Endobronchial ultrasound echoic image of pulmonary hamartoma

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Abstract
A 62-year-old man with an indicated chest radiographic abnormality was referred to our hospital for more thorough examinations. Endobronchial ultrasound-guided transbronchial needle aspiration was performed because of a mass at the left hilum. Endobronchial ultrasound images showed scattered high-density spots in a low echoic and mosaic density. The pathological findings revealed pulmonary hamartoma. Subsequently, the mass was resected and comparison of ultrasound findings and pathological findings indicated that the scattered high echoic spots appeared to reflect cartilaginous tissues and bronchial epithelium inside the tumor.

Introduction
Hamartoma is a benign tumor of the lung and is mostly located peripherally. It is diagnosed by transbronchial lung biopsy, transbronchial fine needle aspiration, or surgery. Endobronchial ultrasound-guided transbronchial needle aspiration (EBUS-TBNA) is a useful procedure for the pathological examinations of not only mediastinal lymph nodes but also of hilar lesion of the lung [1]. Here, we report a case of pulmonary hamartoma at the hilum that was diagnosed with EBUS-TBNA, showing a unique ultrasound (US) finding. In addition, we assessed the correlation between macropathological sectional view of the resected tumor and EBUS findings.

Case Report
A 62-year-old man was referred to our hospital for further investigations of a chest radiographic abnormality. A chest X-ray revealed a left hilar mass. The patient had been smoking one and a half packs of cigarettes per day for 42 years. Chest computed tomography imaging revealed an oval mass at the left hilum with a size of 37 mm in diameter and a smooth surface (Fig. 1a). No calcifications or fatty tissue density was detected inside the mass shadow. Enhanced chest computed tomography imaging showed no contrast within the mass. To obtain tissue samples for pathological diagnosis, we performed EBUS-TBNA (UC-260FW, Olympus, Tokyo, Japan) under conscious sedation with midazolam and local anesthesia with lidocaine. The endobronchial appearance directly disproved mass and mucosal lesions, and only the left lower bronchus was slightly compressed. EBUS images showed scattered high-density spots in a low echoic and mosaic density (Fig. 1b). A Doppler evaluation not used during US demonstrated the cause of the visible solid findings. Further, we punctured the lesion four times with a 22G needle without rapid onsite evaluation. The biopsied specimens were hard and showed typical findings of a pulmonary hamartoma upon pathological examination. Dysplasia or malignancy could not be observed (Fig. 1c). These findings suggested the diagnosis of a pulmonary hamartoma and video-assisted thoracic surgery was performed to resect the tumor 2 months after the EBUS-TBNA (Fig. 1d). The patient has been followed up without any indication of recurrence. Using the resected specimen, we compared US findings with pathological findings. As shown in Figure 1b,d, scattered high echoic spots appeared to reflect cartilaginous tissues and bronchial epithelium inside the tumor.
A pulmonary hamartoma is mostly located in the peripheral lung and is rarely found in a hilar lesion or an endobronchial lesion [2]. A previous study reported only one out of 221 cases in which pulmonary hamartomas was located in the mediastinum [3]. Previously, Hata et al. reported a case of a hilar hamartoma that was diagnosed by EBUS-TBNA [4] with US findings similar to our findings. In this report, we compared the echoic features with the macropathological findings of the resected tumor, which revealed that scattered high echoic spots appeared to reflect cartilaginous tissues and bronchial epithelium inside the tumor. In general, heterogeneous findings on US images are likely to be malignant lesions [5]. We believed that these were caused by complex internal components of the mass. It is a rare for a pulmonary tumor to involve cartilaginous tissues, and there are few diseases with EBUS findings similar to those for this case. To the best of our knowledge, this is the first report of direct comparisons between EBUS findings and pathological findings of a hamartoma. In conclusion, we encountered the distinctive echoic findings of a pulmonary hamartoma by EBUS and compared these with the pathological findings of a resected tumor.

**Disclosure Statements**

No conflict of interest declared.

Appropriate written informed consent was obtained for publication of this case report and accompanying images.

**References**

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