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CORONARY, PERIPHERAL, AND STRUCTURAL INTERVENTIONS

CLINICAL CASE

Cardiac Hydatid Cyst in a 34-Year-Old Ethiopian Woman With Heart Failure

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ABSTRACT

Although the majority of hydatid cysts are found in the liver and lungs, cardiac hydatid cysts, particularly those in the left ventricle and interventricular septum, pose unique challenges because of their extremely rare manifestation of cystic echinococcosis, critical location, and potential for serious complications. Although uncommon, a hydatic cyst of the heart should be investigated in a patient with an intracardiac mass—particularly if it is cystic—and in a patient with symptoms of heart failure caused by a mass shown in imaging examinations. We present a case of left ventricular hydatid cyst in a 34-year-old woman who had been complaining of worsening dyspnea, shortness of breath, orthopnea, and cough for 3 weeks. (JACC Case Rep. 2025;30:103105) © 2025 The Authors. Published by Elsevier on behalf of the American College of Cardiology Foundation. This is an open access article under the CC BY-NC-ND license (http://creativecommons.org/licenses/by-nc-nd/4.0/).

A 34-year-old woman presented with a 3-week exacerbation of shortness of breath, initially noted 1 month earlier as exertional dyspnea. The patient reported a chronic cough— predominantly nocturnal—and exacerbation in her routine activities, which included farming. This cough was accompanied by severe activity-limiting chest tightness, which improved with rest. Over the past week, symptoms had been worsened, with the onset of episodic palpitations described as painful and rapid heartbeats, orthopnea requiring 2 pillows, and paroxysmal nocturnal dyspnea. In addition, the patient noted bilateral lower extremity swelling.

TAKE-HOME MESSAGES

- This case highlights that cardiac hydatid cysts can complicate heart failure, probably because of inflammation-related myocarditis.
- Although surgical intervention is a primary treatment for hydatid cysts, medical treatment was used in this case, the efficacy of which is yet to be investigated.
- Collaboration among team of experts including interventional cardiologists and cardiac surgeons is important in handling such rare cases for better patient outcomes.

The patient did not have history of syncope, near drowning, skin rash, jaundice, dizziness, chills, fever, or hemoptysis. She was not a smoker or an alcoholic. The patient denied any personal or family history of diabetes mellitus, hypertension, or sudden cardiac death. She was married with 4 children and had no history of psychiatric illness, drug allergies, or significant childhood illnesses.

On examination, the patient exhibited dyspnea at 45 degrees. Her vital signs were as follows: Blood pressure was 130/75 mm Hg, measured on supine position, pulse rate was 104 beats per minute (and was regular), respiratory rate was 24 breaths per minute, temperature was 37.0 °C, and oxygen saturation was 96% on room

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ABBREVIATIONS AND ACRONYMS

CT = computed tomography

IHA = indirect hemagglutination

PAIR = puncture, aspiration, injection, reaspiration

WBC = white blood cells

air. Pulmonary examination revealed expiratory wheezing in both lung fields. The jugular venous pressure was elevated at 2 cm above the sternal angle. Cardiac, abdominal, genitourinary, and integumentary examination results were unremarkable. Bilateral pitting edema was present in the lower extremities. The patient was alert and oriented with a Glasgow Coma Scale of 15.

KEY CLINICAL MESSAGES

Intracardiac masses are generally uncommon, although their presence may lead to increased morbidity and mortality. Cardiac hydatid cyst is a rare form of cystic echinococcosis—a parasitic infection caused by a tapeworm—common among people who raise sheep or other livestock and also have dogs. Although surgery and puncture, aspiration, injection, reaspiration (PAIR) are better options of the treatment for cardiac hydatid cysts, medical treatment with benzimidazoles are also used, especially in a scenario with limited expertise.

DIFFERENTIAL DIAGNOSIS

Cardiac tumors, although uncommon, can manifest in ways that resemble intracardiac hydatid cysts. Myxomas represent the most frequent benign cardiac tumors, often leading to such symptoms as dyspnea, chest pain, and systemic embolization. Similarly, fibromas, another benign tumor type, may present as a cystic mass within the heart. However, specific radiographic features of cysts typically differentiate them from cardiac hydatid cysts. Pericardial cysts are another benign fluid-filled mass, typically found in the middle mediastinum adjacent to the heart, mimicking hydatid cysts. They can occasionally exert pressure on the heart chambers, leading to symptoms of heart failure such as chest pain or dyspnea. Pericardial cysts are usually incidentally discovered on imaging studies and are basically extracardiac in location.

