

Foreign Body Aspiration in Infants and Children

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Abstract

Objective: To describe the characteristic features of foreign body aspiration in a group of infants and children by a retrospective evaluation.

Patients: 49 foreign body aspiration cases in 0-12 ages presenting to our center between January 1995 and December 1999. Rigid bronchoscopy under general anesthesia and fluoroscopy had been performed in all patients. All foreign bodies had been removed in one session.

Results: Mean age of the patients was 4.4 years. 55.1% were male and 44.89% female. Time of presentation varied between 1 hour and 1.5 months after aspiration. Only 64% of the patients or their families were aware of the aspiration. The

most common complaint was cough (96%). The breathing sounds were decreased in 60% of the patients. All cases had radiological abnormalities. In 20% of the series the extracted foreign body was sunflower seeds. There were no complications following bronchoscopy in any of the patients.

Conclusion: We found rigid bronchoscopy to be an effective and safe diagnostic and therapeutic procedure in children with foreign body aspiration. Especially in recurrent and intractable pneumonia and asthma in childhood, foreign body aspiration must always be kept in mind.

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Key words: foreign body, aspiration, childhood

Introduction

Foreign body aspiration in the respiratory tract can be encountered at all ages but more frequently in childhood. It is one of the leading causes of accidental death among children under the age 5 years of age. Foreign body aspiration may cause sudden death in some cases or may lead to chronic lung problems. These patients are frequently misdiagnosed and treated for pneumonia or asthma.

Materials and Methods

Forty nine cases aged between 0 and 12 years who presented to our center between January 1995 and December 1999 and who were suspected to have foreign body aspiration according to their history, physical examination and chest X-ray findings, were included in this retrospective study.

The patients were investigated according to age, sex, presence of aspiration history, time interval between aspiration and hospital admission, season of aspiration, number of brothers or sisters, symptoms, clinical findings, radiological findings, type of material taken out and location in the bronchial tree.

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| Table 1. Symptoms | |
|-------------------|---------------------------|
| | Number of cases (percent) |
| Severe cough | 47 (96%) |
| Wheezing | 35 (72%) |
| Dyspnea | 31 (64%) |
| Fever | 27 (56%) |
| Restlessness | 20 (40%) |
| Cyanosis | 14 (28%) |
| Tachypnea | 12 (24%) |

| Table 2. Physical findings | |
|----------------------------|---------------------------|
| | Number of cases (percent) |
| Decreased pulmonary sounds | 29 (60%) |
| Wheezing | 18 (36%) |
| Unilateral respiration | 16 (32%) |
| Crackles | 13 (26%) |
| Hypersonority | 12 (24%) |
| Ronchus | 8 (16%) |
| Intercostal retractions | 6 (12%) |

| Table 3. Radiological findings | |
|--------------------------------|---------------------------|
| | Number of cases (percent) |
| Unilateral hyperinflation | 23 (48%) |
| Pneumonia-Bronchopneumonia | 20 (40%) |
| Atelectasis | 12 (24%) |
| Mediastinal shift | 10 (20%) |
| Radioopaque foreign body | 6 (12%) |

| Table 4. Localization | |
|-----------------------------|---------------------------|
| | Number of cases (percent) |
| Left main bronchus | 15 (30%) |
| Right main bronchus | 15 (30%) |
| Left lower bronchus | 9 (18%) |
| Right lower bronchus | 5 (10%) |
| Left upper bronchus | 2 (4%) |
| Right upper bronchus | 1 (2%) |
| Right intermediate bronchus | 1 (2%) |

| Table 5. Foreign bodies extracted | |
|-----------------------------------|---------------------------|
| | Number of cases (percent) |
| Sunflower seed | 10 (20%) |
| Hazelnut particles | 9 (19%) |
| Pumpkin seed | 9 (19%) |
| Pin | 7 (14%) |
| Hazelnut pod | 4 (8%) |
| Plastic pen cover | 4 (8%) |
| Pieces of carrot | 2 (4%) |
| Watermelon seed | 1 (2%) |
| A grain of corn | 1 (2%) |
| Tooth | 1 (2%) |
| Tree thorn | 1 (2%) |

A Karl Storz 10320 type Rigid Bronchoscopy was applied to all children under general anesthesia and a Karl Storz 10370 U-type foreign body claw was used. All interventions were performed under Siemens 110-3 DM type fluoroscope.

