Radiology & Molecular Imaging

Rad & Mol Image. 2024;1(2):31-34. https://www.radamol.com doi: 10.70087/rami.tui/010211

Case Report

Isolated Hydatid Cyst of the Breast

Memenin İzole Kist Hidatik Hastalığı

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Keywords
breast
hydatid cyst
mammography
ultrasonography

Abstract
The occurrence of primary breast hydatid cysts is exceedingly rare, even in endemic regions, and reported prevalence rates are infrequent. Although classified as a benign condition, it represents a significant health concern caused by the parasitic tapeworm Echinococcus granulosus. Hydatid cyst disease can manifest in various anatomical locations throughout the body, ranging from the head to the extremities. Diagnosis typically involves imaging studies, such as ultrasound, which can reveal the characteristic features of the cyst. Additionally, serological tests may be conducted to detect specific antibodies against Echinococcus. This report aims to present the imaging findings of an exceptionally rare case of an isolated breast hydatid cyst in a 74-year-old female patient.

Anahtar Kelimeler
meme
kist hidatik
mamografi
ultrasonografi

Özet
Primer meme hidatik kistlerinin oluşumu, endemik bölgelerde bile son derece nadirdir ve bildirilen yaygınlık oranları seyrektir. İyi huylu bir durum olarak sınıflandırılmasına rağmen, parazitik tenya Echinococcus granulosus'un neden olduğu önemli bir sağlık sorunudur. Hidatik kist hastalığı, baştan ekstremitelere kadar vücudun çeşitli anatomik yerlerinde ortaya çıkabilir. Tanı genellikle kistin karakteristik özelliklerini ortaya çıkarabilen ultrason gibi görüntüleme çalışmalarını içerir. Ek olarak, ekinokoklara karşı spesifik antikorları tespit etmek için serolojik testler yapılabilir. Bu vaka sunumunda, 74 yaşında bir kadın hastada son derece nadir görülen izole meme hidatik kistinin görüntüleme bulguları sunulmuştur.

Introduction

Echinococcosis is a parasitic disease that predominantly affects the liver and lungs (1). However, it can also manifest in other organs, with a prevalence of 2.5% in the kidneys, 2.5% in the heart and pericardium, 2% in the bones, 1.5% in the spleen, 1% in the muscles, and 0.5% in the brain (2). Primary involvement of the breast in echinococcosis is exceedingly rare, even in endemic regions, with a reported prevalence of only 0.27% (3). Patients typically present to healthcare facilities with a painless, progressively enlarging palpable mass (3,4). The diagnosis of hydatid disease is based on enzyme-linked immunosorbent assay (ELISA) findings for echinococcus antigens, with positive results observed in approximately 85% of infected individuals. The diagnostic process encompasses a comprehensive medical history, physical examination, imaging techniques, and serological testing (5).

Imaging of hydatid cysts in the breast generally reveals a lesion of variable size with sharply defined contours that is not adherent to the surrounding breast tissue. These cysts may present as dynamic, solid, or mobile nodules and can occasionally exhibit calcification. If the cyst remains intact, it typically does not provoke inflammatory responses or lymphadenopathy. In approximately 5% of cases, the cyst may become infected, presenting as poorly defined and pseudo-tumoral, which can mimic an abscess or a malignant tumor (6). The recommended treatment for hydatid cysts in the breast is total cystectomy. The significance of primary breast involvement lies in its potential to be misdiagnosed as malignancy (6).

In the current study, we aim to present a case of an isolated hydatid cyst located in the breast, which may be misdiagnosed as other types of breast masses.

How to Cite: Ünal S, Özkayruk Eliyatkın N, Yılmaz Bozok Y. Isolated hydatid cyst of the breast. Rad & Mol Image. 2024;1(2):31-34. doi: 10.70087/rami.tui/010211

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Received: 2024-07-19
Accepted: 2024-08-23
Published: 2024-08-31

