Endobronchial ultrasonogram analysis of 3 cases with benign central airway stenosis.

Background

Endobronchial ultrasonography (EBUS) allows visualization of the internal structure of the tracheobronchial wall. Currently EBUS technology is available in two forms: radial and linear transducer probes, i.e. the miniprobe and the ultrasound endoscope. Radial miniprobe has a 20-MHz or 30 MHz rotating transducer that can be introduced into the bronchi through the working channel with dimension ＞2.6mm of a flexible bronchoscope. The tip of the probe contains a rotating piezoelectric crystal inside a water-filled balloon, which produces a 360° image to the long axis of the bronchi.

Case report

3 patients suffered from central airway stenosis due to bronchial tuberculosis in our hospital were female, aged from 19 to 37 years. Chest CT showed atelectasis of the left lung. Bronchoscopy showed severe stenosis and scar tissue formation of the left main bronchus. Balloon dilatation was performed. After operation, the stenosis was obviously improved, and the bronchoscope was successfully passed. Radial endobronchial ultrasonography was performed within (3-5) days after balloon dilatation. All the lesions in 3 patients were involved in the left main bronchus. Compared with the normal left main bronchus, EBUS images showed thickening of the wall, narrowing of the lumen, unclear boundary between mucosa and submucosa, thickening of the submucosa with hypoecho, and complete cartilage layer. Because the cartilage layer was not damaged, the stent was not placed. The left main bronchus maintained its shape when underwent bronchoscopy within 3 weeks and 3 months after operation. No airway collapse was found by bronchoscopy.

Conclusion

EBUS shows the layered structure of airway wall lesions. The ultrasonic image of central airway stenosis due to bronchial tuberculosis is characterized by thickening of the wall, especially in submucosa. Patients with incomplete cartilage layer may require stent placement.