Torsed extralobar pulmonary sequestration exhibiting characteristic MRI findings

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DESCRIPTION
A boy in middle childhood was admitted to our hospital for sudden onset of left-sided chest pain and fever. Physical examination was notable for tenderness from the left anterior chest to the back and diminished respiratory sounds in the left lung field. Blood testing revealed a white cell count of 15.9×10^9/L and C reactive protein of 0.71 mg/L. Elevation of the left diaphragm was observed on chest X-ray (figure 1A), and ultrasonography revealed a small pleural effusion. Contrast-enhanced CT (CE-CT) showed a mass lesion adjacent to the left posterior mediastinum (figure 2), but no aberrant arterial vessels suggestive of pulmonary sequestration were observed. We made a tentative diagnosis of infected pulmonary sequestration and pleuritic pneumonia and initiated ampicillin-sulbactam. On day 4, his fever abated but pleural effusion increased (figure 1B). On day 17, MRI showed a well-defined mass lesion with high signal intensity on T1-weighted and T2-weighted images, strong high signal intensity on diffusion-weighted imaging (DWI), and decreased apparent diffusion coefficient mapping (figure 3). The MRI findings suggested torsed extralobar pulmonary sequestration (ELS) or malignant tumour as a differential diagnosis, but the clinical course and lack of contrast effect on CT led us to conclude that torsed ELS was the most likely diagnosis. On day 30, the patient underwent thoracoscopic tumour resection. Intraoperative and pathological examinations confirmed the diagnosis of torsed ELS. The postoperative course was uneventful.

Figure 1 (A) Chest X-ray at presentation showed elevation of the left diaphragm and a small pleural effusion. (B) Chest X-ray on day 17 showed increased size of the pleural effusion.

Figure 2 Contrast-enhanced CT on day 4 showed mass lesion adjacent to the left posterior mediastinum (arrow), but no aberrant arterial vessels suggestive of pulmonary sequestration were observed.

Figure 3 MRI on day 17 showed a well-defined mass lesion (arrows) with high signal intensity on T1-weighted (A) and T2-weighted (B) images, suggesting the presence of subacute haemorrhage. Strong high signal intensity on DWI (C) and decreased apparent diffusion coefficient mapping (D) were observed, indicative of congestion and oedema likely caused by pedicle torsion. DWI, diffusion-weighted imaging.

Figure 4

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ELS. However, a mass at the base of the thoracic cavity with poor blood flow on CE-CT or MRI, as in this case, is an important finding suggestive of torsed ELS. There are few studies on MRI findings of torsed ELS, and we were unable to find any reports of DWI in the literature. If there is haemorrhagic infarction in ELS, the signal intensity may vary depending on the time of imaging. In this case, we speculate that the high signal intensity on T1 and T2 images may have reflected subacute haemorrhage and that the strong high signal intensity on DWI may have reflected congestion and oedema due to pedicle torsion. Torsed ELS is a rare disease but an important differential diagnosis in children presenting with abdominal and/or chest pain and fever. In addition to CE-CT, MRI with DWI may provide important clues for the preoperative diagnosis of torsed ELS.

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Case reports provide a valuable learning resource for the scientific community and can indicate areas of interest for future research. They should not be used in isolation to guide treatment choices or public health policy.

REFERENCES