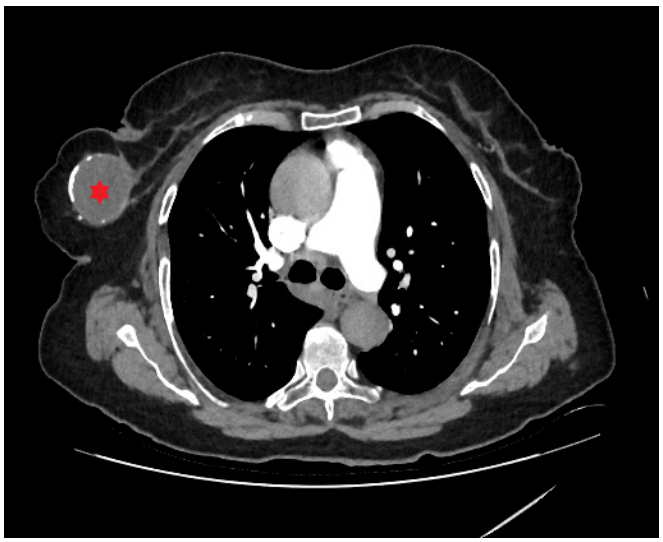

Figure 1: A well-circumscribed hypodense mass lesion with wall calcification located in the upper outer quadrant of the right breast, as observed on thoracic computed tomography (red star).

Case Report

A seventy-four-year-old female patient presented to the emergency department with complaints of dyspnea. Upon examination, a painless, mobile mass measuring 3 cm in diameter was identified in the upper outer quadrant of the right breast. This mass exhibited well-defined borders and a soft consistency. The integrity of the adjacent skin was preserved, and there were no signs of mastalgia or local inflammation in the right breast. Furthermore, there was no evidence of axillary or supraclavicular lymphadenopathy, nor was there any nipple discharge. Laboratory analysis revealed hypercalcemia.

A thoracic computed tomography (CT) scan conducted in the emergency department confirmed the presence of a mass in the right breast (Figure 1). Following this, mammography and breast ultrasound (USG) were performed for further assessment. The results of the mammography indicated a lesion characterized by calcified, well-defined heterogeneous opacity located in the upper outer quadrant of the right breast (Figure 2). The sonographic examination identified a mass lesion exhibiting a well-circumscribed heterogeneous echo, composed of intertwined echogenic and hypoechoic rings with calcified walls (Figure 3). The classification system established by the World Health Organization (WHO) guidelines is the current standard for hydatid cyst classification. In this instance, the lesion was classified as CE5 according to the WHO classification system, due to the presence of thin-wall calcification and a heterogeneous solid appearance on USG. It was categorized as Breast Imaging Reporting and Data System (BI-RADS) category 2.

In non-mammary organs, hydatid cysts were not identified. A tru-cut biopsy was performed on the mass, which had been radiologically assessed as a hydatid cyst due to its composition of necrotic scolices and the absence of anaphylactic risk. The procedure was completed without complications. The pathology report revealed the presence of an acellular lamellar cuticular membrane, consistent with the typical characteristics of a hydatid cyst (Figure 4).

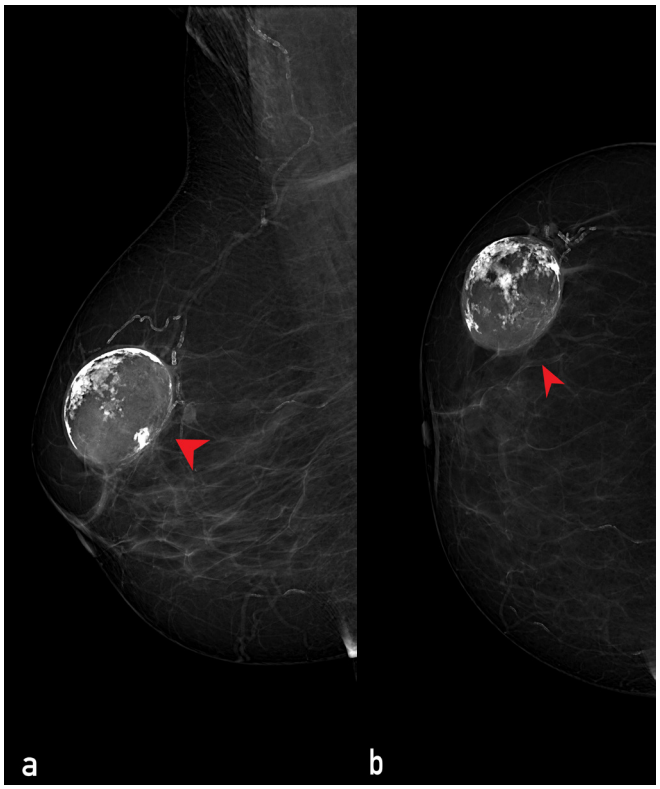

Figure 2: The mammographic findings in the right breast, particularly in the upper outer quadrant, are presented. **(a)** The mediolateral oblique (MLO) view and **(b)** the craniocaudal (CC) view illustrate an opacity lesion characterized by calcifications. This lesion is well-circumscribed and is indicated by arrowheads.

