

Intrapulmonary bronchogenic cyst

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CASE SUMMARY

A 52-year-old female presented to the emergency department with left-sided chest pain. The patient was afebrile and had a normal white blood cell count. A chest radiograph was obtained for evaluation of the chest pain (Figure 1). Based on the chest radiograph findings, a contrast-enhanced chest CT was also obtained (Figure 2).

IMAGING FINDINGS

The chest radiograph demonstrated a well-circumscribed nodule in the medial right lower lobe (Figure 1). Subsequent contrast-enhanced CT demonstrated a homogeneous, nonenhancing, thin-walled cyst in the right lower lobe (Figure 2). Hounsfield units measured 1.6. This cyst correlates with the nodule identified on radiography.

DIAGNOSIS

Intrapulmonary bronchogenic cyst

DISCUSSION

During embryologic development, a ventral foregut diverticulum gives rise to the respiratory system. Abnormal budding of the resultant bronchial tree results in a bronchogenic cyst. Bronchogenic cysts that form

early in respiratory system development localize to the mediastinum, whereas bronchogenic cysts that form later in respiratory system development localize to the lung parenchyma (ie, intraparenchymal bronchogenic cyst).¹ Histologically, bronchogenic cysts consist of ciliated columnar epithelium cells surrounded by bronchial cartilage, smooth muscle, connective tissue, and bronchial glands.² The majority of bronchogenic cysts localize to the mediastinum, 15-25% localize to the lung parenchyma, and a small number of bronchogenic cysts localize to the diaphragm or pleura.^{1,3} In general, most bronchogenic cysts are asymptomatic. When symptomatic, clinical presentations include chest pain, dyspnea, wheezing, and cough.³

On chest radiographs, intrapulmonary bronchogenic cysts are smoothly margined, round or oval masses.⁴ CT typically shows a homogeneous, non-enhancing, oval or round lung mass with thin walls, and a lower lobe predominance.⁴ CT attenuation values may clearly confirm that these lesions are cysts, as in our case. However, if the cyst fluid is hemorrhagic, proteinaceous, or contains calcium, the attenuation values may be higher than expected for simple fluid. In

some cases, intraparenchymal bronchogenic cysts may communicate with the bronchial tree, resulting in air-filled cysts or an air-fluid level.⁴ Differential diagnosis of an intrapulmonary bronchogenic cyst includes a pulmonary lymphangioma, though these are extremely rare. If the cyst contains air, abscess or infected bulla should be included in the differential. If abutting the mediastinum, other mediastinal congenital cysts, pericardial cysts, or cysts from spinal origin could be considered. Furthermore, when the cyst fluid is hyperdense, distinction between an intraparenchymal bronchogenic cyst and a solid lung nodule may be challenging. Bronchogenic cysts typically do not enhance, which helps to distinguish them from solid nodules on contrast-enhanced cross-sectional imaging.⁴ On MRI, a hyperdense bronchogenic cyst should follow proteinaceous fluid signal (ie, high signal on both T1 and T2-weighted sequences).^{3,4}

Treatment of bronchogenic cysts is somewhat controversial. Some advocate surgical excision due to the risk of infection and a small (0.7 percent) risk of malignant degeneration.⁵ An alternative option is close imaging surveillance to ensure temporal stability.⁵

