



www.tantamsj.com

Etiology of Thoracic Foreign Bodies in Adult

Elsayed M. Elmistekawy (MD)

Cardiothoracic Surgery department, Tanta University, Tanta

ABSTRACT:

Foreign bodies of the chest are a well-recognized issue. While foreign bodies in the thoracic cavity in adults are infrequent and not well described. Etiologically, foreign bodies in adults may be due to aspiration, ingestion trauma or may be iatrogenic in origin. This article discusses the etiological aspects as well as management of this entity.

INTRODUCTION

The majority of foreign body in the chest occur in children. Infants are at risk of aspiration and this has been attributed to poor chewing ability due to a lack of posterior dentition, a tendency to put things in the mouth and tendency to vigorous uninhibited aspiration when laughing or crying.⁽¹⁾ Diagnosis and management are well discussed^(2,3). Foreign bodies in adults can be a cause of diagnostic dilemma that can be discovered by unusual clinical or radiological circumstances. The etiology of foreign bodies in adults can be categorized into four types: aspiration, ingestion and trauma or iatrogenic.

ASPIRATION FOREIGN BODIES

Aspiration foreign bodies in adults are common during and after the six decade of life. Many factors predispose to aspiration in this period of life including swallowing disorders and neuromuscular or neurological diseases⁽⁴⁾. A wide variety of foreign bodies, from bone fragments to metallic pins are found in adults. The presentation of foreign bodies aspiration does not differ in adults than children, though delay in diagnosis is more common in adults this may be attributed to more central location of the foreign bodies in children while in adults it is commonly lodged in the right bronchial

tree, parent alertness⁽⁴⁾. The common presentation of foreign bodies in adults is the so called penetration syndrome which is characterized by sudden onset of choking and intractable cough with or without vomiting. Other symptoms which can occur in alone or in combination such as cough, dyspnea, fever and wheezy chest. Atelectasis is more common in adults, while air trapping is common in children⁽⁵⁾. Diagnosis of radio opaque foreign bodies is easily radiologically by plain radiography or computerized tomography, but the radio translucent foreign bodies can be suspected foreign secondary changes such as atelectasis, air trapping or rarely bronchostenosis and bronchiectasis. Bronchoscopy is usually the diagnostic and therapeutic tool. In some cases thoracotomy and pulmonary resection may be required.

INGESTION FOREIGN BODIES

Unlike children, adults rarely ingest foreign bodies and if it happened, most foreign bodies' passes through the gastrointestinal tract without complications. Foreign bodies tend to impact in the esophagus by virtue of passive, distensible and accommodating nature of the esophagus⁽⁶⁾. The most common site of impaction is at the

level of cricopharyngeus followed by other areas of anatomical narrowing ⁽⁷⁾. Chest radiography, CT can demonstrate the level of impaction, and complications such as mediastinitis (pneumomediastinum, pneumothorax, pleural collection, mediastinal abscess). Retained foreign bodies can result in esophageal perforation, acute perforation mandates repair and mediastinal drainage, chronic perforation in association with foreign body and mediastinal inflammation should be treated by removal of foreign body either endoscopically or by a thoracotomy, enteral feeding and antibiotics until healing is demonstrated by contrast esophyagogram ⁽⁶⁾.

TRAUMATIC FOREIGN BODIES

Thoracic trauma:

Blunt thoracic trauma can result in various retained foreign bodies such as broken parts of the ribs, glass, metallic foreign bodies, which can be presented late after trauma by unusual radiological appearance. CT chest can demonstrate presence of various kinds of foreign bodies as well as secondary changes in the intrathoracic structures

Penetrating trauma:

Gunshots or explosion can result in foreign bodies inside the thoracic cavity. In these circumstances the condition is evident. Retained parts of knife, fragments of glass bullets may be encountered inside chest causing lung laceration, hemothorax, pneumothorax, empyema and if delayed can result in fibrothorax and sequel of chronic irritation of the pleura as neoplasm. ⁽⁸⁾ Diagnosis of intrapulmonary FB can be done using chest radiography and CT chest. Removal can be accomplished by thoracoscopy or thoracotomy, Lobectomy or segmental resection may be needed.

Intracardiac foreign bodies

Intracardiac foreign bodies can reach the heart directly through penetrating trauma or indirectly by means of the venous return. Intracardiac foreign bodies were reported such as catheter fragments, broken guide wires, needles, bullet and sewing ring in the right side of the heart, pericardial cavity or rarely left ventricle. The presence of intravascular foreign

bodies usually encountered in drug abusers, mentally retarded, psychiatric disorders as schizophrenia or depression and as a suicidal attempt. Diagnosis is usually self evident. Echocardiography and CT chest can diagnose the presence of foreign bodies. Retrieval of intravascular and intracardiac foreign bodies can be tried using various snares and capturing techniques but surgical intervention through thoracoscopy, thoracotomy or open heart surgery through median sternotomy is usually required for removal of these foreign bodies ⁽⁹⁻¹¹⁾