Discussion

The first documented case of hydatid cysts in the breast was reported by Haen in 1770 (7). Mammary hydatid cysts are generally regarded as primary in origin and disseminate to the breast via the bloodstream. In rare cases, they may also reach the breast through the bile ducts, which can occur as a result of trauma or surgical procedures involving the liver or

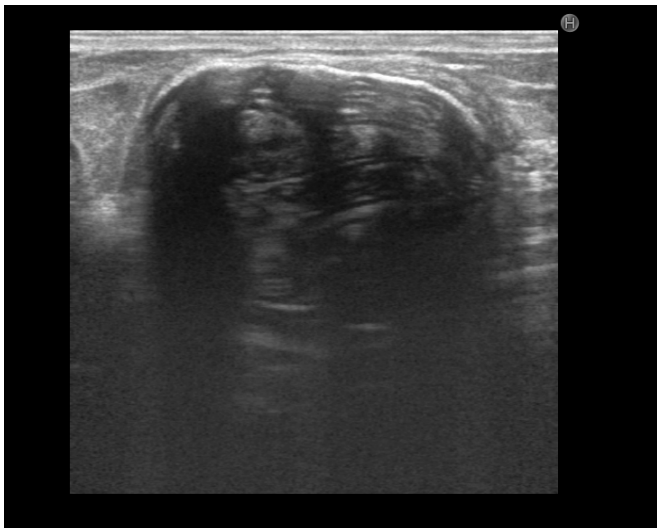

Figure 3: An ultrasound examination has identified a mass lesion characterized by a posterior shadow, which is likely due to calcification. The lesion displays a heterogeneous internal structure, featuring hypoechoic formations organized in circular lamellae, situated in the upper outer quadrant of the right breast.

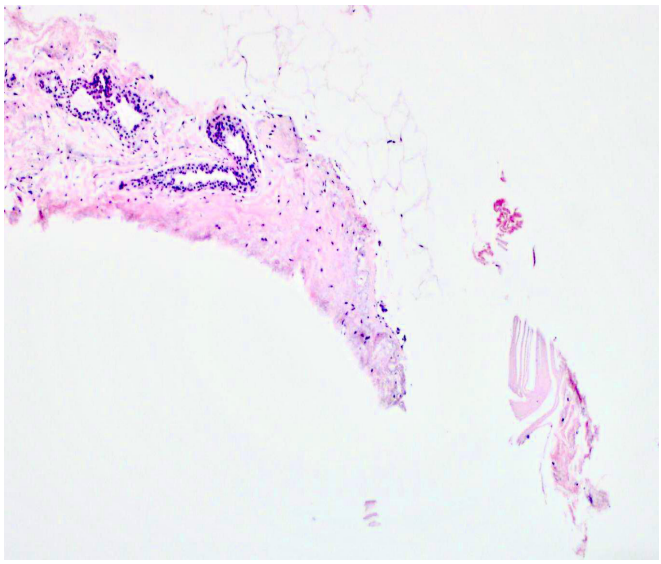

Figure 4: The histological examination of a hydatid cyst reveals the presence of an acellular lamellar cuticular membrane structure located adjacent to the breast tissue (H&E x 100).

other organs.

Hydatid cysts of the breast are predominantly diagnosed through postoperative pathological examination, as the radiological findings associated with this condition lack specificity (8). The main laboratory techniques employed to confirm diagnoses include serological tests such as agglutination methods, immunoelectrophoresis, skin tests, and ELISA (9). Additional serological assessments include the Casoni skin test, complement fixation (Weinberg) test, indirect hemagglutination (IHA) test, and Western blot (WB) test. While positive serological results provide valuable information, negative results do not definitively exclude the presence of hydatid cysts. These serological evaluations are particularly important during patient follow-up (10).

