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Research Article

**PREVALENCE OF INHALED AND SWALLOWED FOREIGN
BODY AMONG CHILDREN IN SAUDI ARABIA**Abdulaziz Obaid Alotaibi^{1*}, Rawan Ayed Almalki¹, Mustafa Jamal Alkhanani²¹ Taif University, Saudi Arabia, ² King Saud Medical City, Riyadh, Saudi Arabia.**Abstract:**

Objectives: Foreign body inhalation and swallowing remains a major cause of pediatric emergency. This study reports the experience of an upper Saudi ORL department in a year in a population of about 500,000.

Study Design: Prospective Study

Methods: In the period from January to October 2018, 166 patients attended the ear, nose and throat departments complaining of inhaled (34 patients) or swallowed foreign bodies (132 patients). Radiography, Rigid oesophagoscopy, bronchoscopy or both were performed for removal of swallowed or inhaled foreign bodies.

Results: our patients swallowed a variety of objects, the majority being coins (98 = 74%). Our patients inhaled a variety of objects, the majority being sunflowers seeds (8 = 23.5%). The site of inhaled foreign body was the trachea in 22 patients (65%), the right bronchus in 6 patients (18%), the left bronchus in 2 patients (6%) and glottis area in 2 patients (6%). The site of swallowed foreign body was the post-cricoid and upper esophagus in 119 patients (90%), the middle esophagus in 5 patients (4%) and lower esophagus in 3 patients (2%).

Conclusion: Any patient coming with a history of foreign body inhalation or swallowing should undergo endoscopic removal even if the radiographic evidence is negative and examination of chest is normal.

Keywords: Foreign body, bronchoscopy, oesophagoscopy.

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INTRODUCTION:

Foreign body inhalation is a significant cause of morbidity and mortality in the pediatric population. It is the 6th most common cause of accidental death in the United States. In the pediatric population, toddlers aged 2-3 years are most commonly affected because children in this age group are ambulatory and more orally explorative. Bronchoscopic removal of inhaled foreign body is a safe method of managing these patients [1,2]. There are 3 clinical stages of foreign body inhalation [3]. The first stage consists of coughing, choking and / or gagging that occurs at time of inhalation and may lead to acute laryngeal obstruction. If the child's parents do not witness this first stage, the diagnosis of an inhaled foreign body is difficult. The second stage is the asymptomatic stage, during which the foreign body becomes lodged and the airway's protective reflexes become fatigued. This stage may last from hours to weeks. The symptoms may vary in severity depending on the object's size, the degree of obstruction and the surrounding tissue reaction. The third stage is the complication stage, during which obstruction, erosion, or infection can lead to various manifestations of pulmonary disease. Foreign body ingestion is very common among children. Nearly 75,000 ingestions of foreign bodies by patients aged 19 years and younger were reported in 1996 in the United States [1,2,4]. Many children who swallow foreign bodies are likely to be undiagnosed and experience no untoward consequences. Rigid Oesophagoscopy is a common practice when foreign body impaction is suspected in the esophagus. After clinical and radiographic evaluation the decision is made to perform rigid oesophagoscopy for removal of the suspected foreign body [4]. Complications of unattended swallowed foreign body patients are high and include pharyngeal or oesophageal perforation, localized or retropharyngeal abscess, mediastinitis and fatal oesophago-aortic fistula. The clinical features of foreign body impaction in the upper aerodigestive tract can be difficult to differentiate from that of mucosal abrasion [5]. This is a report of 34 inhaled foreign bodies and 132 swallowed foreign bodies presented to our departments in ten months.

PATIENTS & METHODS:

In the period from January to October 2018, 166 patients attended the ear, nose and throat departments in Saudi Arabia complaining of inhaled (34 patients) or swallowed foreign bodies (132 patients). Proper history was taken from all patients. Appropriate radiographs of the neck, chest and abdomen were taken and reviewed. Indirect laryngoscopy was done for co-operative patients. Rigid oesophagoscopy was performed for removal of swallowed foreign bodies

for those who had radiographic evidence of a foreign body and for those who had a history of 12 hours of dysphagia after history of foreign body swallowing with no radiographic evidence. Rigid bronchoscopic removal of foreign bodies was performed for those who had radiographic evidence of inhaled foreign body and for those who had history of inhaled foreign body with no radiographic evidence and for those who were referred from the pediatric department with history of recurrent chest infection. If there was a radiographic evidence of foreign body and bronchoscopy was negative, oesophagoscopy was performed and vice versa. All these data were collected in a data sheet.

