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Rare Chest Wall Cystic *Echinococcosis* in a 3-Year-Old Boy in Southwestern Nigeria: A Case Report

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Abstract

Context: Cystic *echinococcosis* (CE) from *Echinococcus granulosus* larvae manifests rarely as isolated chest wall masses in children, mimicking benign cysts clinically. Diagnosis demands histopathology, as radiology and cytology often underperform amid subtle pediatric signs and atypical presentations.
Case Presentation: A 3-year-old boy from southwestern Nigeria without travel or canine exposure presented with a painless 4cm × 4 cm swelling along the right anterior chest wall (anterior axillary line) of 6 months' duration. The clinical impression was lipoma. Ultrasound showed a well-defined subcutaneous cystic lesion infiltrating pectoralis major. Fine-needle aspiration cytology indicates benign cyst contents. Complete surgical excision under general anesthesia revealed a fibrous mass with muscle involvement. Histopathology confirmed hydatid cyst featuring an acellular laminated membrane containing "scoleces" with hooklets and brood capsules.
Conclusion: Chest wall CE evades early detection due to its rarity and absence of classic risk factors, even in endemic urban settings. Routine histopathologic examination of excised cystic lesions is essential to avoid missing CE, thus enabling timely antiparasitic therapy and preventing recurrence.

Keywords: Cystic *Echinococcosis*, *Echinococcus granulosus,* Anterior chest swelling, Case report

Introduction

Cystic *echinococcosis* (CE), caused by *Echinococcus granulosus* metacestodes, is a neglected zoonotic disease endemic to pastoral regions, including sub-Saharan Africa.[1,2] Globally, it affects over 1 million people yearly, causing approximately 19,300 deaths; hyperendemic areas exceed 50 per 100,000 person-years. In Nigeria, data are sparse due to underreporting and misdiagnosis, human cases are rare (surgical prevalence 0.000005% in Kano; seropositivity 0.53% in surveys).[3,4]

Cystic *echinococcosis* primarily involves liver (70%) and lungs (20-30%), with musculoskeletal sites in 1-4% and chest wall disease exceptionally rare (<1%), typically from secondary spread rather than primary formation.[5,6,7] Humans are accidental intermediate hosts: eggs from infected dog feces

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hatch in the intestine, releasing oncospheres that disseminate hematogenously to form unilocular hydatid cysts with pericyst, laminated, and germinal layers.[8,9,10] Despite canine prevalence up to 12.45% in Nigeria, primary human chest wall cystic echinococcosis, especially in urban children without pastoral exposure, is undocumented.[7]

Chest wall cystic *echinococcosis* often mimics benign tumors, requiring imaging, serology, surgery, and histopathology for diagnosis.[11]

We report a histopathologically confirmed case of chest wall cystic *echinococcosis* in a young child from Southwestern Nigeria, an unusual presentation with important diagnostic implications.

Case presentation

A 3-year-old boy from Southwestern Nigeria was brought to the Paediatric Surgery Clinic with a painless right anterior chest wall mass along the anterior axillary line, first noticed by his mother 6 weeks earlier during bathing. Two weeks before presentation, a second right axillary mass appeared. The lesions remained static in size, with a bosselated surface, firm consistency, and free mobility. No overlying skin changes, trauma, constitutional symptoms, travel to endemic areas, or canine contact were reported.

On physical examination, a 4 cm × 4 cm subcutaneous mass was confirmed, with associated mobile right axillary lymphadenopathy. The initial clinical impression was lipoma.

Diagnostic workup included soft-tissue ultrasonography, which revealed a well defined, thick walled, oval cystic lesion within the subcutaneous plane along the anterior axillary line, measuring approximately 2.4cm × 1.1cm × 1.8 cm (volume ≈ 2.7 mL). The lesion was anechoic with posterior acoustic enhancement and showed marginal finger like hypoechoic projections arising from the wall. No internal vascularity was detected on Doppler interrogation. The overlying skin, subcutaneous tissue, and underlying musculature appeared preserved. A right axillary lymph node with a preserved fatty hilum and short axis diameter <1 cm was noted. Figure 1 The sonographic features were suggestive of a benign cystic lesion, with differential diagnoses including epidermoid cyst and hydatid cyst. Abdominal ultrasound showed no evidence of hepatic or intra abdominal cystic lesions.

Fine-needle aspiration cytology (FNAC) of the axillary mass yielded 5 mL of clear fluid without complications; cytology showed acellular proteinaceous material without malignant cells (impression: benign, no suspicion of hydatidosis). Chest radiography was normal.

Four weeks after presentation, the patient underwent surgical excision under general anesthesia. This revealed a 4 cm × 2 cm × 1 cm fibrous-walled cystic mass adherent—but not frankly infiltrative—to the pectoralis muscle. The cyst was removed intact without intraoperative rupture or spillage, and the specimen was sent for histopathologic examination.

