

Image vignette

Effective treatment of empyema thoracis caused by a ruptured large hepatic cyst

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An 87-year-old woman presented to the emergency department with right-sided chest pain and dyspnea. The patient had been undergoing outpatient internal medicine follow-up for a hepatic cyst 10 years previously (Fig. 1A). One month before visiting the hospital, she underwent computed tomography (CT) due to pain in the upper abdomen, which revealed that the size of the hepatic cyst had increased considerably (Fig. 1B). However, her symptoms were not severe and the patient was older. She only wanted to control her symptoms. At the time of admission to the emergency room, a large amount of pleural fluid was observed on CT, and the size of the hepatic cyst had decreased (Fig. 1C), resulting in empyema thoracis as the hepatic cyst had ruptured through the diaphragm and into the thoracic cavity [1,2]. The patient was immediately treated with closed-tube thoracostomy. After the procedure, approximately 2,000 mL of pleural effusion was drained, and her dyspnea improved. The pH of the drained pleural

fluid was 6.57, with a glucose level of 6 mg/L, lactate dehydrogenase level of 51,361 IU/L, and white cell count of 176,000/ μ L. Empyema was diagnosed based on these results, and intravenous piperacillin/tazobactam antibiotics were initiated. Although a diaphragmatic defect or fistula was not clearly visible on the CT scan, >150.0 μ mol/L of bile acid was found in the pleural fluid, confirming empyema from the hepatic lesion. Five days after the procedure, the patient's symptoms significantly improved, and a follow-up CT scan was performed. The large hepatic cyst had almost disappeared, and the empyema was well drained (Fig. 1D). *Escherichia coli* was identified in the pleural effusion, and piperacillin/tazobactam was continued because *E. coli* is highly sensitive to this antibiotic combination. The chest tube was removed on the 19th day of hospitalization. She was discharged without any discomfort 2 days after removal of the chest tube. On the 9th day after discharge, she visited the outpatient clinic, and chest radiography

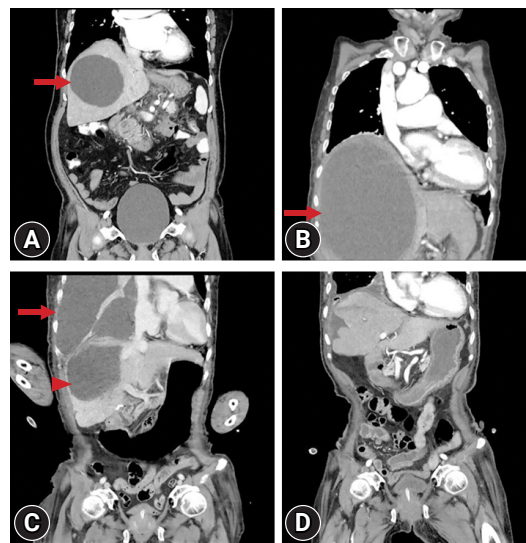


Fig. 1. (A) Hepatic cyst (10 cm, arrow) noted by abdominal computed tomography (CT) 10 years ago. (B) CT scan taken at the internal medicine outpatient department 1 month before the visit to the emergency room shows the existing hepatic cyst enlarged to approximately 19 cm (arrow). (C) Abdominal CT at the time of admission to the emergency room shows a large amount of pleural effusion (arrow) and the hepatic cyst (arrowhead), which is significantly smaller than 1 month earlier. (D) One week after chest tube insertion, CT scan shows that most of the pleural effusion has drained, and the giant hepatic cyst has disappeared.

confirmed that her right lung had improved. It has been 2 years since the patient was treated and discharged from our hospital. She is currently being followed up at the neurology department of a local medical center for dementia. She has had no subsequent symptoms such as dyspnea or abdominal pain.

Hepatic cysts are usually asymptomatic; however, in rare cases, a liver abscess may occur as a complication of an infection. Pyogenic liver abscess (PLA) is primarily caused by bacteria, such as *E. coli*, *Streptococcus* spp., and *Klebsiella pneumoniae* [3]. PLA is rare; however, empyema caused by a liver abscess that bursts through the diaphragm into the chest cavity is much rarer [4]. As the risk of death is high if treatment is not initiated quickly, effective drainage and appropriate use of antibiotics are required to treat patients [3].

Notes

Ethical statements

This study was approved by the Institutional Review Board (IRB) of Yeungnam University Hospital (IRB No: YUMC 2023-03-030). Informed consent was waived because of the retrospective nature of the image vignette.

Conflicts of interest

Hyuckgoo Kim has been an editorial board member of *Journal of Yeungnam Medical Science* since 2021. He was

not involved in the review process of this manuscript. There is no conflict of interest to declare.

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Author contributions

Conceptualization, Data curation, Resources: SSL, HK; Formal analysis, Visualization, Software, Supervision: SSL; Writing-original draft: SSL, HK; Writing-review & editing: SSL.

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