Inflammatory conditions such as tuberculous pericarditis or infectious endocarditis can occasionally present with cystic lesions or masses within the heart chambers. These conditions can cause similar symptoms of chest pain, dyspnea, and systemic manifestations, depending on the extent of involvement and associated complications. However, typical imaging findings helped to differentiate from the hydatid cysts in the case presented.

INVESTIGATIONS

Complete blood count revealed leukocytosis with left shift and mild eosinophilia; 14,000 white blood cells (WBC)/mm^3, polymorphonuclear cells of 84% (11,760), and 10.5% (1,470 cells) of lymphocytes, 5.1% (714 cells) of eosinophils, 0.39% monocytes (56), and hemoglobin of 14.1 g/dL, whereas the platelet count was 275,000 platelets/mm^3 (**Table 1**). Although improved techniques, such as indirect hemagglutination (IHA), radioimmunoassay, and immunoblot and enzyme-linked immunosorbent assay (ELISA) are available widely in the other parts of the world, they are not found here and hence could not be used.[1-3] Serologic antigen testing, including antigen 5 and antigen B combined with the ELISA increases the diagnostic sensitivity from 60% to 90%, with specificity at approximately 90%.[4,5] However, negative serologic tests do not always rule out hydatid cysts, as lack of standardization in laboratories and various procedures used in antigen isolation and purification can lead to false negative results.[6-8]

Transthoracic echocardiogram of the patient showed multilocular, well-delineated, giant cystic lesion, measuring 44 mm × 48 mm, located at the apex of left ventricle, invading the myocardium. There were also 2 daughter cysts within the giant cyst, which were isolated and freely mobile, both measuring 10 mm × 12 mm. The left ventricle was dilated, whereas the cardiac valves were grossly normal (**Figures 1A to 1F**).

The left ventricle was dilated with global hypokinesia, with reduced systolic function, as estimated ejection fraction was 40%, with the index of dilated cardiomyopathy with left ventricular apical hydatid cyst (Video 1).

Precontrast and postcontrast cardiac computed tomography (CT) showed the same findings, with intracardiac biventricular hypodense filling defects (**Figure 2**, Video 2). The high-resolution CT of the lung showed chronic hypersensitivity pneumonitis (**Figure 3**, Video 3). Both postcontrast abdominopelvic CT (**Figure 4**, Video 4) and electrocardiogram results were unremarkable.

MANAGEMENT AND FOLLOW-UP

Although surgical treatment is the gold standard for the treatment of hydatid cysts, the patient was started on oral albendazole, the dose calculated based on her body weight, at 15 mg/kg in 2 divided doses for

1 month, together with managements for heart failure. She was then scheduled for subsequent follow-up and surgical intervention in case there was a need. After being diagnosed with cardiac hydatid cyst with heart failure, her condition improved, and she was discharged with an appointment for follow-up and further management at Jimma Medical Center in Jimma, Ethiopia. The hypersensitivity pneumonitis was considered as part of this complication and was assumed to respond following treatment of the underlying causes, as also evidenced with early improvement of the patient's symptoms while she was in hospital; hence, the team did not provide special treatment. Although the patient did not appear for the subsequent appointment for follow-up, she was contacted by phone, and she reported no worsening of her symptoms, although she still had an intermittent dry cough. She was taking medications for heart failure from local health facility and could not appear, citing financial constraints. Furthermore, she continued daily oral 2.5 mg bisoprolol, 5 mg enalapril, and 25 mg spironolactone; diuretics and other medications were discontinued after consultation with her local primary physician, with no change of medication or any dose escalation made. Although the patient was apparently doing well as reported, she was advised to come to the medical center for evaluation of her progress, at least for academic purposes, although she was skeptical, citing financial considerations.

