An unusual long standing tracheal foreign body in a paediatric patient removed via tracheostome: A case report

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ABSTRACT

Aspirated foreign bodies are commonly reported in pediatric patients and accounts for emergencies. A long standing undiagnosed foreign body (FB) in the trachea is very rare and lethal and the diagnosis needs a high index of suspicion. Foreign bodies in the trachea are uncommon and usually present with acute respiratory symptoms sometimes mimicking bronchial asthma. A long standing tracheal FB is a rare presentation.We report a 4-year old female child who presented with a history suggestive of FB inhalation about 2 years' prior admission. She was treated in several health facilities as a case of bronchial asthma/pneumonia with no clear relief. This case highlights the role of clinicians in having a high index of suspicion when encountering children with unresolving pneumonia so as to rule out the possibility of foreign body inhalation.

Keywords: *Foreign Body, Paediatric Patient, Tanzania, Trachea, Tracheostomy.*

Foreign bodies (Fbs) in the airways are otorhinolaryngological emergencies and pose a challenge to Otorhinolaryngologists. They require prompt intervention to secure airway patency [1]. Foreign body (FB) inhalation is reported commonly among those aged 1-3 years, unlike adults. There are different schools of thought governing FB aspiration but such tendency of aspiration in the mentioned age group may be due to lack of molar for proper grinding of food and less controlled coordination of swallowing. Immaturity in laryngeal elevation and closure of the glottis, or the age-related tendency to explore the environment by placing objects into the mouth and the tendency of children to run and play and ingesting certain items during the play have increased such incidences in children [1-3]. Children who are not given proper individual attention at an early age are more liable to inhale FBs.

FB aspiration (FBA) in children is associated with significant morbidity and mortality [4]. A significant report of FBs in airways have accounted them to be lodged in the bronchi in about 80-90% of cases. The reasons being their size and configuration which allows passage through the larynx and trachea. Therefore, FBs having been lodged in the trachea are rare since tracheal FBs account for only 4% of aspirated FBs [2,4,5]. We report an unusual case of a 4-year old child who aspirated a metallic FB which lodged in the trachea for about 2 years before she was diagnosed to have aspirated it. It was then removed successfully via tracheostomy after several attempts of failed rigid bronchoscopy.

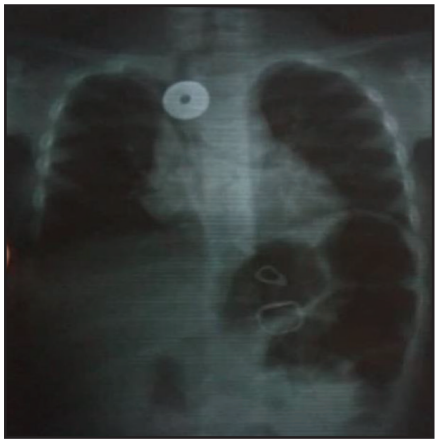

Figure 1: Chest X-ray showing the location of metallic foreign body

Figure2: CT Scan of the chest showing the metallic foreign body

Figure 3: Showing the metallic foreign body after its removal from the trachea

CASE REPORT

The 4-year old female child was admitted in our department upon referral from one of the zonal hospitals in our country. She had a history of persistent cough and halitosis which was initially preceded by on and off difficulty in breathing. General examination revealed an ill-looking child, not pale or dyspneic with finger clubbing. Before the patient was referred to us, the child was attended by the Zonal hospital, she presented with purulent cough, halitosis, and spikes of low degree fevers.

Since the child reported a history of FB aspiration, a chest x-ray was performed and the diagnosis of FB aspiration was made with co-existent aspiration pneumonia. She was kept on broad-spectrum antibiotics and intravenous steroids for 3 days with planned bronchoscopy which was unsuccessful. She was treated in several peripheral health facilities as a case of pneumonia and/or bronchial asthma with no clear relief for 2 years since when she inhaled the metallic object.

After the general investigations and upon work ups including chest x-ray (Fig. 1) and computerized tomography (CT) scan of the chest (Fig. 2), diagnosis of a FB inhalation was confirmed. After the confirmation of FB aspiration, relevant preoperative preparations were done and the patient was scheduled for bronchoscopy. Rigid bronchoscopy was attempted several times without success due to dense granulation tissue covering the FB. Tracheostomy was resorted and finally, the metallic FB was removed from the trachea via the tracheostome (Fig. 3).

