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CASE REPORT

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Isolated breast hydatid cyst: A case report

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Key Clinical Message

A hydatid cyst is a parasitic infestation most frequently caused by the larval tapeworm known as *Echinococcus granulosus*. Breast hydatidosis is a very uncommon condition that may be the main site or one of its components in cases of extensive hydatidosis. We discussed a 28-year-old female patient who had been experiencing left breast pain for a year prior to her presentation.

KEYWORDS

breast, hydatid cyst, hydatidosis, sonography

1 | INTRODUCTION

A hydatid cyst is an infestation brought on by a parasite, most commonly the larval tapeworm *Echinococcus granulosus* of the Cestode *Echinococcus* species.[1,2] All continents, including the polar region, temperate, subtropical, and tropical zones, are affected by this disease. In pastoralist communities, human cystic echinococcosis is still a serious problem, particularly in parts of South America (Argentina, Uruguay, Chile), the Mediterranean littoral (Spain, France, Italy), Eastern Europe, the Near and Middle East (Turkey), East Africa (Maghreb countries), Central Asia, China, and Russia.[3] Even in endemic places, breast hydatid illness is relatively uncommon; it may be the primary site or a component of widespread hydatidosis.[4] Hydatid cysts are detected in the liver 60% of the time, the lungs 30% of the time, the kidneys 2.5% of the time, the heart 2.5% of the time, the bone 2%, the spleen 1.5%, the muscle 1%, and the brain.[5] On the other hand, it only makes up 0.27% of instances in the breast.[6] Usually, patients have a painless breast lump that gets bigger over time. Women between the ages of 30 and 50 are most commonly affected. Although people between the ages of 20 and 74 have been noted.[7,8] The majority of patients arrive at the hospital with a palpable, painless lump in their breast. It can be difficult to distinguish it from other breast tumor lesions.[9] A small number of reports have been made, and the bulk of the patients who have been recorded have postoperative diagnoses.[10]

2 | CASE PRESENTATION

We describe a 28-year-old woman who has been experiencing left breast pain for 1 year. The pain worsened over the past 4 months. Associated with this, she had a loss of appetite and weight loss. She had also left breast swelling of the same duration, which progressively increased. Otherwise, she had no fever, abdominal swelling, cough, constipation, change in mentation, yellowish discoloration of the eyes, and skin. She had no previous history of chronic illnesses like cardiac disease and diabetes mellitus.

On physical examination, the vital signs were all in the normal range. On head, ear, eye, nose, and throat examinations, no abnormalities were detected. On lymphoglandular examination, there was a 5 cm by 4 cm firm, mobile, non-tender mass on the left breast's lower outer quadrant (Figure 1). Figure 1: A picture showing a mass on the lower outer quadrant of the left breast (see white arrow). There were no pertinent positive findings on the remaining systems.

She was investigated with blood tests and imaging. On a complete blood count, white blood cells = 6000/μL (range: 4000–11,000), neutrophils = 42% (range: 50%–70%), hemoglobin = 15 gm/dL, and platelets = 160,000. There were no pertinent positive findings on urinalysis and stool examinations. Liver, renal function tests, and serum electrolytes were all in the normal range. Left breast sonographic evaluation reported a lower outer quadrant well-defined breast mass with multiple daughter cysts and a double membrane wall measuring 5.1 cm by 2.8 cm in size (Figure 2). Figure 2: A sonographic image showing multiple daughter cysts (see white arrows).

The index was the left lower outer quadrant breast hydatid cyst. Eventually, with a diagnosis of left breast hydatid cyst, she was put on albendazole 400 mg PO BID for 3 months. The surgical excision of the cyst was done after 3 months of anthelmintic therapy (Figure 3). Figure 3: An intraoperative picture showing an excised hydatid cyst (see white arrow).

FIGURE 1 A picture showing a mass on the lower outer quadrant of the left breast (see white arrow). 81 × 108 mm (300 × 300 DPI).