TABLE 1 Investigation Summary of the Patient: July 6, 2024

	Results	Reference Ranges
White cell count (per μ L)	14,000	4,000-15,000
Neutrophil (%)	84	37-72
Lymphocyte (%)	10.5	20-50
Hemoglobin (mg/dL)	14.1	11-16.5
Platelet (per μ L)	275,000	150,000-450,000
ESR (mm/h)	62	< = 20
Creatinine (mg/dL)	1.01	0.5-1.2
Blood urea nitrogen (mg/dL)	7.6	7-20
Sodium (mmol/L)	142	135-145
Potassium (mmol/L)	4.1	3.5-5.5
Chloride (mmol/L)	103	98-107
AST (IU/L)	41	0-40
ALT (IU/L)	33.2	0-41
ALP (IU/L)	195	40-130
Random blood sugar (mm/g/dL)	189	
Prothrombin time (sec)	11.6	10-14
APTT (sec)	20.2	22-38
INR	1.02	0.7-1.2
TSH (μ IU/mL)	2.1	0.27-4.2
Blood cultures for aerobic, anaerobic, and fungal organisms	Negative	Negative
HIV test	Nonreactive	Nonreactive
Serum VDRL test	Nonreactive	Nonreactive
Hepatitis B surface antigen test	Negative	Negative
Hepatitis C antibody test	Negative	Negative
Urinalysis	Microscopic RBCs casts	Negative
ASO titer	Nonreactive	Negative
Serum albumin (g/dL)	4.1g/dL (normal range)	
ANA	Nonreactive	

ALP = alkaline phosphatase; ANA = antinuclear antibody; ASO = antistreptolysin O; AST/ALT = aspartate transaminase/alanine transaminase; APTT = activated partial thromboplastin time; ESR = erythrocyte sedimentation rate; TSH = thyroid stimulating hormone; VDRL = Venereal Disease Research Laboratory.

