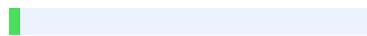




Plagiarism Checker X - Report

Originality Assessment

3%



Overall Similarity

Date: Feb 16, 2026 (10:21 AM)

Matches: 61 / 2067 words

Sources: 8

Remarks: Low similarity detected, consider making necessary changes if needed.

Verify Report:

Scan this QR Code



CAUGHT IN TRANSIT: HEPATOPULMONARY HYDATID DISEASE CROSSING

ANATOMICAL 1 BOUNDARIES – A CASE REPORT 2 ABSTRACT 3 2 Hydatid disease,

caused by Echinococcus granulosus, is a zoonotic infection primarily affecting the 4 liver and lungs. Rarely, both organs are involved simultaneously, termed hepatopulmonary hydatid 5 disease (HPHD), posing diagnostic and therapeutic challenges. 6 7 We report a 21-year-old female presenting with hemoptysis from a ruptured pulmonary hydatid cyst 8 and concurrent hepatic hydatidosis. Diagnosis was confirmed via CECT, revealing characteristic 9 pulmonary and hepatic lesions. This case highlights the role of early imaging and a multidisciplinary 10 approach involving pulmonology, hepatobiliary and cardiothoracic surgery, and anesthesiology for 11 optimal outcomes 12

Keywords: Hepatopulmonary hydatid disease, Echinococcus granulosus, ruptured hydatid

cyst. 13 INTRODUCTION 14 Hydatid disease (echinococcosis) is a chronic 3 parasitic infection caused by the larval stage of 15 Echinococcus granulosus and occasionally Echinococcus multilocularis. Humans are accidental 16 intermediate hosts, acquiring 6 infection through ingestion of eggs excreted by infected dogs or other 17 canines. 18 The liver (in about 60–70% of cases) and the lungs (20–30%) are 3 the most commonly affected organs 19 due to their filtration roles in the portal and systemic circulation.

Simultaneous hepatic and 20 pulmonary involvement, termed hepatopulmonary hydatid disease (HPHD), is uncommon—reported 21 in less than 5–13% of all hydatid cases. 22 Clinical manifestations depend on cyst location and complications such as rupture or infection. 23 Pulmonary hydatid cyst rupture into bronchi may lead to hemoptysis, cough, or expectoration of 24 cystic contents. Radiological imaging, particularly CECT, remains the cornerstone for diagnosis and 25 surgical planning. 26 CASE REPORT 27 A 21-year-old female from Orissa, previously healthy, presented with two episodes of hemoptysis 28 that occurred after vigorous laughter approximately two weeks prior to evaluation. She recalled a 29 similar, less intense episode of hemoptysis two months earlier. There was no history of cough, fever, 30 dyspnea, weight loss, appetite loss, or constitutional symptoms. Upon further questioning, she 31 reported a significant zoonotic exposure four years

earlier, when she frequently fed a sick dog with 32 her bare hands—an exposure that would later prove clinically relevant. 33

On admission, she was conscious and well oriented, with stable vital signs: pulse 90 beats/min, 34 respiratory rate 18/min, blood pressure 120/70 mmHg, oxygen saturation 98% on room air, and a 35 temperature of 98°F. General examination revealed no pallor, icterus, cyanosis, clubbing, 36 lymphadenopathy, or pedal edema. Systemic evaluation was normal except for decreased breath 37 sounds in the right infrascapular region. Cardiovascular, abdominal, and neurological examinations 38 were unremarkable. 39 Initial blood investigations showed a hemoglobin level of 11.4 g/dL and a total leukocyte count of 40 6600/cumm with mild neutrophilia (67%). Sputum TRUENAT performed was negative for 41 *Mycobacterium tuberculosis*. A chest radiograph revealed a right lower zone homogeneous opacity. 42 Bronchoscopy performed on the same day showed normal airways with no endobronchial lesions. 43 44 4 Frontal chest radiograph shows a well-defined, rounded homogeneous opacity in the right lower 45 zone with relatively smooth margins and subtle internal lucencies. 46 Further evaluation with CECT 7 of the chest, revealed a well-defined, smoothly marginated, oval, 47 heterogeneous lesion in the posterior segment of the right lower lobe. The lesion displayed a thick 48 enhancing pericyst, multiple internal air pockets, and curvilinear membranes consistent with a 49 completely ruptured hydatid cyst displaying the classic serpentine sign. A smaller peripherally 50 enhancing cyst was also noted, which communicated with posterior segmental bronchial branches. 51 Concomitant CECT of the abdomen revealed a well-defined, subcapsular, posteroinferior hepatic 52 cyst containing multiple non-enhancing daughter vesicles within a mother cyst, confirming 53 hepatopulmonary hydatid disease. 54 55 56 57 58

