IMAGES IN THORAX

Tuberculosis-induced cartilage fractures leading to collapse of the left main stem bronchus

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CASE PRESENTATION

A 94-year-old female patient was referred to the emergency department of our hospital for cough productive of purulent sputum and recurrent episodes of haemoptysis. She was a mild, former smoker. Her medical history was notable for a left-sided pleuropulmonary infection treated for months with antibiotics at the age of 2 years, and for recurrent respiratory infections occurring ever since. Chest CT revealed multiple abnormalities of the left lung consisting of a marked volume loss; diffuse bronchiectasis prevailing in the upper lobe, where a large airway consolidation was also evident; and multiple centrilobular nodules of variable sizes (figure 1A,B). Furthermore, a reduction of the lumen of the left main stem bronchus associated with possible fractures of some cartilage rings was noticed (figure 1C, arrow). Xpert *Mycobacterium tuberculosis*/resistance to rifampicin (MTB/RIF) and subsequently culture of the sputum were positive for a drug-susceptible *Mycobacterium tuberculosis* complex strain. A 9-month antitubercular treatment led to the rapid remission of symptoms and to a marked radiological improvement. However, 1 month after stopping the treatment, she was admitted again to hospital because of shortness of breath, productive cough and haemoptysis. A new chest CT confirmed the improvement of the parenchymal abnormalities (figure 1D,E) but showed an increase in the number of damaged cartilage rings, which extended up to the lobar bronchi (figure 1F, arrows). Bronchoscopy demonstrated the fracture of several consecutive cartilage rings involving the left main stem bronchus in its entire length (figure 2A–C, arrows). The cartilage damage was severe enough to cause the complete collapse of the airway in the distal third of the main stem bronchus and to prevent the lobar bronchi from being explored despite the use of a 3.5 mm sized video-bronchoscope (figure 2C, online supplementary video). Xpert MTB/RIF and culture of the bronchial washing were negative. Haemoptysis subsided spontaneously.

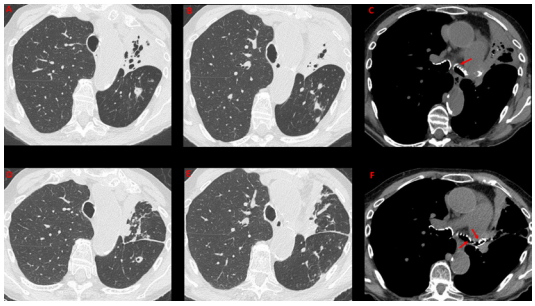

Figure 1 Chest CT shows a marked volume loss of the left lung (A) associated with upper lobe consolidation and bronchiectasis (A,B), multiple centrilobular nodules in the lower lobe (A,B) and possibly fractured cartilage rings in the main stem bronchus (C, arrow). Follow-up CT, performed after antituberculous treatment, shows a marked reduction of the consolidation of the upper lobe (D,E) as well as of the number and size of centrilobular nodules of the lower lobe (D,E), but demonstrates also an increase in the number of damaged cartilage rings, which extend up to the lobar bronchi (F, arrows).

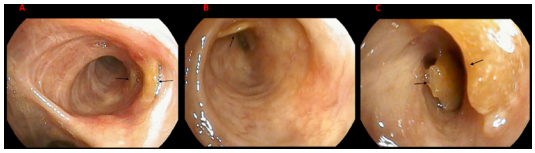

Figure 2 Bronchoscopy shows fractured and exposed cartilage rings (arrows) in the proximal (A), middle (B) and distal (C) third of the left main stem bronchus.

Rupture and protrusion of the airway cartilage rings, also known as fish-scale airway degeneration, is an exceedingly rare and poorly known complication of pulmonary tuberculosis.[1 2] The case presented herein is the third microbiologically confirmed case published in the medical literature, to our knowledge.[1 2] Interestingly, all of the patients described up to now were female, and all of them underwent resolution of the clinical and microbiological abnormalities, but the anti-TB treatment had no effect whatsoever on the airway cartilage damage.[1 2]

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REFERENCES

1 Fois A, Trisolini R, Canu S, *et al*. Tuberculosis-induced fish-scale degeneration of the central airways. *Am J Respir Crit Care Med* 2016;194:e14.
2 Park MJ, Woo IS, Son JW, *et al*. Endobronchial tuberculosis with expectoration of tracheal cartilages. *Eur Respir J* 2000;15:800–2.