Radiologic Diagnosis / *Radyolojik Tanı*

DOI: 10.5578/ced.20240109 • *J Pediatr Inf 2024;18(1):e45-e47*

Bölüm Editörü: Prof. Dr. Mithat Haliloğlu

What is Your Radiologic Diagnosis?

Radyolojik Tanınız Nedir?

Mert Göl(İD), Adalet Elçin Yıldız(İD)

Department of Radiology, Hacettepe University Faculty of Medicine, Ankara, Türkiye

Cite this article as: Göl M, Yıldız AE. What is your radiologic diagnosis? J Pediatr Inf 2024;18(1):e45-e47.

An eight-year-old girl was admitted to the pediatric emergency outpatient clinic of our hospital with the complaint of swelling in her left leg for 15 days. She had pain in the left calf while she was walking and touching, and her complaints had increased in the last two days. The patient had no known history of internal disease and trauma. On physical examination, there was an increase in diameter and temperature in the left leg compared to the right leg. Meanwhile, erythrocyte sedimentation rate (ESR) was 34 mm/h and increased (reference value= 0-20). Body temperature was normal.

The left calf MRI, which was performed outside center, was re-evaluated by our radiology department. Accordingly, an abscess measuring 8.6 x 4.7 x 3.4 cm in size, with lobulated contour and intense contrast enhancement of the lesion wall was observed in the anterior-anterolateral and deep muscle compartments of the proximal calf. Linear low intensity structures were seen within the abscess. There were findings of cellulitis-fasciitis in the subcutaneous connective tissue and fascia around the abscess (Figure 1).

Abdominal ultrasonography showed a lesion compatible with type 5 hydatid cyst in the liver. There was no abnormality on chest radiography.

The patient was admitted to the infectious diseases department with a prediagnosis of soft tissue abscess. During hospitalization, two drainage catheters were inserted by the interventional radiology department after percutaneous aspiration of purulent material from the collection. During hospitalization, she was treated with vancomycin for 28 days, albendazole for 20 days and ceftriaxone for seven days.

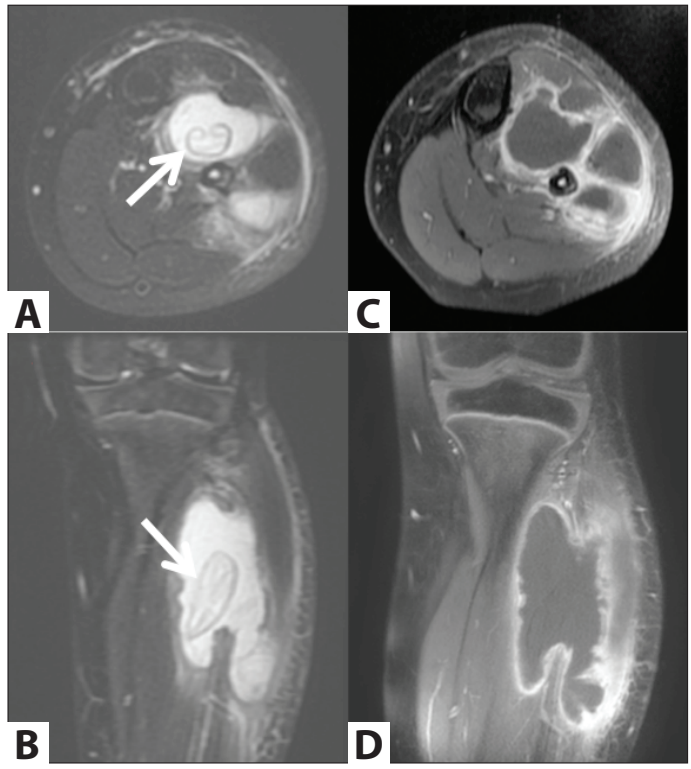

Figure 1. Axial **(A)** and coronal **(B)** fat-suppressed T2W images show a cystic lesion within the anterior-anterolateral and deep posterior muscle compartments with a thin hypointense wall and linear hypointense spiral structures (white arrows) of detached germinative membrane in the lumen. Axial **(C)** and coronal **(D)** post-contrast fat-suppressed T1W images show contrast enhancement of the lesion wall (consistent with abscess) and surrounding muscles, fascia and subcutaneous connective tissue (consistent with cellulitis and fasciitis).