RESULTS:

The ages of inhaled foreign body patients ranged from 9 months to 19 years with a slight female preponderance (20: 14) with a mean age of 38 months. The ages of swallowed foreign body patients ranged from 20 months to 60 years with a slight male preponderance (72:60) with a mean age of 12 years. The majority of inhaled patients attended the department within 4 hours of inhalation (24 or 70.6%), 3 presented during the first day and 7 presented within the first week of presentation. The majority of swallowed patients attended the department within 12 hours of swallowing (98 or 74.2%), 20 presented during the first week and 14 presented within the first month of presentation X-ray (Neck and chest) was positive in 10 cases of inhaled foreign bodies (29.5%) and in 110 cases of swallowed foreign bodies (83.5%). The site of inhaled foreign body was the trachea in 22 patients (65%), the right bronchus in 6 patients (18%), the left bronchus in 2 patients (6%) and glottic area in 2 patients (6%). The site of swallowed foreign body was the post-cricoid and upper oesophagus in 119 patients (90%), the middle oesophagus in 5 patients (4%) and lower oesophagus in 3 patients (2%). No foreign body was removed in 2 inhaled cases and in 5 swallowed cases. One patient expelled the inhaled foreign body in a violent cough while we were preparing her for general anesthesia. In one patient with a typical history of swallowed foreign body, the foreign body was found in the trachea. Another patient with a typical history of inhaled foreign body had the foreign body from the oesophagus. A variety of objects were swallowed by our patients (Table I), the majority being coins (98 = 74%). A variety of objects were inhaled by our patients (Table I), the majority being sunflower seeds (8 = 23.5%). An inhaled piece of metallic television antenna (55 mm), a swallowed fishbone (33 mm), an inhaled ballpen plug (25 mm), a head of headkerchief fixation pin (15 mm), a metallic star

(diameter of 20 mm) and an inhaled metallic spring (12 mm).

Table 1: Swallowed foreign bodies

F.B.	No.	%
Coin	98	74%
Meat	12	9%
Fishbone	8	6%
Nail	6	4.50%
Others	3	2.50%
No F.B.	5	4%

Table 2: Inhaled foreign bodies

F.B.	No.	%
S.S.	8	23.50%
Peanut	6	17.50%
W.S.	5	14.50%
Nail	3	9%
Egg c.	3	9%
Pin	2	6%
Others	5	14.50%
No F.B.	2	6%

DISCUSSION:

Foreign body inhalation remains a major cause of accidental death in the pediatric population [6]. Coughing, choking and wheezing are present in 80% to 95% [1]. About 80% to 90% of inhaled foreign bodies are found in the bronchi [7]. About 65% of bronchial foreign body patients present with triad of cough, wheezing and decreased breath sounds [8]. About 50% of patients with foreign body inhalation do not have a witnessed episode of coughing, choking or gagging [9]. This can make diagnosis more difficult and unresolved or recurrent pneumonia direct our attention for foreign body inhalation. A chest radiograph is routinely obtained for patients presenting with these symptoms. However, chest radiographs do not always show inhaled foreign bodies. Eighty percent of inhaled foreign bodies are peanuts or other food particles which often are not detected with plain chest films. Only about 10% of inhaled foreign bodies are metallic. In our study, 68% of inhaled foreign bodies were food particles, mostly sunflower seeds (23.5%) and 20.5% were metallic. However, plain film radiography is neither sensitive nor specific in the diagnosis of inhaled foreign bodies and this was confirmed by one study which reported that 35% of 400 patients with normal findings on radiographic studies were later found to have bronchial foreign bodies [10]. Bronchoscopy is indicated even in the absence of radiographic evidence when clinical suspicion of inhaled foreign body is high. The primary and contingency plans for

airway control, anesthesia and foreign body removal should be discussed with the anesthesiologist prior to beginning the procedure [11]. When a patient presents with suspected foreign body impaction a decision must be made as to whether an oesophagoscopy should be performed. The most common cause of oesophageal impaction is food and in children is a foreign body [12]. The radiological assessment of fish bones in the neck is known to be difficult and inaccurate [13,14]. Plain radiographs would seldom show fish bones that are not obvious on clinical examination in the larynx, tonsil, pyriform fossa or posterior third of tongue where the soft-tissue shadows are prominent. Tong et al. experience showed that the majority of the x-rays were not helpful [5]. For symptoms at the level of cricoid and cervical oesophagus, however, plain lateral radiographs of the neck are sometimes useful in showing abnormal air shadows or the foreign bodies themselves. Radiopaque chicken and beef bones are less likely to be missed in the neck [15]. The most common foreign body associated with a negative oesophagoscopy was a fishbone. Bone impactions are more likely to cause complication. However, if there was a suspected oesophageal foreign body and a physical finding of hypopharyngeal edema, the probability of finding a foreign body in the oesophagus was lower than if there was no physical finding at all. This may indicate that trauma caused the symptoms. In our study, 74.5% of swallowed foreign bodies were coins, 9% were meat bolus and

only 6% were fishbones. In cases of fishbone swallowing, lateral x-ray neck is more helpful and should be done in all cases.

CONCLUSION:

Any patient coming with a history of foreign body inhalation or swallowing should undergo endoscopic removal even if the radiographic evidence is negative and examination of chest is normal. Any patient with radiographic evidence of foreign body inhalation or swallowing should undergo oesophagoscopy if bronchoscopic examination is negative and bronchoscopy if oesophagoscopy examination is negative.

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