Introduction to *Journal of Thoracic Disease* new column of advance in bronchoscopy for peripheral pulmonary diseases

The diagnosis of peripheral pulmonary lesions (PPLs) has always been a challenging clinical problem (1-3). Bronchoscopy has been widely used for the diagnosis of PPLs. With the continuous improvement of instruments and development of technologies, especially with the advent of guided bronchoscopy, the diagnostic yield of bronchoscopy has been gradually enhanced (4). Guided bronchoscopy refers to bronchoscopy used for the diagnosis and treatment of PPLs, which is different from conventional bronchoscopy used for the diagnosis and treatment of visible lesions in the lumen. It includes technologies such as thin/ultrathin bronchoscopy, endobronchial ultrasound, guide sheath, and navigation bronchoscopy. With advancements in technology, guided bronchoscopy is changing with each passing day. Thus, we have launched a special column on the progress of guided bronchoscopy.

This column contains two reviews and three original articles, which systematically illustrate the application value of guided bronchoscopy in PPLs from the perspectives of development of ultrathin bronchoscopy and navigation bronchoscopy, as well as convex probe endobronchial ultrasound (CP-EBUS) and radio probe (RP)-EBUS sonographic features, virtual bronchoscopy navigation (VBN), and RP-EBUS-guided transbronchial lung cryobiopsy (TBLC).

Standard bronchoscopy with an external diameter of 5 mm is not suitable for PPLs located at distal branches and smaller bronchi. The ultrathin bronchoscopy, with external diameter no more than 3.5 mm, shows significant diagnostic advantages in this situation. The review on ultrathin bronchoscopy discusses the diagnostic value of various types of ultrathin bronchoscopies in PPLs, from the perspectives of technology application, diagnostic yield, clinical studies, safety, and limitations. Navigation technologies can help bronchoscopists precisely reach the site of PPLs for biopsy. The most commonly used navigation technologies currently include VBN and electromagnetic navigational bronchoscopy (ENB). Augmented fluoroscopy, cone beam computed tomography (CT), and robotic assisted bronchoscopy are newly developed navigation technologies. The review related to navigation bronchoscopy provides a comprehensive overview of the current application status and future development of these technologies.

EBUS can scan tissue structure around the trachea and bronchus for ultrasonic images. EBUS is commonly used for localization of lesions, but its imaging diagnostic value has rarely been studied. RP-EBUS without water capsule can display the morphological characteristics in grayscale imaging, including shape, size, margin, echogenicity, and blood vessels of PPLs. CP-EBUS with water capsule device can also reflect the blood flow and relative stiffness of PPLs. The two ultrasound articles in this column constructed scoring models using RP-EBUS and CP-EBUS sonographic features, respectively, to assist bronchoscopists in distinguishing malignant from benign PPLs. In addition, transbronchial cryobiopsy has a higher diagnostic efficiency for PPLs but is associated with greater operation risk. Therefore, precise TBLC with guided bronchoscopy for lesion location is worthy of recommendation. The diagnostic value of VBN and RP-EBUS assisted TBLC for pulmonary lymphangitic carcinomatosis was also studied in this column.

I hope the readers will gain a more comprehensive understanding and get valuable inspiration on the use of guided bronchoscopy in PPLs.

Footnote

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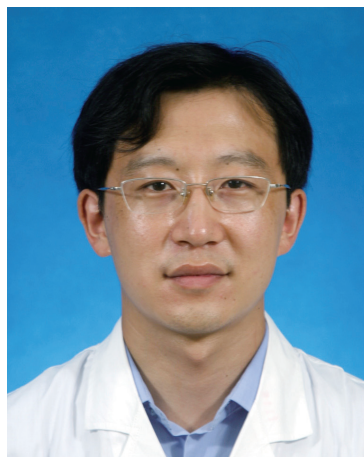
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