Correspondence Address/Yazışma Adresi

Mert Göl

Department of Radiology,
Hacettepe University Faculty of Medicine,
Ankara, Türkiye

E-mail: mertgol05@gmail.com

Received: 02.02.2024 **Accepted:** 13.02.2024 **Available Online Date:** 19.03.2024

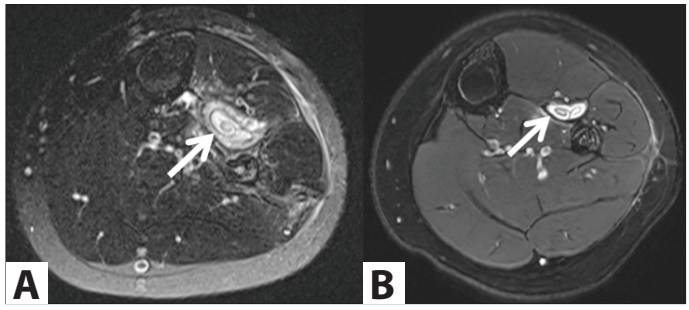

Figure 2. Axial T2W fat-suppressed images of follow-up MRIs after percutaneous drainage show that the lesion has shrunk in size and its peripheral edema has decreased at one-week follow-up **(A)**. At the third month **(B)**, the lesion has further decreased in size and the peripheral edema has largely regressed. The shrinkage of the lesion at follow-up and the hypointense linear spiral structures of the detached germinative membrane (white arrows) are consistent with the degeneration process of the cyst.

Microbiologic examination of the drainage fluid showed no Echinococcus scolexis and no growth in cultures.

During hospitalization, a control left calf MRI was performed one week after drainage. Accordingly, two draining catheters were inserted into the collection compatible with abscess in the anterior, anterolateral and deep posterior muscle compartments in the proximal left calf and shown that it was mostly drained (45 mm maximum size) compared to the previous examination. Within the collection, linear hypointense spiral shaped structures that may represent a separated germinative membrane were seen. Cellulitis and fasciitis were observed again (Figure 2A).

The patient was discharged on the 28th day of hospitalization. A follow-up magnetic resonance imaging (MRI) of the left calf performed in the third month showed further shrinkage of the collection. The draining catheters were removed. Linear hypointense spiral structure which may represent the detached germinative membrane in the collection was observed again. Cellulitis and fasciitis had disappeared (Figure 2B).

DIAGNOSIS: Infected muscle hydatid cyst

Short discussion:

