Emergency and Critical Care Medicine

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Hepatic cystic echinococcosis with the involvement of the pericardium: a case letter

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Echinococcosis, a zoonotic parasitic disease caused by the larval stages of *Echinococcus* species, is globally distributed and remains a significant public health challenge in regions like western China.[1] Cystic echinococcosis (CE), predominantly caused by *Echinococcus granulosus*, is endemic to socioeconomically disadvantaged pastoral areas where livestock (e.g., cattle, goats, sheep, camels, and cervids) coexist with carnivorous definitive hosts (e.g., canids and felids). In this natural transmission cycle, carnivores act as definitive hosts, herbivores act as intermediate hosts, and humans usually become accidental or aberrant hosts.[2]

Hepatic involvement accounts for approximately 70% of CE cases.[3] Over time, rising intracystic pressure may lead to cyst rupture into adjacent anatomical structures, most commonly resulting in cystobiliary fistula formation, which has been reported in 13%–37% of cases.[2] Hepatic cyst rupture can trigger Kounis syndrome, also known as allergic angina.[4,5] In contrast, pericardial involvement is exceedingly rare.[6] When it occurs, pericardial effusion carries a substantial risk of life-threatening cardiac tamponade.

We report the case of a 44-year-old Tibetan woman (height: 168 cm; weight: 46 kg) who developed massive pericardial effusion secondary to a giant hepatic CE cyst. A long-term resident of an agropastoral region situated 3800 m above sea level was transferred to our hospital with a 6-day history of chest tightness, dyspnea, nausea, and vomiting. She was engaged in livestock farming (cattle and sheep) and had kept dogs for over 2 decades. She had known but untreated hepatic echinococcosis that had been previously asymptomatic for 15 years. There was no relevant family history or identifiable exposure incidents. On admission, her vital signs were as follows: blood pressure, 100/78 mmHg; pulse, 120 bpm; respiratory rate, 21 breaths per minute; and temperature, 36.2°C. Physical examination revealed jugular venous distension, bilateral basal crackles, and distant heart sounds without rubbing or murmurs.

Liver function tests were abnormal: ALT, 120 U/L; AST, 114 U/L; ALP, 572 U/L; and γ-GT, 649 U/L. Hyponatremia was evident (Na^+ 124.5 mmol/L). The complete blood count and additional biochemical parameters are summarized in Supplemental Table 1, https://links.lww.com/ECCM/A108. Serum immunological markers were within normal ranges (Supplemental Table 2, https://links.lww.com/ECCM/A108).

Electrocardiography revealed sinus tachycardia (Supplemental Fig. 1, https://links.lww.com/ECCM/A105). Echocardiography revealed a large pericardial effusion with preserved left ventricular ejection fraction (LVEF) (Supplemental Fig. 2A, https://links.lww.com/ECCM/A106). Computed tomography (CT) identified a sizable cyst in the right hepatic lobe with diffusely calcified walls. The cyst extended into the diaphragm. Pericardial effusion was substantial, with a maximal pericardial thickness (including fluid) of 3.3 cm and no apparent thickening of the pericardial wall (Supplemental Fig. 2B and 2C, https://links.lww.com/ECCM/A106).

Emergency pericardiocentesis was performed to alleviate cardiac tamponade.[7] This procedure was followed by the percutaneous aspiration of the hepatic cysts. Both pericardial and hepatic cyst fluids were yellow, turbid, and tested positive in the Rivalta test (Supplemental Fig. 3A and 3B, respectively, https://links.lww.com/ECCM/A107). A pericardial fluid smear was negative for *Mycobacterium tuberculosis*. The analysis of the hepatic cyst fluid is detailed in Supplemental Table 3, https://links.lww.com/ECCM/A108. Both fluids were notably viscous and prone to coagulation, which considerably complicates drainage. The patient refused surgical intervention for definitive cyst management. After partial symptom relief, the patient was discharged on medical advice.