Results

The mean age of the patients was 4.4 yrs (range: 9 months-12 years), 68% being under 5 years of age. Twenty seven (55.1%) were male, while 22 (44.89%) were female. A foreign body aspiration history could be obtained in 31 (64%) of the patients, while 17 (36%) patients or their families were not aware of any kind of aspiration. The time interval between aspiration and admission to our center was between 1 hour and 1.5 months. All cases had at least one brother or sister. The most common season of aspiration was

winter (9 cases - 40%), followed by autumn (10 cases - 20%) and by summer (9 cases 18%).

The most common symptom was coughing and wheezing (Table 1). The most common physical finding was decreased pulmonary sounds. Wheezing, crackles and a non functioning hemithorax were other findings (Table 2).

None of the chest X-rays were normal. The most common finding was unilateral hyperinflation (Table 3). In 6 of the cases (12%) the foreign body was radioopaque.

Twenty six (55%) of the foreign bodies were seen on the left side, 22 (44%) on the right and only one (2%) was seen in the trachea (Table 4).

Sunflower seeds and hazelnut particles were the most common extracted foreign bodies (20% and 19%) (Table 5).

Discussion

Foreign body aspiration is one of the major causes of childhood morbidity and mortality (1). Foreign bodies in airways cause asphyxia, cardiac arrest, obstructive dyspnea, larynx and glottis edema, loss of consciousness as early complications and secondary infection, obstructive bronchiectasis as late complications. Sometimes these patients are misdiagnosed as asthma or pneumonia and are exposed to unnecessary and ineffective therapies.

A large series of foreign body aspiration in children has recently been reported in a publication from Turkey (2)

Foreign body aspiration can be seen in all ages but it is most common in children younger than 3 years of age (3,4). Sunflower seed was the most commonly identified object in our study, similar to findings in other studies performed in Turkey (2,5). Depending on regional feeding habits, peanuts and other nuts have been reported as commonly aspirated foreign body in many countries (6,7).

Foreign bodies were more common on the left side (53%) in our study. Some authors who have studied large series have reported foreign bodies mostly on the right side (2), while others reported no significant preponderance of right or left sides (3). In some studies, normal chest X-rays have been reported in more than two thirds of the children (3). None of the children in our series had normal radiograms. In our study, unilateral hyperinflation (obstructive emphysema) was the most common radiological finding, and this was followed by mediastinal shift, pneumonia and atelectasis. These results are similar to previous experience (4,8).

When there is suspicion about presence of a foreign body, bronchoscopy must be a procedure to be resorted to, since the risks of this intervention are very low. Without bronchoscopy, it is very difficult to reach an accurate diagnosis. Bronchoscopy also constitutes the most effective treatment of foreign body aspiration. Thoracotomy should be considered when bronchoscopy is unsuccessful, but it can

never replace bronchoscopy. In one of our patients, where rigid bronchoscopy was insufficient in removing a chicken bone, Neodym: YAG laser was used to break it and the need for thoracotomy was eliminated (9).

Foreign body aspiration in children should be kept in mind even when the history of aspiration is absent, if recurrent pneumonia, intractable pneumonia and attacks of respiratory distress do exist. Delays in diagnosis may lead to serious complications and death.

References

1. Metrangolo S, Monetti C, Meneghini L, et al. Eight years'experience with foreign body aspiration in children: what is really important for timely diagnosis? *J Pediatr Surg* 1999;34:1229-31
2. Şenkaya I, Sağdıç K, Gebitekin C, et al. Management of foreign body aspiration in infancy and childhood. A life threatening problem. *Turk J Pediatr* 1997;39:353-362
3. Mu L, He P, Sun D. Inhalation of foreign bodies in Chinese children: a review of 400 cases. *Laryngoscope* 1991;101:657-660
4. Wunsch R, Wunsch C, Darge K. Foreign body aspiration. *Radiologe* 1999;39:467-471
5. Paşaoğlu I, Doğan R, Demircin M, et al. Bronchoscopic removal of foreign bodies in children: retrospective analysis of 822 cases. *Thorac Cardiovasc Surg* 1991;39:95-98
6. Tariq P. Foreign body aspiration in children - a persistent problem. *J Pak Med Assoc* 1999;49:33-36
7. Karim RM, Momin IA, Lalani II, et al. Aspiration pneumonia in pediatric age group: etiology, predisposing factors and clinical outcome. *J Pak Med Assoc* 1999;49:105-108
8. Mu L, He P, Sun D. The causes and complications of late diagnosis of foreign body aspiration in children. report of 210 cases. *Arch Otolaryngol Head Neck Surg* 1991;117:876-879
9. Boelcskei PL, Wagner M, Lessnau KK. Laser-assisted removal of foreign body in the bronchial system of an infant. *Lasers Surg Med* 1995;17:375-377