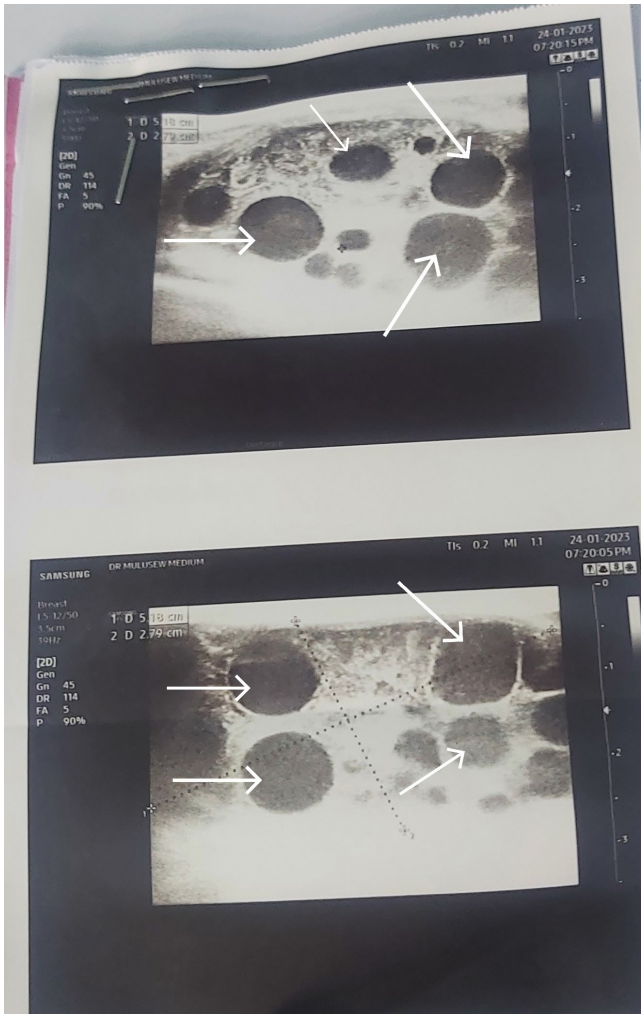

FIGURE 2 A sonographic image showing multiple daughter cysts (see white arrows). 55 × 88 mm (300 × 300 DPI).

3 | DISCUSSION

Hydatid disease is a parasitic illness brought on by the growth of the larval stage of the tapeworm known as *E. granulosus* in the body.[11] It is a member of the Taeniidae family. The disease progresses through two stages: the metacestode larval stage and the adult stage (taenia). Dogs and wild dogs serve as the parasite's definitive hosts, with humans serving as its unintentional intermediate host. Herbivores and omnivores serve as the parasite's intermediate and definitive hosts.[3,12] Hydatid cysts in the active stage have three distinct layers: The pericyst, the host's fibrous response that surrounds the parasite, is the topmost layer. The most recognizable layer is the middle one, the laminated layer (ectocyst), is distinguished by its white hue and rather uniform thickness. The innermost layer, the germinal layer (endocyst), which is visible in liver cysts as a thin and translucent membrane.[13] The adult *E. granulosus* is a worm, and when ingested by definitive hosts, it releases eggs that are excreted in feces. Eggs ingested by intermediate hosts such as cows, sheep, and humans liberate an embryo in the duodenum, which enters the intestinal mucosa and the portal circulation.[14,15] About 15% of embryos develop into cysts in a variety of organs; the liver serves as a first filter and suppresses cyst growth in roughly 75% of cases, and the lungs serve as a second filter and suppress cyst growth in approximately 10% of cases.[11] Although extrahepatic and extrapulmonary hydatidosis can happen, breast involvement on its own is quite uncommon.[16]

Breast hydatid cysts commonly manifest as a gradual, benign painless swelling[17] that can mimic a number of breast conditions observed during pregnancy and breastfeeding, such as galactocele, fibroadenoma, lactating adenoma, cystic mastopathy, phyllodes' tumors, chronic abscesses, and breast cancer.[7,17–19] Skin thickening and axillary lymphadenopathy brought on by the cyst inflammation may resemble mastitis.[20] On the contrary, our case complained of intermittent dull, aching pain, which triggered her to visit our institution. Anatomically, published literature has documented hydatid cysts either on the left breast or on the right one.[12,19,21–23] In our case, the cyst is in the lower outer quadrant of the left breast.