59 Contrast-enhanced CT images demonstrate a well-defined, smoothly marginated heterogeneous lesion 60 in the right lower lobe, showing a thick irregular enhancing

pericyst with enhancing curvilinear 61 membranes (serpentine sign) and internal air foci - consistent with a contained ruptured pulmonary 62 hydatid cyst with bronchial communication. Additionally, a well-defined subcapsular hypodense lesion 63 in the right hepatic lobe with multiple daughter cysts - hepatic hydatid cyst. 64 65 66 MRI shows a well-defined cystic lesion in the right lower lobe with internal hypointense curvilinear 67 membranes and peripheral rim (serpentine sign), suggestive of a ruptured pulmonary hydatid cyst. A 68 subcapsular hepatic cyst 5 in the right lobe demonstrates T2 hyperintense daughter cysts within a 69 mother cyst ("cyst-within-cyst" appearance) - features consistent with concomitant hepatothoracic 70 hydatid disease. 71 The patient was admitted under Pulmonology and started on albendazole therapy, along with 72 bronchodilators and tranexamic acid. She improved symptomatically, with no further episodes of 73 hemoptysis. A multidisciplinary team comprising Pulmonology, Gastrointestinal Surgery, 74 Cardiothoracic and Vascular Surgery (CVTS), and Anesthesiology formulated a comprehensive 75

management plan. CVTS recommended performing bronchoscopy before lung resection, which 76 confirmed the absence of endobronchial involvement. She continued 2 albendazole for 2 months and 77 was planned for surgical intervention following adequate medical therapy and optimization. She 78 underwent a pre-anesthetic evaluation and was deemed fit for surgery. 79 During follow-up imaging after a period of albendazole therapy, the right lower lobe hydatid cyst 80 was found to be stable, with a slight reduction in size. The smaller satellite cyst persisted without 81 new complications. The hepatic cyst in segments VI and VII showed disappearance of previously 82 seen daughter cysts and the development of peripheral calcifications, indicating therapeutic 83 response or collapse. With stable disease and good clinical condition, she was scheduled for 84 combined thoracic and hepatic surgical management. 85 She underwent right lower lobectomy and partial pericystectomy under general anesthesia with 86 epidural analgesia. Intraoperatively, a large ruptured hydatid cyst measuring approximately 10 × 10 87 cm was

seen occupying the right lower lobe, with significant parenchymal destruction, necessitating 88 anatomical lobectomy. The liver harbored a 10 × 8 cm hydatid cyst with a thickened pericyst and 89 dense adhesions involving the lesser omentum and adjacent structures. No intrathoracic or intra90 abdominal dissemination or perforation was identified. The hepatic cyst was decompressed and 91 partially excised with meticulous precautions to prevent spillage. Two right-sided intercostal drains 92 and an abdominal drain were placed. The patient tolerated the procedure well and was shifted to 93 the ICU for postoperative monitoring. 94 Histopathological examination of both pulmonary and hepatic specimens confirmed hydatid disease, 95 with laminated membranes and scolices characteristic of Echinococcus infection. During the 96 postoperative period, she received serial chest physiotherapy, epidural analgesia, hemodynamic 97 monitoring, and radiographic evaluation. The first intercostal drain was removed once satisfactory 98 lung expansion was confirmed, the epidural catheter was discontinued a few days later, and the 99 remaining chest and abdominal drains were removed sequentially after minimal output. She was 100 transferred to the ward, where she resumed oral intake, mobilized comfortably, and remained pain101 free. 102 At subsequent outpatient follow-up, the patient showed excellent recovery. Her surgical wounds 103 had healed well, and clips were removed. She was clinically stable with no respiratory or abdominal 104 symptoms. Laboratory evaluation demonstrated near-normal hematologic, hepatic, and renal 105 parameters, along with a markedly reduced inflammatory profile. She continued albendazole 106 therapy as advised and was scheduled for further follow-up with repeat blood investigations. 107

