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Case Reports

A Tale of Late Diagnosis of Foreign Body Aspiration in Children with Damaged Lungs

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Introduction

Foreign body aspiration (FBA) in children is not uncommon in our context[1,2]. The child usually presents with an initial episode of choking, coughing and respiratory distress[3]. If the initial attack is ignored, the child may develop recurrent respiratory symptoms with ultimate development of recurrent pneumonia and bronchiectasis with damaged lungs in the long run. Only two thirds of patients seek treatment within 1 week following aspiration[4].The diagnosis of FBA can be delayed in terms of days to weeks[5,6]. But much delay to the extent of years is not usually reported in the literature. Two cases of FBA occurring long 3-4½ years back with the development of bronchiectasis have been presented. The very simple question regarding any history of choking and coughing following food intake was not enquired or ignored in these cases leading to protracted sufferings on the part of the parents and patient had subsequent lung damage.

Case-1

A 3½-years old male child had been suffering from 'recurrent pneumonia' since 6 months of age. He has been hospitalized in a medical college hospital for 4 times for his recurrent chest problem. On query, it was interestingly revealed that there was history of aspiration of 'a piece of hard coconut' at the age 6 months. The victim had immediate coughing and choking and he was immediately rushed to local registered doctor who reassured as the condition of the child improved apparently with time. Subsequently, the child had recurrent fever, cough and respiratory distress and repeated hospitalization. The child was found to have diminished movement on the left lower chest anteriorly, respiratory rate 32/min, apex beat in the 5th intercostal space lateral to mid clavicular line, dull on percussion over left lung posteriorly with coarse crepitation. The chest findings were normal on other areas of lung fields. Chest x-ray (Fig.-1) showed shifting of heart shadow to the left with features of collapse consolidation in the left lower zones. Fiberoptic bronchoscopy (FOB) done by the first author revealed inflammatory changes in the left lower lobe and part of lingular segments (Fig.-2). CT scan of lungs (Fig.-3) showed loss of lung tissue with collapse of left lower lobes.

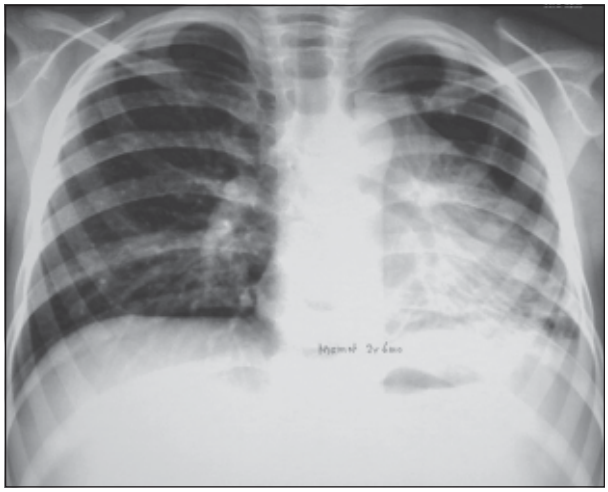

Fig.-1: *Collapse and consolidation left lung*

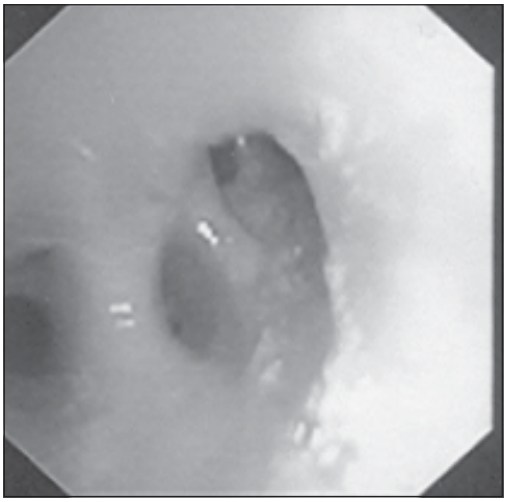

Fig.-2: *FOB-inflammatory changes of left lower lobes*

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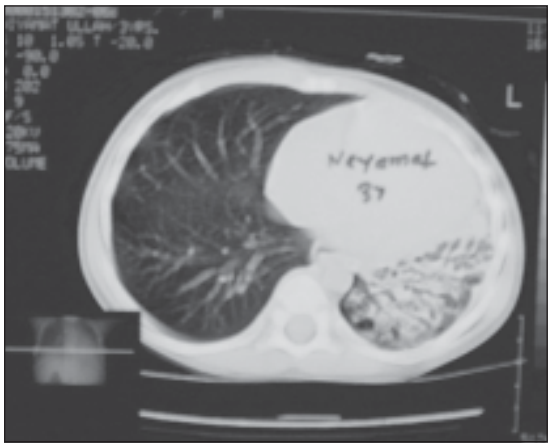

