Asphyxia while swallowing solid food caused by bronchial compression: a variant of the pneumonectomy syndrome

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Abstract

A 40 year old man presented with recurrent episodes of dyspnoea whilst swallowing solid food. He had undergone right pneumonectomy and thoracoplasty for recurrent pneumonias and empyema 23 years previously. Solid food boluses appeared to cause bronchial obstruction by compressing the surgically distorted left main bronchus. This is a new variant of the post pneumonectomy syndrome.

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The postpneumonectomy syndrome is an uncommon delayed complication of pneumonectomy, usually right sided pneumonectomy, occurring in children and adults.¹⁻⁵ After right pneumonectomy, extreme mediastinal shift and distortion can cause compression of the distal trachea and left main bronchus between the aorta and pulmonary artery, leading to dyspnoea and recurrent infections.¹

Case report

A man aged 17 underwent right pneumonectomy because of recurrent pneumonias complicating congenital cystic bronchiectasis and bronchomalacia. Limited thoracoplasty with partial resection of the third, fourth and fifth ribs was subsequently required for postoperative empyema.

At the age of 18 complaints of breathlessness during the swallowing of solid food were thought to be functional as the chest radiograph and barium swallow appeared to be consistent with the usual postoperative appearances. His symptoms gradually progressed until a severe episode resulted in a near respiratory arrest at the age of 40 leading to hospital admission.

Physical examination revealed considerable chest wall deformity and absent right sided breath sounds. His FEV₁ was 1.6 l (predicted 2.66 l), vital capacity 1.86 l (3.92 l). Arterial PO₂ was 13.2 kPa and PCO₂ was 5.6 kPa on room air. The chest radiograph showed mediastinal displacement to the right and thoracoplastic chest wall deformity (fig 1). No

Figure 1 Postero-anterior chest radiograph showing the chest wall deformity and gross mediastinal displacement.

obvious tracheobronchial malacia was seen on fiberoptic bronchoscopy or fluoroscopic imaging. Oesophagogastroscopic findings were normal. Liquid barium cine swallow showed deviation and some dilatation of the thoracic oesophagus and peristaltic waves were irregular and of poor quality in the distal oesophagus. Computed tomographic scanning showed gross rightward mediastinal shift, counter clockwise rotation of heart and great vessels, and left lung herniation to the right. The left main bronchus was stretched across the vertebral column, bounded by the oesophagus posteriorly and the left pulmonary artery anteriorly (fig 2). A dynamic swallowing study with barium-soaked bread showed delay of the food bolus at the level of the left main bronchus. There was no evidence of intraoesophageal air accumulation from aerophagia as a further contributory factor to bronchial obstruction.

Shortly after swallowing a piece of bread the patient complained of choking, then developed severe dyspnoea, cyanosis and ultimately unconsciousness, witnessed by two of the authors. Despite large respiratory efforts, breath sounds to the left lung were significantly reduced. His arterial PO₂ of 3.5 kPa, PCO₂ of 11.6 kPa, and pH 7.18 on room air confirmed respiratory failure. He recovered after vomiting the food bolus. The absence of coughing and lack of propulsive expectoration of the food bolus made the possibility of food aspiration unlikely.

Discussion

The postpneumonectomy syndrome may be a result of mechanical compression of the left main bronchus caused by the gross anatomical displacement and possibly worsened by tracheobronchial malacia.⁴ The symptoms are usually recurrent infections and dyspnoea, al-

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Figure 2 Computed thoracic tomogram showing the proximity and relation of the left main bronchus to the vertebral column, oesophagus, and pulmonary artery.

though loss of lung function and stridor have been described.¹⁴ The diagnosis and management of this syndrome have been comprehensively discussed in a recent report.⁵

We report a new variant of this syndrome – namely, bronchial obstruction resulting from swallowing solid food. We believe that oesophageal dilatation from a solid food bolus compressed the left main bronchus which was encased within a fixed space formed by the vertebral column, aortic arch, and great vessels. This variant probably results from an

additional thoracoplastic chest wall deformity causing more than the usual postpneumonectomy anatomical derangement. In this patient a small dilatation of the poorly motile post-pneumonectomy lower oesophagus from a solid food bolus appeared to cause significant left main bronchus compression.

His treatment has consisted of an exclusion diet. Whilst mediastinal repositioning and intrathoracic placement of mammary prostheses can correct the anatomical displacement in the postpneumonectomy syndrome,⁵⁻⁷ it was judged too hazardous in this patient because of his previous thoracoplasty and pleural infections. Pleural adhesions may cause a failure of corrective thoracotomy in the postpneumonectomy syndrome.⁴ Bronchial stenting of any type was considered too hazardous in this patient as any stent malfunction or problem with positioning would almost certainly have resulted in immediate death.

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False aneurysm following modified Blalock-Taussig shunt

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Abstract

A nine month old infant with life threatening tracheal compression due to a Blalock-Taussig shunt aneurysm is described. Successful surgical management is discussed.

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The Blalock-Taussig shunt is now a well recognised procedure for treating cyanotic congenital heart disease in infancy. The ori-

ginal operation consisted of anastomosis of the subclavian artery to the pulmonary artery,¹ but the use of polytetrafluoroethylene grafts to produce a communication between systemic and pulmonary circulation has simplified the procedure.² False aneurysm formation following a modified Blalock-Taussig shunt is a rare and potentially fatal complication.³⁻⁵ We report a false aneurysm presenting with tracheal compression in a nine month infant with tetralogy of Fallot who had undergone a modified Blalock-Taussig shunt in the neonatal period. The aneurysm was successfully repaired with complete relief of the tracheal compression.

Case report

Shortly after normal full term delivery a female infant was noted to be cyanosed. Echocardiographic evaluation revealed a normal viscerotrial arrangement (situs solitus), a large atrial septal defect, and a large inlet ventricular septal defect with an overriding aorta. In addition, the baby had infundibular and valvar pulmonary stenosis. The aortic arch