The contact between hosts in a predator–prey relationship results in the transfer of *Echinococcus* species from intermediate to definitive hosts. Intimate dog–human contact, indiscriminate livestock slaughter, and filthy living conditions are all recognized risk factors for human infection.[24] Likewise, our patient came from a rural area where living conditions are substandard and frequent contact with pets is common. She might have acquired the infection through frequent contact with pets and animals.

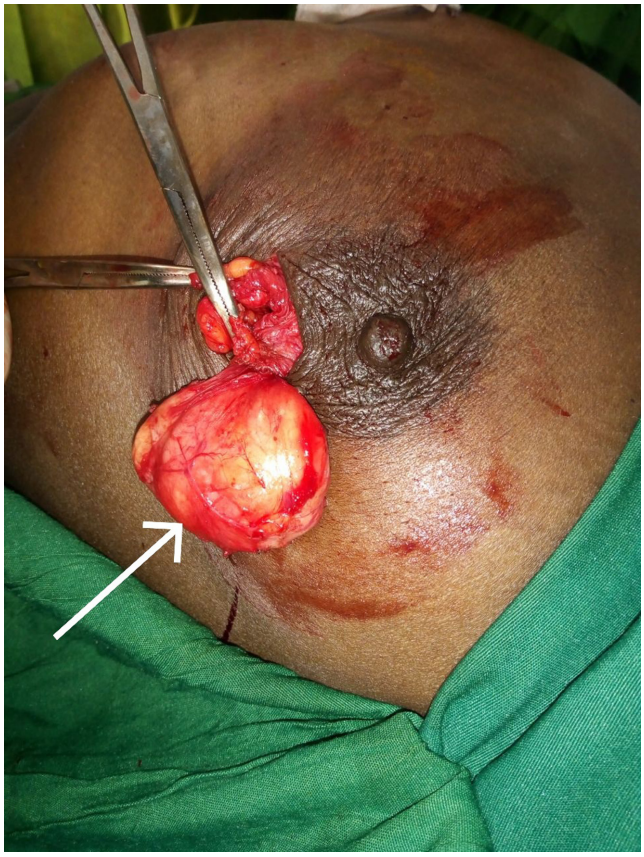

FIGURE 3 An intraoperative picture showing an excised hydatid cyst (see white arrow). 81 × 108 mm (300 × 300 DPI).

There are a number of serological and imaging procedures to diagnose hydatid diseases at various anatomical locations.[25] For liver hydatids, ELISA is 80%–100% sensitive and 88%–96% specific, although it is less sensitive for lung or other organ involvement (55%–56%). Hydatid serology must be positive in order to be useful, and negative results do not rule out the diagnosis.[26] Sonography, mammography, computed tomography, and magnetic resonance imaging are radiological screening techniques for the diagnosis of breast hydatid cysts.[4] The very first diagnostic method for soft tissues, notably the breast, should be ultrasound. Ultrasonography has a sensitivity of 95%, and if vesicular fibrils are present, this sensitivity rises to 100%.[27,28] Depending on the parasite's stage of development, the sonographic findings vary. Hydatid cysts can show as lobulated masses with diverse echo structures or as anechoic unilocular cysts.[20] The "double-wall" sign, in which the cyst wall appears as two echogenic layers, is the most typical sonographic feature of a hydatid cyst.[29] The same holds true for our case. Her ultrasound evaluation has shown the left lower outer quadrant to have well-defined mass with multiple daughter cysts and a double membrane wall.