Fig.-3: *CT scan of lungs showing fibrosed and atelectatic left lower lobe*

Case-2

A 5½-years old male child (Fig-4) had accidental aspiration of some parts of TV remote at one year of age followed by choking, coughing and vomiting of some pieces of materials. Mother immediately consulted a local pediatrician who advised to observe the stool on the subsequent days to watch further passage of 'ingested materials of TV remote'. The physician even did not suggest a chest x-ray in response to mother's complaint. Since then the child had often and on recurrent attacks of fever, cough and respiratory distress needing antibiotics and asthma medications for improvement of his condition being advised by different pediatricians. He had features of collapse-consolidation in right lower lobe both clinically and radiologically (Fig.-5). Finally, he was advised CT scan of lungs (Fig.-6) which showed a suspected FB and fibrosed right lower lobe following bronchiectasis. The child underwent lobectomy (Fig-4) of right lower lobe and a TV remote knob was explored (Fig-7) after long four and a half years!

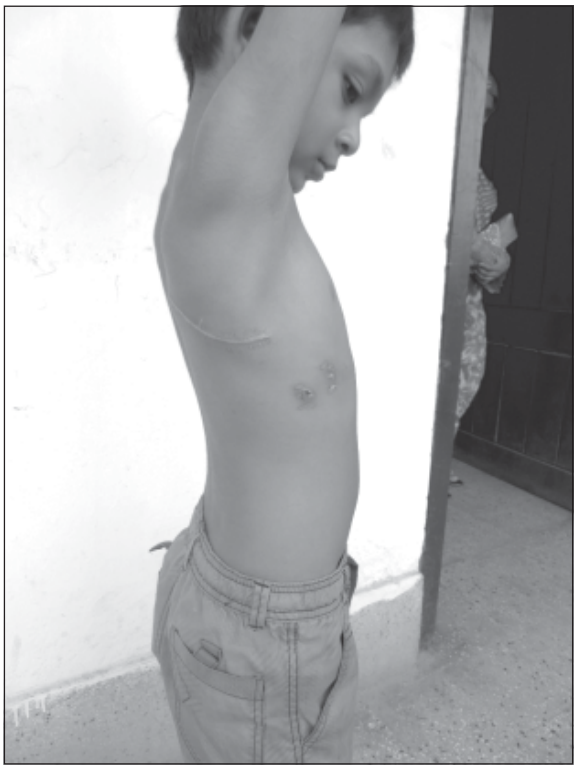

Fig-4: *The child had right lower lobe lobectomy*

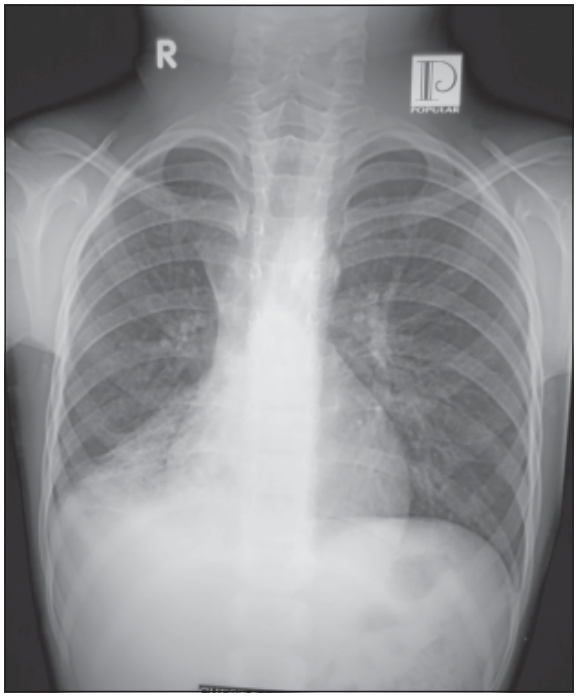

Fig.-5: *Collapse-consolidation right lower lobe (RLL)*

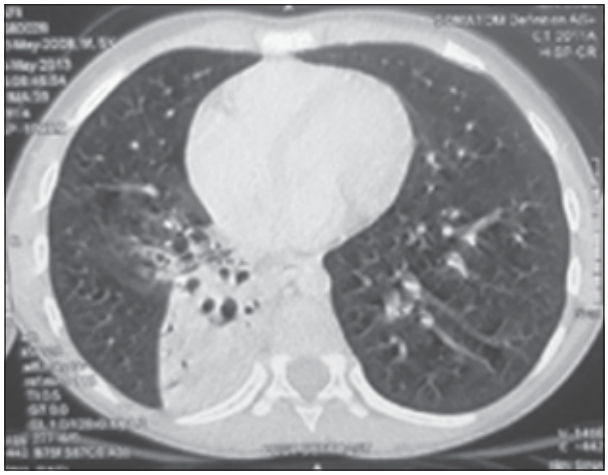

Fig.-6: *CT scan of lungs showing collapse-consolidation RLL*

Fig-7: *The explored foreign body-TV remote knob*

Discussion

Children who aspirate foreign bodies (FBs) are younger than 3 years and two thirds are boys[7]. The FB aspiration occurred within first year of life in the reported cases and both were male. Most foreign objects are coughed or regurgitated spontaneously via protective refluxes, or pass unimpeded through the alimentary tract. Foreign bodies may be inorganic or organic. Food and toys account for approximately 90% of FB aspiration in children[8].

Most inhaled FBs travel distally into the tracheobronchial tree. FBs occur least frequently in the larynx. Partially obstructive objects may cause stridor, hoarseness, aphonia, croup-like cough, odynophagia, hemoptysis, wheezing, and dyspnea. Tracheal FBs occur rarely. The predominant symptoms are obstruction, stridor, wheeze, and dyspnea. FBs in the lower trachea, however, may shift from one bronchus to the other and give rise to a variety of signs and symptoms. Bronchial FBs are the most common, manifesting primarily with symptoms of coughing and wheezing.

