

Demonstration of supernumerary tracheal bronchus by computed tomographic scanning and magnetic resonance imaging

S J Freeman, J E Harvey, P R Goddard

Abstract

A bronchus arising directly from the trachea is an infrequent congenital anomaly which usually represents the displaced origin of a normal bronchus. Rarely, a true supernumerary tracheal bronchus occurs supplying an associated tracheal lobe. The case is described of a patient in whom a supernumerary tracheal bronchus and tracheal lobe was demonstrated by computed tomographic scanning and magnetic resonance imaging.

(*Thorax* 1995;50:426-427)

Keywords: supernumerary tracheal bronchus, computed tomographic scanning, magnetic resonance imaging.

A non-smoking 50 year old woman was referred for investigation of a two year non-productive cough unresponsive to inhaled bronchodilators and inhaled steroids. She was otherwise in good health but had a history of eczema and whooping cough in childhood. Physical and ENT examinations were normal. She had a peak expiratory flow rate of 450 l/min (pre-

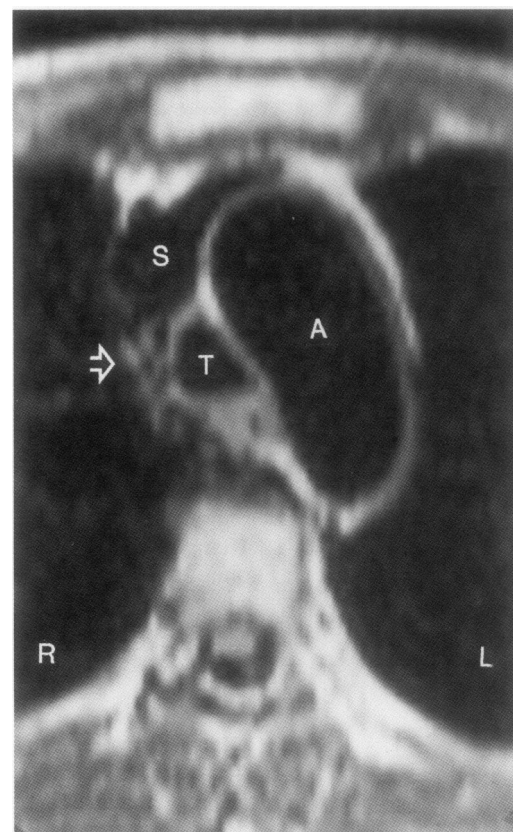


Figure 2 Magnetic resonance imaging slice. Magnified detail of the mediastinum showing the tracheal lobe (arrow). A = aorta, S = superior vena cava, T = trachea, T1 weighted image: TR 961.7 ms, TE 25 ms.

dicted 450-500 l/min) but was unable to perform spirometric tests because of the cough.

The chest radiograph was normal. Bronchoscopic examination revealed an accessory opening on the right wall of the trachea 5 cm above the carina. The bronchial anatomy was otherwise normal with three segmental bronchi arising from the right upper lobe bronchus. Computed tomographic scanning was performed (Somatom CR, Siemens) which demonstrated a small airway arising from the right side of the trachea (fig 1), passing caudally, dividing distally, and extending into an area of poorly defined soft tissue opacification immediately adjacent to the arch of the azygos vein. The appearances were consistent with a tracheal bronchus.

Magnetic resonance imaging was undertaken on a 1 Tesla magnet (Magnetom Impact, Siemens). Axial T1 weighted images showed the tracheal bronchus extending down to a small area of abnormal lung situated to the right of the trachea, immediately above the azygos arch (fig 2).

Discussion

The tracheal bronchus is a rare congenital abnormality seen in 0.1-2% of bronchoscopic examinations.¹² It occurs almost exclusively on the right side and predominantly involves the upper lobe. In most cases the tracheal bronchus represents a displaced origin of the main right upper lobe bronchus or apical segmental bronchus,²³ but rarely there may be a true super-

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Reprint requests to:
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Received 14 November 1993
Returned to authors
25 January 1994
Revised version received
27 April 1994
Accepted for publication
4 May 1994

