced breath sound over basal area of right lung. Chest x-ray showed an opacity of the right hemithorax with air bronchogram of the right upper lobe. The right hemidiaphragm is elevated (Figure 3a and 3b). Rigid bronschoscopy was performed and a foreign body (Figure 3 c) was removed from the right lower lobe bronchus with 20mls of purulent effluent.



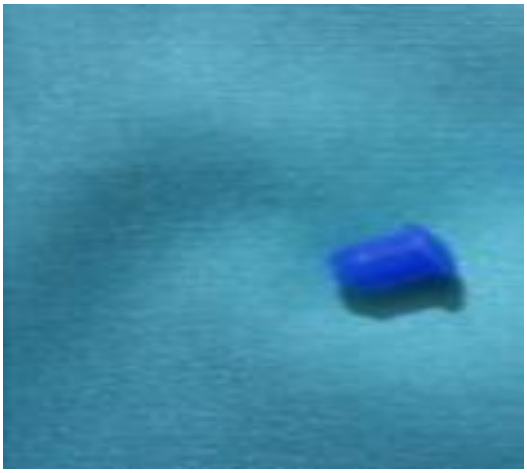
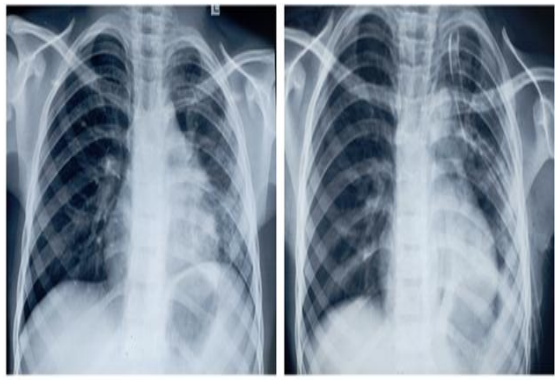


Figure 3 chest radiograph pre and post bronchoscpy for second case and the third picture is the foreign body retrieve from the right main bronchus

Case 3

A 10-year-old boy presented to the paediatrician with a cough that was dry for a period of 5months and then cough became productive with associated fever for a month duration. A week prior to the presentation, the mother took the child to a general practitioner with above complaints for which the child was started on a course of antibiotic and analgesics, but the symptoms seem not to improve. Significantly in history, the child had inhaled the cover of his writing pen while in school 5 months ago. His first point of care was at a private clinic, and they were reassured due to lack of symptoms. Upon examination, the child was toxic looking, febrile and mildly tachycardic. He was in respiratory distress and no wheezing. Lung auscultation revealed a reduced breath sound over basal area of left lung with no lung crepitation noted. Other systemic examinations reveal normal findings.

Chest x-ray showed an opacity of the left hemithorax with air bronchogram of the left upper lobe. The left hemidiaphragm is elevated (Figure 4a and 4b). Rigid bronschoscopy was performed and a foreign body (Figure 4c) was successfully removed from the left lower lobe bronchus with 20mls of purulent effluent. The immediate post procedure child developed left pneumothorax which he had a chest drain passed.



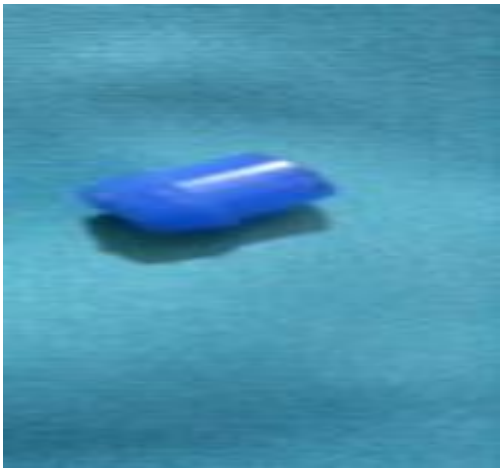


Figure 4 chest radiograph pre and post bronchoscopy for the third case with the foreign body in the left main bronchus and a chest tube in place following pneumothorax intraoperatively and the foreign body retrieve in the third picture

Discussion

The tracheobronchial airway foreign body aspiration is a serious medical problem associated with significant morbidity and mortality, and it can often be a life-threatening condition.[8] Foreign body aspiration occurs most commonly in children, and about 75% of cases have been reported in children younger than three years of age.[2]It is less common in older children.[6] This case review, examines children of 6, 9 and 10 years of age respectively at the time they inhaled the FB. They FB are inorganic material, and all presented with lower respiratory tract infection.

Aspirated Foreign bodies are broadly classified into organic and inorganic.[4,7]Organic FBs are known to causes more complications due to their ability to absorb moisture that often result in airway obstruction and post-obstructive pneumonia. Inorganic FBs do not possess absorbent properties.[9] This is partly the reason why they could have tolerated this FB longer, hence the neglect / missed diagnosis and late presentation. Up to 50% of patients with FB aspirations do not have a contributing history available. The patient is seen with nonspecific pulmonary complaints such as intermittent coughing or wheezing.[3]Therefore, any patient with a prolonged nonspecific pulmonary complaint, even without the history of acute aspiration, should raise the question of a FB. This is as in the first case who was never properly investigated but was treated for tuberculosis.

The need to timely recognition and retrieval FB are important to prevent any post-obstructive complications such as necrotizing pneumonia, lung abscess, hemoptysis, empyema, stricture, and resultant sepsis or respiratory failure.[9]

The complication rate for FBA was as high as 60% in children who were diagnosed after 30 days had elapsed and bronchiectasis was a major complication in 25% of these patients.[10] this is evidence from the 3cases reviewed as they were all complicated. However, at al[11] discovered that diagnosis of FBA was further prolonged by a mean duration of 49 days in patients with initial diagnosis of pneumonia when compared to those who had a correct diagnosis of FBA at first contact with medical personnel. This finding is like the patients in this case series and in our experience.

World health organization reported of 1 in 14 children dying before reaching age 5 in 2017. An estimated 5.4 million children aged under 5 years died in 2017, of whom 2.5 million were female and 2.9 million males. Under-5 mortality rates are highest in the WHO African Region and in low-income countries, where one child dies out of 14 born. More than half of under-5 child deaths are due to diseases that are preventable and treatable through simple, affordable interventions.[12] From the case we had they were all male. Current trends read that close to 48 million children under five will die between 2020 and 2030.[13] The factors responsible for poor quality of health care in Nigeria to include: declining government expenditure on health despite increasing health care needs, non-availability, non-functional or insufficient basic medical equipment, inadequate health facilities, lack of basic drugs as well as unavailability of prescribed drugs, long waiting time at the health facilities.[7,14,15]Inequalities in the distribution of health care services, programs, resources as well as personnel have persistently remained the case. There are clear indications of disproportionate allocation of health care resources. The consequent effects of these disparities can be best imagined.[7]These factors could be responsible for the reason why the first case was able to harbour a nail in his away for this long time.

Conclusion

The diagnosis of FB aspiration can be neglected for months to years due to the lack of classical symptoms and failure of patients to give a history of FB aspiration. Inequalities in the distribution of health care services, programs, resources as well as personnel have persistently remained a major problem. Chest radiographs in combination of good history and examination are usually adequate for diagnosis. Bronchoscopy is both safe and effective in the diagnosis and removal of aspirated FB.

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