Hemoptysis and dyspnea may also be present. Initially, FBs often cause obstructive emphysema (air trapping); later, atelectasis, pneumonia, and, rarely, lung abscess or empyema occur with bacterial overgrowth. Organic materials are more likely to cause an intense inflammatory reaction with accompanying granulation tissue and purulent mucus[9]. In case of case 1, the FB moved to left lower bronchus and that in case of case-2, the FB took its place in the right lower bronchus giving rise to repeated pneumonia and bronchiectasis finally.

The manifestations of aspiration depend on the size of the FB, its composition, its location, the degree of blockage, and the duration of obstruction. History is of paramount importance in the diagnosis of FB aspiration because the physical examination and radiographic study can be unremarkable as time passes after the acute event.

Physical examination is an important part of evaluation for FB aspiration. The classic triad of cough, wheeze, and unilaterally reduced breath sounds may be present in half of the patients[10]. Asymmetric wheezing is a strong indicator of unilateral bronchial obstruction, although symmetric wheezing may also be present. One should consider these physical features when come across a case of FB aspiration. Foreign bodies in children have been reported to be located more in the right bronchus[11]. The second case was consistent with this feature. With the passage of time the FB progressed further down to right lower lobe giving rise to the development of recurrent right lower lobe pneumonia.

The final point of evaluation is investigations like chest x-ray, both anterio-posterior and lateral end-inspiratory views as well as end-expiratory radiograph, fluoroscopy anteroposterior and lateral end-inspiratory views as well as an end-expiratory radiograph. The classic radiographic abnormality is unilateral hyperlucency on an expiratory film[12]. A ball-valve effect of a partial occlusion of the bronchus allows air to enter the affected lobe or lung on inspiration but traps the air on expiration. FB aspiration can never be excluded on the basis of a chest radiograph alone. Operative intervention is based on history and physical examination, and should not be changed because of a negative radiographic study[13,14]. We don't know the radiological features of our cases as both the children were not advised for the investigations. Further investigation is endoscopic airway examination in case of suspected and even to exclude FB in the airway when there is symptomatology suggestive of FB aspiration with no definite witnessed aspiration and choking crisis.