The incubation period and clinical manifestations of CE vary widely. The disease often remains asymptomatic until the development of complications. Symptoms typically arise from cyst rupture (leading to infection or anaphylaxis), fistula formation in adjacent structures (e.g., biliary tree, intestine, and bronchus), or mass effects on the surrounding organs. The liver and lungs are the most frequently affected sites, accounting for nearly 90% of cases.[8] The liver is the primary organ involved in alveolar echinococcosis (AE), which often causes significant tissue destruction via infiltrative tumor-like growth, widespread abdominal invasion, and extrahepatic metastasis.[9] CE diagnosis relies heavily on imaging, because laboratory findings are often nonspecific.[2,10] In this case, the diagnosis was supported by the patient's history and the characteristic CT features of the hepatic cyst.

Notably, the patient remained asymptomatic and remained untreated for 15 years. Pericardial effusion is a rare complication of giant hepatic hydatid cysts in the right lobe. Thoraco-abdominal CT

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The datasets generated during and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Emergency and Critical Care Medicine (2025) 5:4

Received: 4 July 2025; Accepted: 16 September 2025

Published online: 6 November 2025

http://dx.doi.org/10.1097/EC9.0000000000000160

confirmed a large hypodense cystic lesion (17.7 cm × 11.8 cm) with diffuse wall calcifications extending to the diaphragm, suggestive of subdiaphragmatic and pericardial rupture. The aspiration of yellow, cloudy, and highly viscous fluid from both the pericardial cavity and hepatic cysts with similar properties supported the diagnosis of cyst rupture into the pericardium. These fluid characteristics, along with markedly elevated serum ALP and γ-GT, were highly indicative of a cysto-biliary fistula.

Surgical resection remains the definitive treatment for CE and is generally associated with favorable outcomes.[11,12] Postoperative broad-spectrum anthelmintic therapy is recommended to reduce recurrence risk.[13] Unfortunately, the patient declined both surgery and medical therapy after the initial symptomatic improvement and was subsequently lost to follow-up after discharge. Long-term prognosis depends on cyst progression and the potential recurrence of complications.

In conclusion, CE typically follows an asymptomatic course unless complications occur. The rupture of a hepatic hydatid cyst, especially from the right lobe, into the pericardial cavity is highly unusual. However, when pericardial tamponade manifests, emergency percutaneous drainage is essential to reduce the intracystic and pericardial pressures. Although radical management involved surgery combined with anthelmintic medication, the patient declined these interventions.

Conflict of interest statement

The authors declare no conflict of interest.

Author contributions

Niu M and Qing K wrote the manuscript. Guo T, Zhang Y, and Guo C collected the data, and Zhang X corrected the manuscript scientifically. Han H supervised the project and critically revised the manuscript for important intellectual content. All the authors have read and approved the final version of the manuscript.

Funding

(1) Natural Science Foundation of Tibet Autonomous Region (XZ202501ZR0145, XZ2024ZR-ZY048(Z)), (2) Natural Science Foundation of Tibet Autonomous Region Group Medical Aid Project (XZZR202402030(W), XZZR202402077(W), XZZR202402120 (W)), and (3) Natural Science Foundation of Shigatse (RKZ2024ZR-003(Z)).

Ethical approval of studies and informed consent

The study followed the principles of the Declaration of Helsinki as revised in 2013. The publication of the individual case report was exempt from ethical approval according to the guidelines of the People's Hospital of Shigatse City, and written informed consent was obtained from the patient.

Acknowledgments

The authors thank the medical staff of the Department of Cardiovascular Medicine at People's Hospital of Shigatse City. The authors are grateful to the patient and her family for their valuable support during the preparation of this manuscript.

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How to cite this article: Niu M, Qing K, Guo T, et al. Hepatic cystic echinococcosis with the involvement of the pericardium: a case letter. *Emerg Crit Care Med*. 2025;5(4):208–209. doi: 10.1097/EC9.0000000000000160