DISCUSSION 108

Hepatopulmonary hydatid disease is a rare manifestation of Echinococcusgranulosus, and imaging 109 plays the central role in diagnosis, staging, and management. Ultrasound is the first-line modality for 110 hepatic involvement and forms the basis of the WHO-IWGE classification, which categorizes cystic 111 echinococcosis into active (CE1–CE2), transitional (CE3), and inactive (CE4–CE5) stages. USG 112 demonstrates key features such as unilocular cysts with the double-line sign (CE1), multivesicular 113 daughter cysts (CE2), detached floating membranes in

CE3A (water-lily sign), and heterogeneous 114

degenerative “ball-of-wool” contents in CE4, while CE5 shows calcified walls. This standardized 115 classification guides treatment selection and monitoring. 116 CT remains the most comprehensive modality for evaluating both hepatic and pulmonary hydatid 117 disease. It accurately identifies fluid-attenuation cysts, daughter vesicles, internal septa, peripheral 118 calcification, and complications. CT also depicts hallmark signs including the water-lily/serpentine 119 sign, meniscus (air-crescent) sign, and cumbo/onion-peel sign in cysts containing air, along with 120 adjacent consolidation in ruptured pulmonary lesions. CT effectively assesses mass effect, biliary or 121 bronchial communication, and cyst viability. 122 MRI provides complementary characterization with low T1/high T2 signal and clear visualization of 123 membranes and daughter cysts. 124 Thus, USG-based WHO staging combined with CT characterization forms the cornerstone for 125 accurate diagnosis, therapeutic planning, and follow-up in hepatopulmonary hydatid disease 126

CONCLUSION 127 Hepatopulmonary hydatid disease is a rare condition that can present with life-threatening 128 complications such as pulmonary cyst rupture. Although more common in endemic regions, it may 129 occur in otherwise healthy individuals with a history of zoonotic exposure. Early recognition, aided 130 by characteristic radiological findings, preoperative medical therapy with Albendazole, and timely 131 surgical intervention are crucial to achieving favorable outcomes. 132 This case highlights the importance of imaging in diagnosis, treatment planning, and monitoring 133 therapeutic response in complex dual-organ hydatid disease. 134 Teaching Points 135 136 Early recognition saves lives – Pulmonary cyst rupture may present subtly with hemoptysis; prompt 137 imaging with CECT is crucial for diagnosis and surgical planning. 138 Combined therapy is key – Pre- and post-operative Albendazole, along with timely surgical cysto139 pericystectomy or lobectomy, ensures cyst sterilization, reduces recurrence, and improves patient 140 outcomes. 141

ACKNOWLEDGMENT 142 □ 1 I would like to express my deepest gratitude to everyone who supported and guided me 143 throughout

this presentation. 144 □ First and foremost, I 8 extend my heartfelt thanks to the team at my institution especially my 145 mentors and colleagues for providing an enriching environment and access to the resources 146 essential for this work. 147 □ Special thanks to the radiology, critical care, and gastroenterology departments who were 148 directly involved in the management of this case. Their dedication and collaboration 149

exemplify the importance of multidisciplinary care in managing complex and life-threatening 150 conditions. 151 □ I also wish to acknowledge the family of the patient for their cooperation and understanding 152 during this challenging medical journey, allowing us to learn and contribute to the medical 153 literature. 154 □ Finally, I am thankful for the contributions of past researchers and clinicians whose work laid 155 the foundation for this study. Their findings have inspired the discussions presented here. 156 157 158

REFERENCES 159 □ Arıbaş E, Metin B, Dumanlı A, Arıbaş OK. Concomitant occurrence of hepatopulmonary 160 5 hydatid cysts: a case report. Iran J Parasitol.

