Inhalation of Pin – A Rare Case Report

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Abstract: A boy aged 1 year presented with persistent cough, sputum and fever for last two months which did not subside in spite of empirical medical therapy. For last 15 days symptoms started to aggravate and not responding to medical management. Chest X-ray showed a pin in the right main bronchus with more radiolucency of right lung. CT scan of chest revealed radiodense linear opacity in the right lower lobe primary and secondary bronchus with partial collapse consolidation of right lower lobe medial basal and lateral basal segment. Rigid bronchoscopic removal was tried but failed. Ultimately thoracotomy was done to remove the foreign body.

1. INTRODUCTION

In children foreign body aspiration or inhalation is very common [1-3], however may have dangerous complications. Children are very inquisitive in nature; they put everything in their mouth. Foreign body aspiration accounted for 7% of all accidental deaths especially in children under 4 years of age in the US during the year 1986 [4]. About 75% to 85% of all foreign body aspiration occur in children younger than 15 years old; however, most are younger than 3 years of age [5]. Boys are affected more frequently than girls [6]. The common inhaled items are edibles like nuts, beans, seeds, chicken bone and comprises of 75% of cases. Non edible items are not uncommon which includes pin, needles, screws, plastic objects⁷. The scarf pin inhalation has been reported as a cultural hazard in Arab women [7]. Recently the authors have encountered such a case of foreign body (metal pin) which was lodged in right bronchus in one year old child and managed successfully by thoracotomy after failure of bronchoscopic removal.

2. CASE REPORT

A 1 year old male baby presented with recurrent chest infection since last two months. His parents could not give any history of specific inhalation or the cause of cough, sputum, and fever for last two months. In spite of medication, it was not subsiding. On examination baby thrives normally with good nutritional status and he is vigorous and active. His pulse rate was 110/min. On auscultation, it was found that there is diminished air entry in the right middle and lower zone with few rhonchi. No cardiac murmur was present. Haematological and biochemical reports are normal. CXR PA view shows a pin is present in the right main bronchus with more lucency over right lung indicating air trapping (Fig 1). CT scan shows radio dense linear opacity in the lumen of right lower lobe primary and secondary bronchus with partial collapse consolidation of right lower lobe medial basal and lateral basal segment. Rest of the lung fields are normal (Fig 2). A rigid bronchoscopy was tried in an attempt of removal of the foreign body but unfortunately it failed.

Fig. 1. CXR pin in right bronchus

Fig. 2 & 3. CT chest pin in right lower bronchus

Then emergency thoracotomy was decided. After opening the thorax by right lateral thoracotomy, right bronchotomy was done and it was seen that, a metallic pin was embedded in the right bronchus which partially obstructed the air entry (Fig 3). The pin was removed successfully without any operative complications. There was no leak or bleeding postoperatively. Patient was extubated on table after proper leak testing. Postoperatively patient was doing well and gradually all symptoms subsided. Patient was discharged on 5th postoperative day.

Fig. 4. Pin in right bronchus after bronchotomy

Fig. 5. Pin after removal

3. DISCUSSION

Children inhale or aspirate foreign objects very often. They suffer more due to inadequate dentition and immature swallowing coordination.

Most common route of ingestion of foreign bodies is either in the esophagus or in the trachea [8]. Accidental inhaled objects in adult usually lodged in the right bronchus as it is more straight and wide as compare to left one. That's why almost half of the reported cases right side is usually affected [1-3] as also happened in present case. But in case of very small children both sided bronchus are equally angulated. Two thirds of aspirated objects lodge in main stem bronchi rather than in the distal bronch [9-10].

In case of metallic object, X-ray is diagnostic. It is also true in this case. Parent of that baby could not give the positive history of inhalation of foreign body, even they were unknown of that fact. Local doctor prescribed a series of antibiotics, but baby is still suffering from low grade fever and cough. X-ray showed the actual cause of recurrent cough and chest infection at last. Absence of the classical history and/or physical or radiographic findings may lead to a delayed diagnosis [11]. It has been reported that about 50% of patients with foreign body aspiration do not have a contributing history, and 20% of all children are given medication for other disorders for longer than a month before diagnosis [12-14].

Intrathoracic pin can cause severe complications endangering patient's life. Migrating pin may cause minor irritation to death of the patient when accidental perforation of vital structures occurred. Several complications has been reported till now like pericardial tamponade, arrhythmias, pericarditis, false aneurysm, aorta-innominate and aorta-pulmonary fistulas, pneumothorax, hemoptysis and subclavian steal syndrome¹⁵. Two cases has been reported where pin has penetrated the wall of pulmonary artery and aorta without any significant symptom [16-17]. It may cause recurrent haemoptysis to irreversible damage of the obstructed airways or lung parenchyma, which often necessitate emergency surgical exploration. All deaths in such cases mentioned in the literature were caused by catastrophic cardiovascular events [17].

In this case, persistent cough of the baby is due to infection or tissue reaction by the foreign body which partially obstructed the airway resulting in retention of secretions and persistent infection of corresponding lung segments.

Prompt diagnosis and early management is essential in case of foreign body aspiration to avoid potential; sometimes life threatening complications [18]. Surgical removal is mandatory in case of foreign body especially when the object is metallic one to avoid serious complications even in case of asymptomatic patient.

In present case, emergency thoracotomy was performed when rigid bronchoscopy was unsuccessful to remove the intraluminal pin. Retrieval of foreign body depends on site of lodgment, physical nature, efficacy of bronchoscopist, accessibility and feasibility of interventional facilities available. The pin type has also been suggested as an important factor [19]. Rigid bronchoscopy is the choice and preferred over flexible one while attempting for removal of foreign body in a child. Laser has been used now a days but surgery is the last resort where all other procedures are unsuccessful [1,2,3,7,11,20]. Recently thoracoscopy has been reported in case of foreign body removal [21] but it was not possible in this case due to unavailability of such instrument in the operating room. Thoracoscopic removal is preferred over thoracotomy due to its less invasiveness and early postoperative recovery. However, thoracoscopy may fail in case of foreign body removal where patient might be subjected to thoracotomy finally. However this case was successfully managed by thoracoscopic removal of that metallic pin followed by uneventful postoperative course.

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