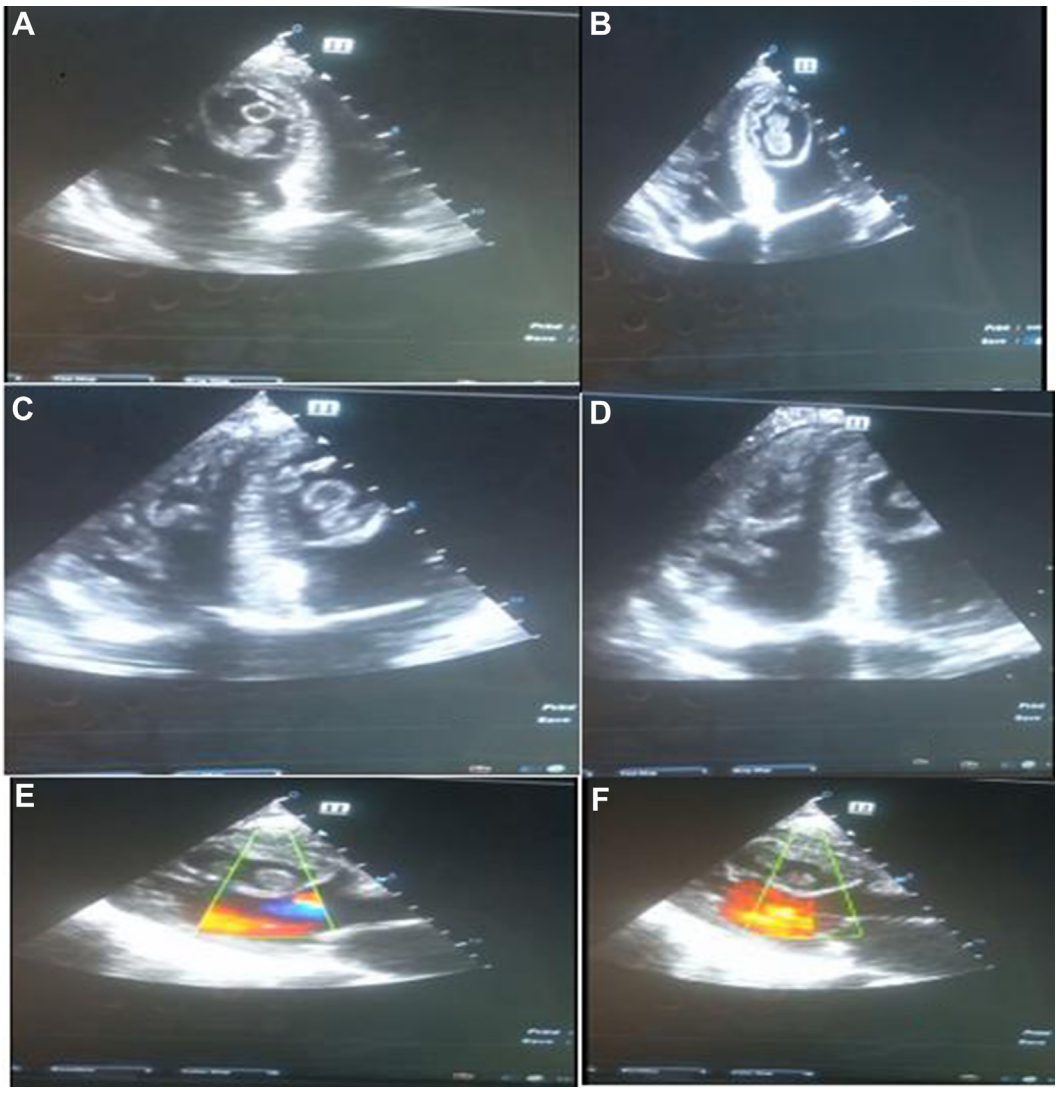
DISCUSSION

This case reported a 34-year-old woman presenting with worsening dyspnea, shortness of breath, orthopnea, and chronic cough, which raised suspicion for cardiac and pulmonary involvement. However, echocardiography and cardiac CT revealed significant findings of dilated left ventricles with multiple hydatid cysts located at the apex of the left ventricle. The presentation was highly suggestive of isolated left ventricular apical intracardiac hydatid cysts, a rare manifestation of echinococcosis within the heart.[9-12]

Despite extensive investigations, including electrocardiogram, serologic screening, and imaging studies such as liver ultrasound, as well as pre- and postcontrast CT involving the chest and abdominopelvic organs, no evidence of extracardiac hydatid disease was found. This underscores the rare and isolated nature of the cardiac involvement in this case, with no systemic spread of the parasitic infection.[13,14] The patient was diagnosed with dilated cardiomyopathy with reduced ejection fraction, likely secondary to the mechanical effects of the intracardiac hydatid cysts and toxin-mediated myocardial dysfunction or concomitant de novo dilated cardiomyopathy. The cysts, by their size and location, can impair ventricular function and contribute to heart failure symptoms such as dyspnea and orthopnea, as documented in this case.[15-17]

Albendazole is effective against Echinococcus species and is typically used in conjunction with surgical intervention in cases such as ours to optimize treatment outcomes.[17] Accordingly, albendazole therapy, calculated based on her body weight of 15 mg/kg, in 2 divided doses for 1 month, together with management for heart failure, was initiated as medical management for echinococcosis, aiming to reduce the size of the cysts and prevent further parasitic growth and subsequent complications. Management of heart failure in the context of dilated cardiomyopathy including standard pharmacotherapy aimed at reducing symptoms, improving

FIGURE 1 Transthoracic Echocardiogram of the Patient



(A-F) Multilocular, well-delineated, giant cystic lesion measuring 44 mm × 48 mm, located at the apex of left ventricle, invading the myocardium. There are also 2 daughter cysts within the giant cyst, which are isolated and freely mobile, both measuring 10 mm × 12 mm. The left ventricle is dilated, whereas the cardiac valves are grossly normal.