IATRIGENIC FOREIGN BODIES

Retained surgical sponge:

Gauze granuloma (Gossypiboma), defined as retained surgical sponge in the thoracic cavity, is a very rare complication of thoracic surgery. It gives rounded, well defined mass with mottled calcification and gas bubbles within it, can be misdiagnosed as abscess, hematoma, recurrence of the primary tumor, CT chest together with previous history of chest surgery can help in diagnosis of this condition but surgical removal confirm gossypiboma ^(12,13)

Complications of Plombage therapy:

Complications related to previous plombage therapy are not uncommon. Various materials including paraffin oil, olive oil and polyvinyl ethylene were used to fill the dead space. Initial complications included pleural effusion and empyema. Delayed complications included recurrent local infection, bronchopleural fistula and malignancy. Management includes removal of the filling materials and muscle flaps ⁽¹⁴⁾

Esophageal voice restoration devices:

Following laryngectomy, esophageal voice restoration device represented a viable option for those patients. It is done by creation of tracheoesophageal fistula and placement of voice device. Stenosis or loosening of the fistula results in dysphonia. Rarely the device slips in the trachea or can be displaced in the esophagus that can be diagnosed radiographically and should be removed endoscopically ⁽¹⁵⁾.

OTHERS

Detached parts of pacing wires, central catheters and fine needles of acupunctures are reported as foreign bodies inside the thoracic cavity. Radiological evaluation and angiographic intervention is indicated ⁽¹⁶⁾. Ruptured silicone implant after mastectomy can provoke foreign body reaction and risk of fibrothorax ⁽¹⁷⁾.

REFERENCES

- 1-Ayed AK, Jafar AM, Owayed A. Foreign body aspiration in children: diagnosis and treatment. *Pediat Surg Int* .2003; 19:485-488.
- 2-Sersar SI , Hamza UA , AbdelHameed WA , Abulmaaty RA , Gowaeli N, AbouMussa S , et al . Inhaled foreign bodies: management according to early presentation. *European J Cardiothoracic Surg*. 2005; 28(3):369-374.
- 3-Siddiqui MA, Banjar AH, Al-Najjar SM , Al-Fattani MM, Aly MF. Frequency of tracheobroncheal foreign bodies in children and adolescents. *Saudi Medical J*. 2000;21(4):368-371.
- 4-Baharloo F , Veykermans F , Francis R , Bietlot M, Rodenstein D. Tracheobroncheal foreign bodies: presentations and management in children and adults. *Chest* 1999; 115:1357-1362
- 5-Limper AH, Prakash UB. Tracheobroncheal foreign bodies in adults. *Ann Int Med*. 1990; 112:604-609.
- 6-Naido R, Reddi A. Chronic retained foreign bodies in the oesophagus. *Ann Thorac Surg*. 2004; 77:2218-2220
- 7-Bailr SR, Graber GM , Cruzzaval JL , Gustafson RA, Hill RC, Warden HE et al *Chest* .1993;104:1205-1209.
- 8-Kim TJ, Goo JM, Moon MH, Gi-IM J, Kim M Y .Foreign bodies in the chest: how come they are seen in adults. *Korean J Radiology*. 2001; 2(2):87 -96
- 9-Choi BI, Kim SH, YU ES, Chung HS, Han M C, Kim CW. Retained surgical sponge: diagnosis with CT and sonography *AJR*.1988 ;150:1047-1050.
- 10-Vigneswaran WT, Ramasatry SS, Paraffin plombage of the chest revisited. *Ann Thorac Surg* . 1996; 62:1837-1839.
- 11-Wales L, Jenkins DP, Smith PI .Delayed presentation of right ventricular embolus. *Ann Thorac Surg*.2001; 72(2):619.
- 12-Rossi MA, Alvarenga DG, Agizzi RS.. Sewing needle transfixing the posterior wall of the left ventricle causes death. *Circulation*. 1999; 99:843-4
- 13-Suwatanapongched T, Bookasem S, Sathianpitayakul F, Leelachakul P. Intrathoracic gossypiboma: radiographic and CT findings. *Br. Radiol*2005; 78(933):851-853
- 14-Borracci RA, Milani AP, Guerrero RA. Intracardiac Sewing Needle in a Woman with Autoaggressive Behavior. *Rev Esp Cardiol* 2005; 58: 456 - 457.
- 15-Johnson A. Voice restoration after laryngectomy . *Lancet*1994 ; 343(8895):431 -432.
- 16-Yildzeli B, Lacin T, Baltacioglu F, Batirel HF, Yukesl M .Approach to fragmented central venous catheters. *Vascular* 2005; 13(2):120-123.
- 17-Levine RL, Allen TC, Cartwright J jr, Cagle PT, Silicone thorax due to a ruptured breast implant. *Chest* 2005; 127(5):1854-1857