Imaging modalities generally demonstrate greater sensitivity than serological tests; therefore, USG, which reveals characteristic features of echinococcal cysts, or CT scans are recommended in cases where serological findings are negative. Upon identifying echinococcal disease, a comprehensive systemic examination should be conducted to assess the potential involvement of other organs, particularly the liver and lungs (11,12). The diagnosis of breast echinococcosis is often complicated by its frequent misidentification with other commonly encountered breast pathologies, such as benign cysts, chronic abscesses, fibroadenomas, phyllodes tumors, and even carcinomas, especially in older women. This diagnostic challenge is further exacerbated by the absence of specific precursors for the disease in its rare presentations and evaluations (13). USG is particularly preferred due to its ability to visualize floating membranes in entirely cystic lesions, as well as its effectiveness in identifying daughter cysts and vesicles. Furthermore, USG is superior in demonstrating pathognomonic features, such as hydatid sand (13).

The initial classification of hydatid cysts was established by Gharbi, who categorized them into five types primarily based on their USG characteristics (13). Subsequently, the World Health Organization (WHO) developed its own classification system. Both classification systems aim to guide the clinical management of hydatid cysts; however, the WHO system is more widely utilized on an international scale and provides greater detail, while the Gharbi system is predominantly employed in the regions where it was originally formulated (14). In the case presented, the cyst was classified as Type V according to the Gharbi system and as CE5 according to the WHO classification, with the USG findings consistent with the existing literature.

Mammography is capable of identifying well-defined lesions characterized by round-shaped structures within the mass (3). The ring-shaped structures observed within the lesion have previously been recognized as an unreported mammographic finding. This phenomenon may be attributed to variations in the density of the walls and the contents of the daughter cysts within a fluid-filled hydatid cyst. When a secondary infection occurs, differentiating between an echinococcal cyst and a breast abscess via mammography becomes challenging. In this case, mammography revealed typical rim-type calcification, suggesting the presence of a hydatid cyst. However, it is essential to acknowledge that similar rim-type calcified lesions can also be observed in the breast, and no definitive diagnostic conclusions were established (3).

Magnetic Resonance Imaging (MRI) is not definitive for diagnosing hydatid cysts; however, it can provide valuable diagnostic information (15). Hydatid cysts typically exhibit hypointensity on T1-weighted images, similar to other cystic lesions, and hyperintensity on T2-weighted images. A distinguishing characteristic of hydatid cysts is the consistently low signal intensity observed across all imaging sequences, as well as the presence of collapsed membranes (15). In the case under discussion, MRI was not performed.

Based on the USG and mammography findings, as well as the lamellar appearance and wall calcification of the cyst, we proceeded with a tru-cut biopsy due to the suspicion of a hydatid cyst. The use of fine needle aspiration biopsy (FNAB) in diagnosing echinococcal disease remains a contentious issue. It is generally discouraged because of the potential risk of inducing acute anaphylaxis or the dissemination of daughter cysts. Although this risk has garnered considerable attention in the literature, numerous studies indicate that FNAB is a cytologically safe procedure for diagnosing hydatid disease, with minimal associated complications. To date, only one case has been reported in which a cervical echinococcal cyst resulted in anaphylactic shock during FNAB. While occurrences of allergic reactions are infrequent, it is crucial to implement appropriate immediate measures to manage such events (16). In the current case, the initial diagnosis was established through USG imaging. However, considering the patient's preference against surgical intervention and the classification of the cyst as CE5 inactive, we opted to perform a biopsy to confirm the diagnosis.

Surgical excision of a cyst is regarded as the primary treatment for hydatid disease of the breast. In cases of cystic hydatid disease, the primary goal of radical treatment is to minimize recurrence rates and to prevent the need for unnecessary pharmacological interventions (2,10). Given the patient's expressed desire to avoid surgical intervention, no surgical procedure was planned.

Conclusion

Hydatid disease of the breast is a rare condition. Although it does not exhibit distinctive features and may mimic other mass lesions of the breast in imaging studies, it demonstrates specific diagnostic characteristics when evaluated through USG.

Ethical Approval and Consent: Written consent was obtained from the patient for the presentation.

Funding: The authors state that this study has not received any funding.

Conflict of Interest: The authors have no conflict of interest to declare.

Authors' Contributions: Project Administration: S.U.; Data Collection: S.U., N.O.E.;Literature Searching: S.U.; Data Analysis: S.U., Y.Y.B.; Methodology: S.U.; Writing: S.U.; Study Design: S.U.; Review and Editing: S.U., N.O.E., Y.Y.B.

Acknowledgments: None

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