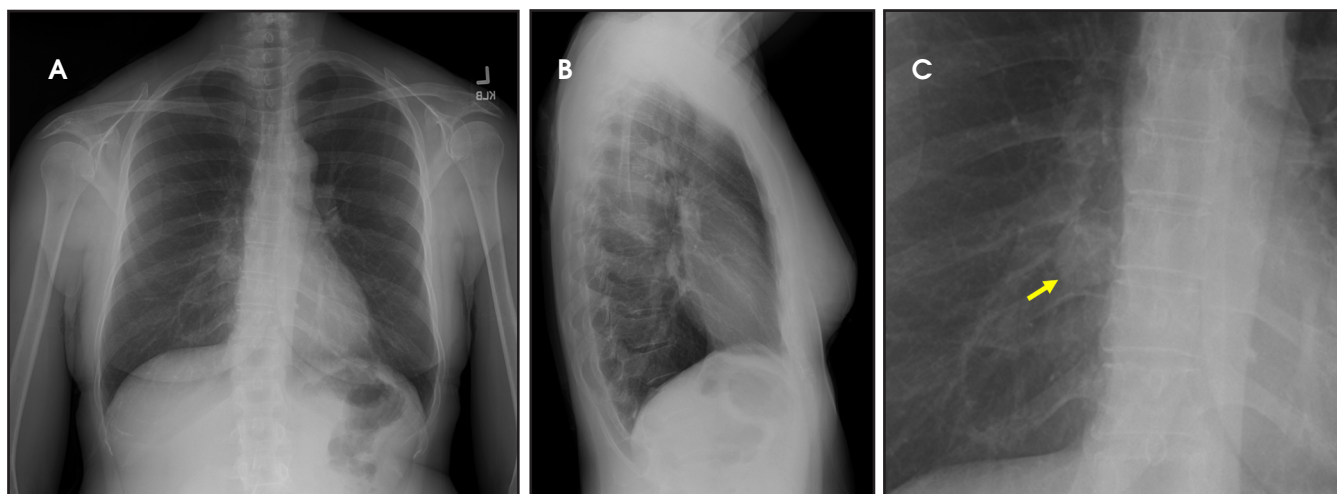


FIGURE 1. PA (Figure 1A) and lateral (Figure 1B) show a round mass in the medial right lower lobe. Detailed view (figure 1c) of the medial right lower lobe on the frontal radiograph confirms the round mass (arrow).

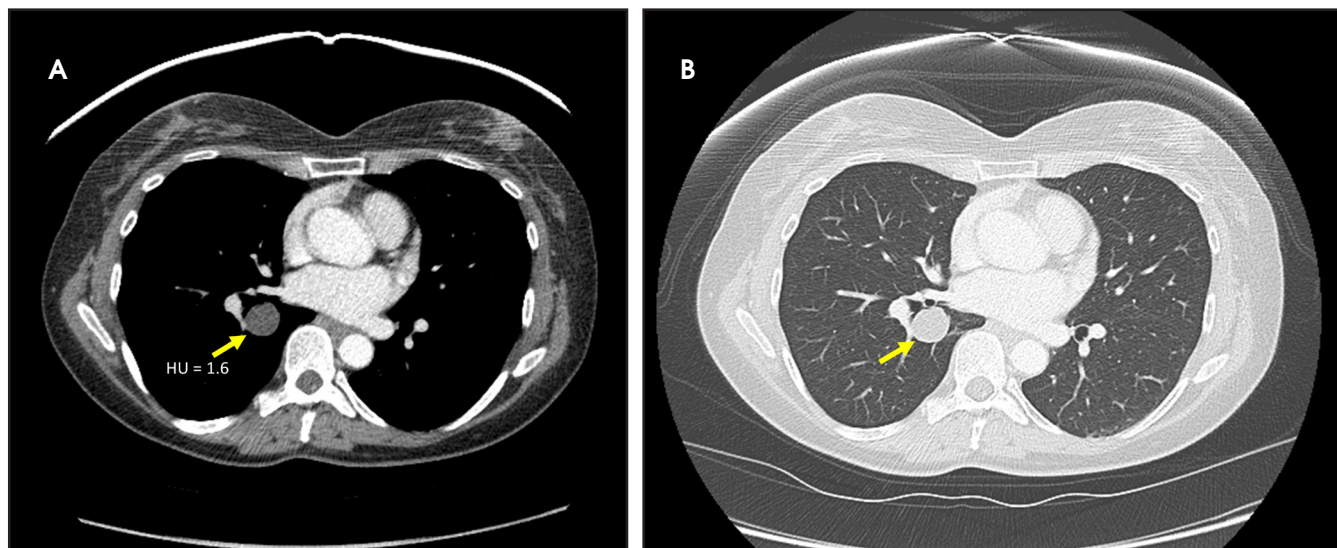


FIGURE 2. Axial images from a contrast-enhanced chest CT are presented in both soft tissue (Figure 2A) and lung (Figure 2B) windows. There is a nonenhancing, round mass in the right lower lobe (arrow). Hounsfield units (HU) measure 1.6, indicating that this mass is a cyst.

CONCLUSION

Bronchogenic cysts may occasionally arise within the lung parenchyma rather than the more common mediastinal location. On imaging, these intraparenchymal bronchogenic cysts are typically well circumscribed oval or round masses. When the attenuation is clearly fluid, the diagnosis of a bronchogenic cyst is fairly straightforward. However, when the fluid is dense (hemorrhagic/proteinaceous), distinction of a cyst versus a solid lung nod-

ule may prove challenging. Treatment is controversial and ranges from surgical excision to imaging surveillance.

REFERENCES

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