Histopathology, reported 3 days postoperatively, showed features consistent with hydatid cyst, including brood capsules containing "scoleces" with hooklets, associated calcification and necrotic debris, and surrounding fibrosis with chronic inflammatory infiltrate. The cyst wall comprised an acellular laminated membrane lined by germinal epithelium. (Fig. 2)

Postoperative management included abdominal ultrasonography to evaluate for potential primary hydatid foci (day 10; unremarkable/normal) and albendazole suspension (15 mg/kg/day for 2 weeks). One-month follow-up showed complete wound healing without recurrence; longer-term follow-up was unavailable.

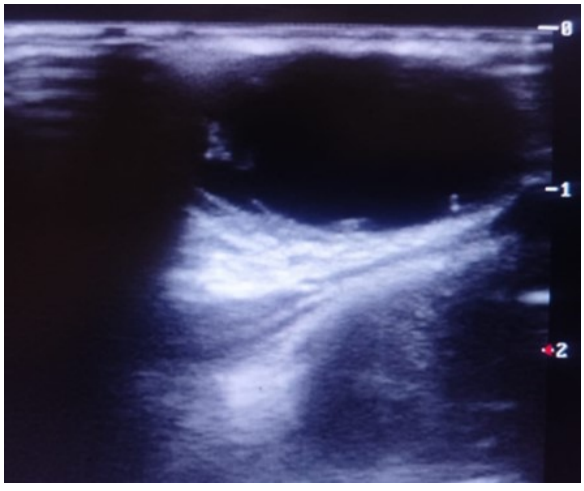


Figure 1: Ultrasound image of the right anterior chest wall showing a well defined anechoic cystic lesion (white arrow) with posterior acoustic enhancement and marginal wall projections.

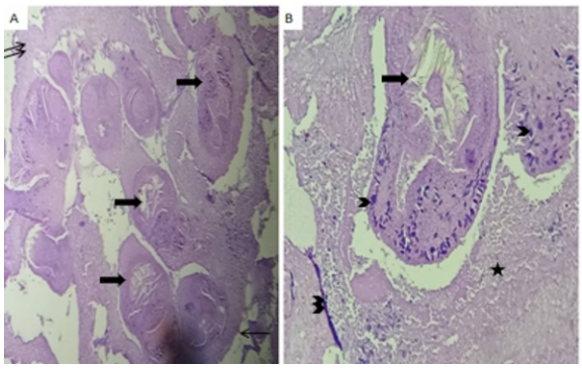


Figure 2: Photomicrographs of hydatid cyst showing brood capsules (thin arrow) containing multiple protoscoleces with hooklets (thick arrows), admixed with calcified "scoleces" (arrowheads), necrotic debris (star), and laminated membrane (double thin arrows: calcified cyst wall (double arrow). H&E stain; (A) ×100 magnification; (B) ×400 magnification

Discussion

Primary anterior chest wall cystic echinococcosis in a 3-year-old is exceptionally rare (<1%), especially without identifiable primaries. Hepatic (70-75%) and pulmonary (15-20%) sites dominate; extrahepatic muscle involvement occurs in 0.5-4%, usually from secondary pleural spread.[13-15]

This urban child from southwestern Nigeria lacked risk factors (no canine exposure, no endemic travel), mimicking lipoma clinically. Ultrasonography and cytology suggested benign cyst, underscoring diagnostic difficulty for painless, mobile chest wall masses.[16,17]

Definitive diagnosis required histopathology, revealing laminated membrane, scoleces, and hooklets. Thus, histopathologic examination remains gold standard when imaging/cytology fail.[18]

Management entailed complete excision without spillage, plus albendazole (15 mg/kg/day × 2 weeks), following WHO-IWGE ultrasound classification guidelines for cystic echinococcosis 1 (CE1) cysts.[19] Chest radiography and abdominal ultrasound excluded other sites, extended monitoring with anti-Echinococcus IgG and periodic imaging is recommended, given the possibility of delayed primary cyst development.[20]

Limitations include short 1-month follow-up, absent serology, and no magnetic resonance imaging (due to costs) preclude definitive "primary cystic *echinococcosis*" claim.

This report underscores high suspicion for cystic echinococcosis in endemic regions, with histopathology as diagnostic cornerstone.[21]

Conclusion

Cystic *echinococcosis* should be considered in the differential diagnosis of painless cystic chest wall masses, even in the absence of a typical exposure history. This case highlights the diagnostic importance of histopathologic examination and clinico-radiologic correlation in rare soft tissue presentations of hydatid disease.

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Conflicts of interest

The authors state that there are no conflicts of interest regarding the publication of this article.

Ethical Approval

The Health Research and Ethics Committee of Afe Babalola University Ado-Ekiti Multisystem Hospital, Ekiti State, Nigeria, approved this study with reference number
AMSH/REC/25/48/096. See Appendix A. The article also maintained confidentiality.

An informed consent for publication was obtained from the child's guardian.

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