Right Lower Lobe Consolidation: An Unusual Complication of the Modified Blalock-Taussig Operation


ABSTRACT Persistent right lower lobe consolidation in a 5-year-old girl is described. In infancy she had been diagnosed to have tricuspid atresia and pulmonary stenosis, and she had undergone a modified Blalock-Taussig shunt using a polytetrafluoroethylene tube graft at the age of 1 year. The shunt had parasitized and then occluded the right main bronchus. At bronchoscopy, the shunt was removed. The pneumonia resolved, and the child remains well 10 months later. This complication of the modified Blalock-Taussig shunt, which does not appear to have been reported previously, demonstrates the need for bronchoscopy in unresolving pneumonia in childhood.

The use of a prosthetic tube as a modification of the standard Blalock-Taussig shunt [1] was described by Kliner and co-workers [2] in 1962. A recent study by Kay and his colleagues [3] has demonstrated the efficacy of 4-mm polytetrafluoroethylene tube grafts, with a two-year patency of about 90%. The operation is recommended as a palliative systemic pulmonary shunt in patients who are likely to undergo reparative surgery at a later date [3].

We report a remarkable case of persistent right lower lobe infection in a young child caused by an intrabronchial foreign body—a 4-mm polytetrafluoroethylene (Gore-Tex) tube graft used to create a modified Blalock-Taussig shunt four years previously.

A 5-year-old girl, under regular review in the pediatric cardiology clinic, was admitted with a persistent cough producing bloodstained sputum. She had a complex medical history. Shortly after birth she was noted to be cyanosed and dyspneic, and examination revealed a pansystolic murmur at the left sternal edge. Electrocardiography demonstrated left axis deviation, left ventricular hypertrophy, and right atrial enlargement. A diagnosis of tricuspid atresia with low pulmonary blood flow was made. Cardiac catheterization confirmed the presence of tricuspid atresia, pulmonary stenosis, and ventricular and atrial septal defects with several right-to-left shunts at the atrial level.

At the age of 1 year, she had undergone a modified Blalock-Taussig shunt through a right-sided thoracotomy. A 4-mm Gore-Tex graft was anastomosed between the right subclavian artery (end-to-end) and the right pulmonary artery (end-to-side). Following this procedure, the child did well until the age of 4½ years, when she became more cyanosed and began to experience frequent chest infections. Recatheterization confirmed the clinical findings of shunt thrombosis.

A second shunt was performed when the patient was 5 years old. Through a median sternotomy, a 5-mm Gore-Tex conduit was anastomosed between the aorta and the main pulmonary artery. During the immediate postoperative period, right lower lobe consolidation developed, but the chest cleared with physiotherapy and intravenously administered antibiotics. Three months later she was readmitted as an emergency.

On admission the child was pyrexial (temperature, 39°C) and flushed, with a tachycardia of 140 beats/min. Chest expansion was poor on the right side, and the percussion note was dull in the right lower zone. Chest auscultation revealed poor air entry to the right lung base and widespread rhonchi and coarse crepitations. Chest radiographs confirmed the presence of patchy consolidation and collapse of the right lower lobe (Fig 1). Sputum microscopy demonstrated abundant pus cells and gram-negative bacilli.

Fig 1. Admission chest radiograph showing right lower lobe consolidation.
Because intensive physiotherapy, postural drainage, and antibiotics were ineffective, a bronchoscopy was performed. A 5-mm Storz bronchoscope was used to remove a foreign body from the right main bronchus adjacent to the lower lobe orifice: a 4-mm Gore-Tex graft (Fig 2). The child's condition rapidly improved, and she remains well 10 months later.

Comment
To our knowledge, this is the first report of a modified Blalock-Taussig shunt eroding the bronchial tree. We assume this complication was caused by a combination of infection around the occluded graft and pressure necrosis of the bronchus with growth, resulting in the shunt parasitizing the bronchial tree. This case report illustrates a very unusual cause of right lower lobe consolidation and serves to demonstrate the need for bronchoscopy in unresolving pneumonia in childhood.

References
1. Blalock A, Taussig HB: The surgical treatment of malformations of the heart in which there is pulmonary stenosis or pulmonary atresia. JAMA 128:189, 1945

Notice from the American Board of Thoracic Surgery

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