2021;16(3):506–511. 161 □ Popova G, Popova D, et al. Treatment of hepatic and pulmonary hydatidosis with 162 albendazole and praziquantel. Acta Trop.

2023;247:106712. 163 □ Dalal U, Dalal AK, Singal R. Concomitant lung and liver hydatid cyst managed as one-stage 164 surgery. Int Surg. 2017;102(3–4):228–234. 165 □

Toktogaziev B, Omorov K, Aitbaev S, et al. Rare case of 4 concurrent pulmonary and hepatic 166 hydatid cysts treated by single-stage surgical management. J Surg Case Rep.

167 2022;2022(6):rjac267. 168 □ MDPI Diagnostics. Hydatid disease: a radiological

pictorial review of a great neoplasm 169 mimicker. Diagnostics. 2023;13(6):1127. 170 171

MCQs: 172 Q1. Which of the following statements about hepatopulmonary hydatid disease

(HPHD) is TRUE? 173 A) It is more common than isolated hepatic or pulmonary hydatid

disease. 174 B) Simultaneous involvement of liver and lungs occurs in less than 5–13% of

cases. 175 C) Humans are definitive hosts of *Echinococcus granulosus*. 176 D)

Pulmonary involvement never presents with hemoptysis. 177 Answer: B – Simultaneous

hepatopulmonary involvement is uncommon, reported in less than 5–13% 178 of hydatid

disease cases 179 Q2. On CECT chest, which finding is most characteristic of a ruptured pulmonary hydatid cyst? 180 A) Ground-glass opacity with pleural effusion 181 B) Oval heterogeneous lesion with enhancing thick pericyst and intralésional air foci (serpentine 182 sign) 183 C) Homogeneous consolidation without cystic features 184 D) Mediastinal widening with calcified hilar nodes 185

Answer:B – This describes the serpentine or water-lily sign, indicating endocyst detachment within 186 the pericyst 187 188 Q3. Which of the following clinical features most strongly suggests pulmonary cyst rupture in 189 hepatopulmonary hydatid disease? 190 A) Right upper quadrant abdominal pain 191 B) Hemoptysis with expectoration of cyst membranes (hydatid sand) 192 C) Mild dry cough with low-grade fever 193 D) Asymptomatic incidental lung opacity 194 Answer:B – Hemoptysis with expectoration of cyst membranes is the hallmark of pulmonary cyst 195 rupture and can be life-threatening if massive. 196 197

Sources

1	https://master-academia.com/phd-thesis-acknowledgeme... INTERNET 1%
2	https://www.sciencedirect.com/science/article/pii INTERNET <1%
3	https://pubmed.ncbi.nlm.nih.gov/40511766/ INTERNET <1%
4	https://pmc.ncbi.nlm.nih.gov/articles INTERNET <1%
5	https://pmc.ncbi.nlm.nih.gov/articles/PMC6447420/ INTERNET <1%
6	https://www.cell.com/trends/parasitology/fulltext/S1471-4922(19)30109-6 INTERNET <1%
7	https://www.researchgate.net/figure/a-Chest-X-ray-PA-view-showing-well... INTERNET <1%
8	https://ai.tenorshare.com/emails/thank-you-letter-for-team-effort.html INTERNET <1%

EXCLUDE CUSTOM MATCHES ON

EXCLUDE QUOTES OFF

EXCLUDE BIBLIOGRAPHY OFF