Postoperatively, she was kept on broad-spectrum antibiotics (intravenous ceftriaxone 500mg given 12 hourly) plus steroids (intravenous dexamethasone 4mg given 8 hourly) with tracheostomy tube care done accordingly. Three days later, the tracheostomy tube was removed and the patient was discharged home and is currently under follow up in one of the zonal hospitals nearby her place.

DISCUSSION

Children with a history of FB aspiration presents with choking, gagging and paroxysms of coughing or airway obstruction during acute moments. In most occasions, complications are reported when obstruction, erosion or infection causes hemoptysis, pneumonia, atelectasis. The longer the FB remains in situ, the greater the propensity of granulation tissue formation, resulting in smaller airway lumen and as the lumen diminish in size, symptoms usually become more pronounced [2-4,6,7].

Encountering foreign bodies in the trachea having been lodged for a long-standing period of time, is rare. It is so because of the effect of gravity which aids in propelling them distally to lower parts of the tracheobronchial tree [2]. The mechanism of migration of FBs may be due to a high expiratory flow rate generated during coughing. This initial peak of expiratory flow lasts about 30-50 milliseconds and may reach rates as great as 12L/s [8]. Shape and chemical nature of the FB also play a role in its migration. Irregularly shaped and sharp pointed objects are less likely to migrate since they easily stick to the mucosa. Inorganic FBs are usually inert and evoke less inflammatory response even if they migrate. Organic FBs can cause a severe inflammatory response and with fluid absorption, they can increase in size and may cause airway obstruction [9].

The main stay of treating aspirated foreign bodies remains to be endoscopic removal to prevent associated morbidity and mortality [9-15]. FB aspiration most commonly affects young children and they do present with respiratory symptoms such as wheeze and cough after a choking episode. A careful history and physical examination are important deciding factors as to whether bronchoscopy will be done or not otherwise it may be mistaken with other pathological conditions which mimic FB aspiration such as lung abscess. Important clinical information should be enquired carefully from parents/caretakers so as to establish linked information such as choking and subsequent symptoms of which may be missed sometimes by parents [15].

It is usually possible to diagnose the presence of a FB in the trachea in the acute phase because of readily available history of inhalation and features referable to the presence of FB in the highly sensitive air passages [2,3,5]. The severity of the clinical picture of FB aspiration varies according to the size, shape, type, and location of aspirated material. Organic matter is seen approximately in 70–80% of aspirated FBs mainly peanuts, peas and watermelon seeds [2,4,7]. FB have a tendency to lodge in the right main bronchus by virtue of its anatomy where it's more vertical and larger in diameter than the left main bronchus. However, in our case report the FB was found to lodge in the trachea for 2 years without descending to other parts of the tracheobronchial tree with the aid of gravity making it unusual [2,4,5].

The recommended modality of removing FBs from the tracheobronchial tree is through bronchoscopy which correlate to the first attempt made in removing the FB reported in this case report. But it went unsuccessful due to hindrance from dense granulation tissues covering the FB. Tracheostomy was further opted and the FB was removed successfully via tracheostome. Though bronchoscopy is considered to be a safer way of removing foreign bodies in the airways, it is associated with several complications regardless of the the experience of the person who will be performing the procedure. The sharp edged FBs even complicates

the whole thing, reported complications include bronchospasm, foreign body dislodgement to distal airways, pneumothorax, pneumomediastinum, hydropneumothorax, pneumonia, and atelectasis. Such rate of complications is reported to be worse when FBs lodge in distal airways. When a surgeon decides to remove FBs in the airways, rigid bronchoscopy is the procedure of choice while taking precautions to avoid the mentioned complications [1-4,6,7]. If a FB goes undetected in a child it can lead to severe life threatening complications leading to failure to thrive.

CONCLUSION

Foreign bodies in the trachea may be missed, as in this particular case, bearing the anatomical description of the trachea being wider than other parts of the tracheobronchial tree. Though they may be overlooked, they should always be considered in pediatric patients with unresolved pneumonia or attacks being labeled as bronchial asthma. Generally, any child with sudden onset of difficulty in breathing and choking should be considered to have "aspirated a foreign body" until proven otherwise. Such consideration will aid clinicians in increasing their index of suspicion in establishing the diagnosis of foreign bodies in the airways thus reducing morbidity and mortality.

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