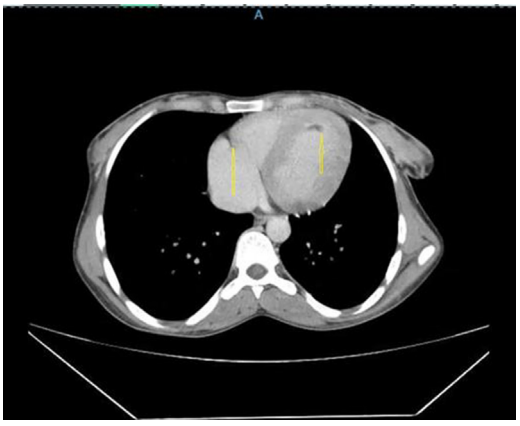
cardiac function, and preventing disease progression, including diuretics, beta blockers, angiotensin-converting enzyme inhibitors or angiotensin receptor blockers, and aldosterone antagonists tailored to the patient's clinical status and tolerability were provided.[18]

In conclusion, the case highlights the rare occurrence of isolated left ventricular apical intracardiac hydatid cysts as a cause or together with dilated cardiomyopathy in a young female patient. Multidisciplinary management involving cardiology and infectious disease specialists were involved in optimizing treatment outcomes, focusing on both the parasitic infection and heart failure symptoms, for better patient outcome.

LIMITATIONS

The problems in this case were numerous. The lack of confirmatory testing from the sample might lead to a

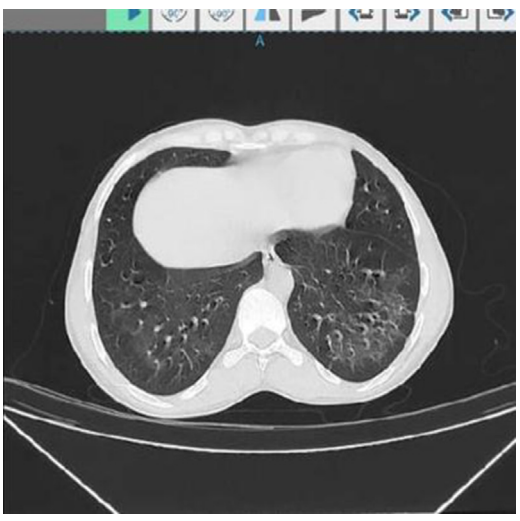
FIGURE 2 Postcontrast Sagittal Cardiac Computed Tomography of the Same Patient During Her Visit to Our Hospital



Intracardiac biventricular hypodense filling defects are shown.

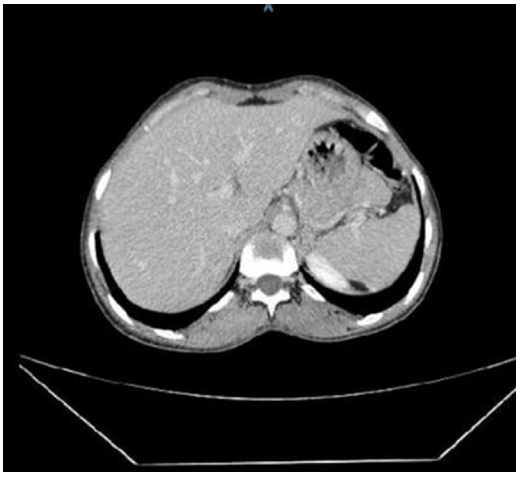
substantial challenge in diagnosing the etiology precisely and in subsequent management. The lack of open-heart surgery as an option also made optimal management difficult. Endomyocardial biopsy might also be paramount to differentiate the causes of heart failure, as it might not solely be caused by the hydatid cyst itself alone.

FIGURE 3 Sagittal Section of HRCT of the Patient's Lungs



Bilateral central ground glass opacity involving all lobes of lungs with subplural sparing and bilateral mild fibro-bronchiectatic changes. HRCT = high resolution computed tomography.

FIGURE 4 Sagittal Section of Postcontrast Computed Tomography of the Abdomen



There is normal flow with no evidence of cystic lesions or no visible liver parenchymal architectural abnormality.

CONCLUSIONS

Isolated cardiac hydatic cysts are generally rare. Surgical intervention is the primary treatment for hydatid cysts and should be initiated as soon as feasible following diagnosis. Medical treatment should be administered in the postoperative phase to prevent recurrences. Clinical management and subsequent treatment outcome decisions would also play a role with situations in which standard therapy was not offered, mainly because of the limitation of invasive cardiac surgical services in the medical center.

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KEY WORDS cardiac mass, hydatid cyst, heart failure

APPENDIX For supplemental videos, please see the online version of this paper.