Already mentioned that the diagnosis of FBA can be delayed in terms of days to weeks[5,6]. But the length of much delay to the extent of 3 to 4½ years is not reported in the literature. Thus, the first symptoms prompting medical attention may represent a complication of FB impaction, such as chronic cough and fever due to recurrent or persistent pneumonia,

bronchitis, or even bronchiectasis[11]. Atypical asthma is a common misdiagnosis assigned to unsuspected airway FBs[15]. Physician-related factors still account for the largest portion of delay in diagnosis, with reliance on a negative radiographic report being one of the most important factors[8]. The cause of such delay results from unawareness of the seriousness of FBA, ignorance about the symptoms and physical features of FBA and lack of readily available definite treatment in terms of skilled manpower and facility of airway endoscopic examination in the country.

The initial attack was not inquired or ignored in these cases. The child had recurrent respiratory symptoms with ultimate development of bronchiectasis and damaged lungs. It is believed that delay could have been avoided with a more meticulous history taking, thorough physical examination, necessary investigations and appropriate referral. The attending physicians need to be conversant with the presenting features of FB aspiration, physical features, radiological findings and appropriate referral to centres where rigid bronchoscopy is done by skilled persons.

References

1. Kabir ARML, Ahmed F, Chowdhury GMA,Amin R, Hossain H. Foreign body aspiration in children: Reports of 2 cases. Bang J Child Health 2003; 27: 64-66
2. Chowdhury GMA, Akramul Haque, Rahman Z, Kabir ARML, Amin R, Tahsinuddin N. Management of respiratory foreign body- a twelve years' experience with 382 cases. Bang J Child Health 2006; 30 (1/2/3): 12-16
3. Atelectasis-right. In: Kabir ARML. Editor. Pediatric Practice on Parent's Presentation, Dhaka: Nazneen Kabir; 2011: 337-340
4. Mu L, He P, Sun D: Inhalation of foreign bodies in Chinese children. A review of 400 cases. Laryngoscope 1991;101:657–660
5. Mu L, He P, Sun D. The cause and complications of late diagnosis of foreign body aspirations in children. Report of 210 cases. Arch Otolaryngol Head Neck Surg 1991; 117 (8): 876-9
6. Karakoc F, Cakor E, Ersu R, Uyan ZS, Colak B, Karadag B et al. Late diagnosis of foreign body aspiration in children with chronic respiratory symptoms. Intl J PediatrOtorhinolaryngol 2007; 71 (2): 241-6
7. Black RE, Choi KJ, Syme WC, Johnson DG, Matlak ME. Bronchoscopic removal of aspirated foreign bodies in children. Am J Surg 1984;148:778–781
8. Tan HK, Brown K, McGill T, Kenna MA, Lund DP, Healy GB: Airway foreign bodies (FB). A 10-year review. Int J PediatrOtorhinolaryngol 2000;56:91–99
9. Foreign Body Aspiration. Sulman CG, Green CG, Holinger LD. In: Taussig LM, Landau L, Le Souef PN, Martinez FD, Morgan Wj, Sly PD. Editors. Pediatric Respiratory Medicine, Second Edition. Philadelphia: MOSBY; 2008: 330-335
10. Wiseman NE: The diagnosis of foreign body aspiration in childhood. J Pediatr Surg 1984;19:531–535.
11. Chemick V, Boat TF, Wilmott RW, Bush A. Editors., Kendig's Disorder of Respiratory Tract in Children. Seventh edition, Philadelphia; Saunders; 2006: 610-615
12. Burton EM, Brick WG, Hall JD, Riggs W Jr, Houston CS. Tracheobronchial foreign body aspiration in children. South Med J 1996; 89: 195–198
13. Zerella JT, Dimler M, McGill LC, Pippus KJ. Foreign body aspiration in children. Value of radiography and complications of bronchoscopy. J PediatrSurg 1998;33:1651–1654.
14. Silva AB, Muntz HR, Clary R: Utility of conventional radiography in the diagnosis and management of pediatric airway foreign bodies. Ann OtolRhinolLaryngol 1998;107:834–838.
15. Steen KH, Zimmermann T: Tracheobronchial aspiration of foreign bodies in children. A study of 94 cases. Laryngoscope 1990;100:525–530