Hydatid cyst (HC) disease is a parasitic disease that is endemic in many parts of the world including Türkiye and is mostly caused by *Echinococcus granulosus*. It can occur almost anywhere in the body and shows variable imaging features depending on the growth stage, associated complications and affected tissue (1). Although HC can be seen in all organs in the body, intramuscular hydatid cysts constitute less than 3% of cases. The main reason for this is that the contractile structure and high lactic acid content of muscles are unsuitable for implantation of the parasite (2). Thoracic wall muscles and pectoralis major, sartorius, psoas, quadriceps and gluteus muscles are the most commonly involved muscles. Among these, intramuscular hydatid cyst is most commonly reported in the psoas muscle (3). Diagnostic radiologic imaging usually starts with ultrasonography (US) (2). According to the 2001 hydatid cyst classification of the World Health Organization (WHO), which is based on US findings and defines the activity of the disease better than the Gharbi classification; cystic lesion (CL), uniloculated cyst with anechoic content and no clearly visible wall; CE1, uniloculated cyst with anechoic and well-visible wall; CE2, multivesicular, multiseptated cyst with a well-visible wall; CE3, uniloculated cyst with a separated germinative membrane (CE3a) or multivesicular cyst with a semi-solid echogenic component (CE3b); CE4, heterogeneous hypoechoic pseudo-solid cyst without a daughter cyst component; CE5, partially or completely calcified cyst. Accordingly, CE1 and CE2 define the active disease stage, CE3 represents the transitional stage and CE4 and CE5 define the inactive disease stage (4). Magnetic resonance imaging is more sensitive and specific for the diagnosis of HC. Multivesicular lesions are the most commonly reported characteristic imaging finding. However, unlike other organ involvement, uniloculated cyst surrounded by hypointense pericyst observed on T2-weighted sequence in muscle involvement is also a diagnostic finding (2). When imaging findings are non-specific, they may mimic necrotic masses or abscess (5). Although non-specific, hypereosinophilia is positive in only 25% of cases. Serologic examinations provide positive information in only half of primary intramuscular hydatid cysts (6). A negative serology result does not exclude the diagnosis of HC. Fine needle aspiration can also be used as a first-line diagnostic finding in the diagnosis of hydatid cysts, but its role is controversial because of the risk of anaphylaxis and dissemination (7). Although secondary infection has been described especially in liver and lung hydatid cysts in which wall integrity is disrupted and fistulization with bile ducts or bronchial structures is observed, intramuscular hydatid cysts may also be infected via blood circulation when pericyst and endocyst integrity is disrupted. The cystic lesion in our case was consistent with WHO-CE3a stage due to its detached germinative membrane. However, since it was complicated with secondary infection, it mimicked a soft tissue abscess with its clinical and laboratory findings as well as radiologic imaging features (6).

While total pericystectomy and subtotal pericystectomy are surgical treatment methods, percutaneous treatment with imaging guidance (PAIR or catheterization techniques) constitutes the non-invasive treatment option (2). Surgical treatment offers the best hope for permanent cure and should include excision of the primary lesion, daughter cysts and interconnected fistulas as a whole. However, the spread of the cyst to different muscle layers through fistulas involving different muscle groups may make complete excision difficult and may cause seeding and recurrence of daughter cysts. In this case, percutaneous treatment, as in our patient, offers a

less invasive treatment option. Concurrent drug treatment with antihelminthics such as albendazole or praziquantel reduces the risk of secondary echinococcosis and recurrence (8).

References

1. *Polat P, Kantarci M, Alper F, Suma S, Koruyucu MB, Okur A. Hydatid disease from head to toe. Radiographics 2003;23:475-94. https://doi.org/10.1148/rg.232025704*
2. *Shrestha A, Shrestha AK, Deo A, Sharma GR. Intramuscular hydatid cyst of paraspinal muscle: A diagnostic challenge. Clin Case Rep 2023;11:e8105. https://doi.org/10.1002/ccr3.8105*
3. *Şimşek S, Hattapoğlu S. Intramuscular hydatid cyst in the lower extremity: Report of three cases. Rev Soc Bras Med Trop 2021;54:e02552021. https://doi.org/10.1590/0037-8682-0255-2021*
4. *WHO Informal Working Group. International classification of ultrasound images in cystic echinococcosis for application in clinical and field epidemiological settings. Acta Trop 2003;85:253-61. https://doi.org/10.1016/S0001-706X(02)00223-1*
5. *Gougoulias NE, Varitimidis SE, Bargiotas KA, Dovas TN, Karydakis G, Dailiana ZH. Skeletal muscle hydatid cysts presenting as soft tissue masses. Hippokratia 2010;14:126-30.*
6. *Zairi M, Boussetta R, Msakni A, Sahraoui G, Mohseni AA, Nessib MN. Infected primary hydatid cyst of the right lumbar paraspinal muscles: A rare case in a ten-year-old child. Int J Surg Case Rep 2021;89:106570. https://doi.org/10.1016/j.ijscr.2021.106570*
7. *Siraj S, Nijrabi MM, Hakimi A, Zaki A, Hares R. Primary intramuscular thigh hydatid cyst: A case report. Int J Surg Case Rep 2023;109:108589. https://doi.org/10.1016/j.ijscr.2023.108589*
8. *Bharati S, Pal M. Primary hydatid cyst in gastrocnemius muscle. Niger J Surg 2012;18:19-21. https://doi.org/10.4103/1117-6806.95479*