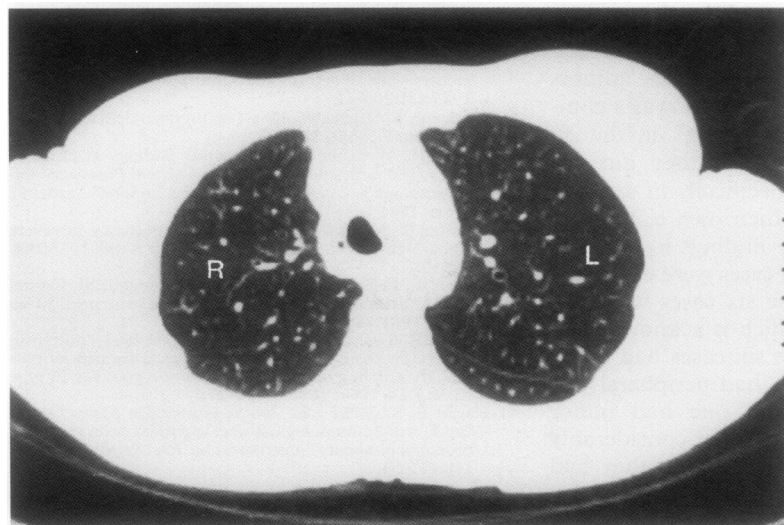


Figure 1 Computed tomographic slice showing the tracheal bronchus to the right of the trachea. Lung settings: W1000, C-750.

numery bronchus supplying a segment of pulmonary tissue known as the tracheal lobe.⁴ In these cases bronchoscopy will show the normal position and trifurcation of the right upper lobe bronchus, allowing differentiation from the ectopic origin of a normal bronchus. For an accessory bronchus to be definitely designated as supernumerary it must be shown to supply lung parenchyma in excess of that normally encountered in the right upper lobe¹ which has previously required bronchography.^{3,4} Tracheal lobes may lie in an extralobar or intralobar position and usually have a vascular supply from the pulmonary artery.⁴ It is uncertain whether lung parenchyma supplied by an abnormal bronchus is intrinsically more susceptible to disease,¹ however, most patients with tracheal bronchi are asymptomatic and need no specific treatment.¹⁵ In some patients disease occurs in the lung supplied by a displaced or supernumerary bronchus, usually in the form of bronchiectasis.¹ Surgical excision of the involved segment has been necessary in such patients.^{4,6}

Our patient showed a true supernumerary

tracheal bronchus that was distinguished from an ectopic bronchus by the normal anatomy of the right upper lobe bronchus. This case shows the ability of axial imaging to fully demonstrate a rare congenital abnormality of the bronchial tree. Computed tomographic scanning demonstrated the caudal course of the supernumerary bronchus and suggested the presence of the tracheal lobe, but was unable to define clearly the associated segment of lung. Magnetic resonance imaging showed the size and position of the tracheal lobe which, in this case, obviated the need for bronchography.

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Thorax 1995;50:427-428

Replacement of one lung by a large bulla in active tuberculosis

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A 70-year-old diabetic man with pulmonary tuberculosis developed a progressively enlarging bulla which occupied the whole left hemithorax and caused some shift of the mediastinum.

(Thorax 1995;50:427-428)

Keywords: tuberculosis, bulla, lung.

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Reprint requests to:
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Received
22 December 1993
Returned to authors
21 February 1994
Revised version received
7 April 1994
Accepted for publication
9 June 1994

Large bullae are a known but rare complication of active tuberculosis.^{1,2} This is the first report of total replacement of one lung by a bulla which progressed in spite of successful chemotherapy.

Case report

A 70-year-old Saudi man was admitted to King Khalid University Hospital, Riyadh, with coughing, yellow sputum, fever, and sweating for one month. Diabetes had been diagnosed four months previously and he was treated with

diet and an oral hypoglycaemic agent. He had never smoked and had no relevant occupational exposure. His chest symptoms persisted in spite of two courses of antibiotics. Chest radiography showed an infiltrate in the left mid zone without cavitation or elevation of the diaphragm. Bronchoscopic examination showed an inflamed, patent left main bronchus with multiple areas of ulceration. Abundant acid fast bacilli were seen in the bronchoalveolar lavage fluid. He was started on 300 mg isoniazid, 600 mg rifampicin, and 1.5 g pyrazinamide daily. Culture of lav-

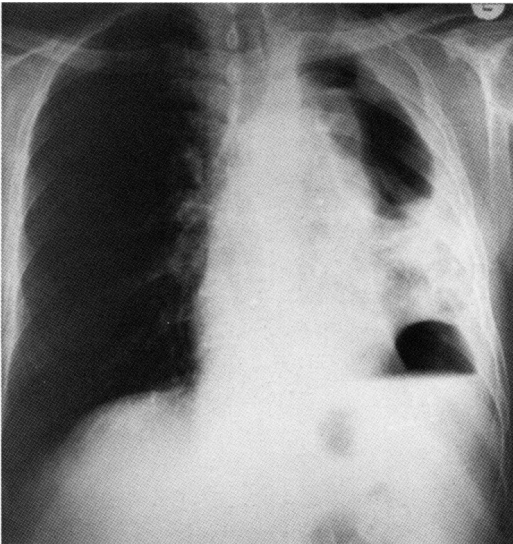


Figure 1 Chest radiograph showing two bullae in the left hemithorax.