A hydatid cyst typically appears on mammography as a homogenous, well-circumscribed lump with potential

external or internal calcifications that mimic other benign breast lesions like chronic abscess and phyllodes tumor.[20] A hydatid cyst should be suspected if there are any ring-shaped structures inside the mass. These can be accounted for by the main cyst's internal vesicles' contents and different wall densities.[30] On the basis of fine needle aspiration cytology (FNAC) data, hydatid illness of the breast has previously been diagnosed. The laminated membrane or diagnostic hooklets may be visible on FNAC.[19,30] Prior to any surgical excision, biopsy, or FNAC, the diagnosis of hydatid disease should be ruled out in order to prevent cyst components from leaking and the associated risk of allergy and subsequent hydatidosis.[31]

The diagnosis of a hydatid cyst can be aided by magnetic resonance imaging. The presence of an augmenting capsule and a cyst suggest a hydatid cyst. The appearance of a hydatid cyst is similar to that of any cystic lesion: it is hyperintense on T2-weighted imaging (T2WIs) and hypointense on T1-weighted images (T1WIs). On T2WIs, however, a weak intensity rim, or "rim sign," is more noticeable. On T1WIs and T2WIs, daughter cysts may show as hypo- or isointense in comparison to the mother matrix. Another distinctive imaging characteristic of a hydatid cyst is the "serpent sign" or "snake sign," which shows collapsed membranes of cystic damage or degeneration with low signal intensity with all sequences.[17]

Breast hydatidosis is still treated surgically. It entails the removal of the cyst together with a pericystectomy to prevent its breach, which could serve as a source of reinfestation.[7,32] Nonetheless, 10% of individuals have reported having recurrence cysts after surgery. Hydatid cyst disease recurrence rates may be reduced by albendazole therapy.[33,34] According to one study, individuals who underwent a cystectomy and then received medical care until their *Echinococcus* hemagglutination titers were back to normal.[35] It has been demonstrated that albendazole-based preoperative treatment lowers the likelihood of recurrent illness. It might not, however, stop the spread of the illness to distant locations. Recurrence is often brought on by either insufficient cyst removal or cysts that were not previously recognized.[36] Our case was treated with albendazole for 3 months before excision was done to lessen the possibility of recurrence.

4 | CONCLUSION

Hydatid disease is a parasitic illness brought on by the growth of the larval stage of the tapeworm known as *E. granulosus* in the body. Although extrapulmonary and extrahepatic hydatidosis can occur, breast involvement alone is relatively rare. Hydatid cysts in the breast frequently present as a slow-moving, painless swelling that resembles a number of breast disorders seen during pregnancy and breastfeeding. The diagnosis of hydatid illnesses at diverse anatomical sites can be made using a variety of serological and imaging techniques. Breast hydatidosis is still surgically managed in conjunction with adjunct albendazole therapy.

AUTHOR CONTRIBUTIONS

Telila Mesfin: Data curation; formal analysis; methodology; software; writing – original draft; writing – review and editing. **Biniyam Sahiledengle:** Conceptualization; formal analysis. **Muhammadamin Taha:** Investigation; resources. **Fikadu Nigusu:** Conceptualization; software; supervision. **Kenbon Seyoum:** Conceptualization; software; supervision. **Girma Geta:** Conceptualization; software; supervision. **Neway Ejigu:** Conceptualization; software; supervision. **Demisu Zenbaba:** Conceptualization; software; supervision. **Degefa Gomora:** Conceptualization; software; supervision. **Girma Beressa:** Conceptualization; supervision; validation. **Sisay Dadi:** Conceptualization; data curation. **Elias Ibrahim:** Conceptualization; data curation. **Mesfin Tsegaye:** Conceptualization; data curation. **Getu Kusa:** Supervision; writing – review and editing. **Elias Bezaw:** Supervision; writing – review and editing.

CONFLICT OF INTEREST STATEMENT

The authors declare that they have no conflicts of interest.

DATA AVAILABILITY STATEMENT

Data on the case, clinical information, informed consent form, and images are available for review from the corresponding author upon reasonable request.

CONSENT

Written informed consent was obtained from the patient for the publication of her condition and accompanying images.

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