



BEYOND BORDERS: NAVIGATING RARE REALMS – UNRAVELING HYDATID DISEASE IN UNCHARTED TERRITORIES

Radiology

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ABSTRACT

Introduction: Hydatid disease, endemic in Mediterranean countries, primarily affects the liver, but can manifest in diverse organs. Non-hepatic and non-pulmonary cysts often pose diagnostic challenges. This study examines patients with hydatid cysts in atypical locations. **Methods and Results:** From May 2021 to October 2025, our center treated 200 echinococcosis patients, among whom 10 cases with hydatid disease in uncommon sites were retrospectively reviewed. The distribution of unusual cyst locations and their clinical implications are discussed. **Conclusion:** Extrahepatic abdominal hydatid lesions share nearly identical imaging features, including cyst wall calcification, daughter cysts and membrane detachment. A more accurate diagnosis is achieved by combining radiologic and serologic tests, particularly in individuals living in endemic areas. Despite their rarity, a comprehensive grasp of the diverse radiologic findings in these uncommon sites proves beneficial for enhancing diagnostic precision.

KEYWORDS

Parasitic Infection, Hydatid Disease, Surgery

INTRODUCTION

Hydatid disease (HD) is chronic parasitic infection caused by the larval stage of the *Taenia Echinococcus* parasite. Hydatidosis is widespread Zoonoses in the world with significant socio-economic repercussions and ramifications [1]. It is considered an endemic condition in regions such as the Middle East, Africa, Australia, Turkey, India and parts of Southern Europe. The definitive hosts of the parasite are dogs whereas humans inadvertently become intermediate hosts by ingesting *Taenia* eggs. *Echinococcus Granulosus* infestation in humans predominantly affects the liver (55–70%) followed by the lungs (18–35%) [2]. although less common, hydatid cysts can occur in unusual sites, constituting around 8–10% of reported cases in the literature [2]. These uncommon locations include the spleen, kidney, peritoneal cavity, skin, and muscles which incidence is about 2% each and in rarer instances, the incidence of HD is about 1% each including the heart, brain, vertebral column, ovaries, pancreas, gallbladder, thyroid gland, breast, and bones [2]. In India highest prevalence is seen in regions like Gujarat, Andhra Pradesh and Tamil Nadu [3]. The disease is transmitted through the feco-oral route when humans accidentally ingest parasite eggs, which then hatch in their bowels and circulate to various body parts. The clinical features are variable and are mainly dependent on the organ involved.

The early diagnosis and prompt treatment are few of the challenges faced during this study. Treatment of hydatid cysts has to be considered mandatory in symptomatic Cysts and recommended in viable cysts because Of the risk of severe complications [4]. The modern Treatment of hydatid cysts varies from surgical Intervention to percutaneous drainage or medical Therapy [5]. Surgery is still the treatment of choice.

The objective of this study is to unravel the diagnosis of hydatid disease in unconventional sites caused by *Echinococcus Granulosus*, contributing to a better understanding of this aspect.

MATERIALS AND METHODS

This retrospective study, conducted in department of Radiodiagnosis, GMC Chh. Sambhajnagar, delves into patients diagnosed with hydatid disease from May 2021 to October 2025. We reviewed 10

cases of hydatid disease in uncommon locations among 200 echinococcosis patients treated during this period. Data on clinical presentation, imaging findings and treatment outcomes were analyzed. Ethical clearance was obtained for the study. All data used in this study were collected by a principal doctor. Among the subjects under scrutiny, ten cases manifested hydatid disease in atypical anatomical locations, diverging from the conventional extrahepatic and extrapulmonary sites. The imaging modalities utilized for a thorough assessment included Ultrasonography (USG), Computed Tomography (CT), and Magnetic Resonance Imaging (MRI).

RESULTS

Among the 10 patients with hydatid cysts in uncommon sites, distinctive distributions were observed. Rare locations included gluteal, thyroid, submandibular, uterine and spermatic cord cysts. Majority were female 60% and 40% were male. The age of age was 24-85 years. All patients presented with symptoms and diagnostic imaging played a crucial role in confirming the diagnosis (Table 1 summarizes all cases). Surgical management was employed, with total cystectomy being the preferred approach. A CT scan was performed in 10 cases. The treatment course employed was combined with surgical and medical therapy. Complications during the treatment course occurred in 1 case including massive pulmonary embolism and then death. No recurrence was observed.

In all patients, eosinophilia was absent.

On ultrasonography among patients, the finding ranges from simple cyst to Multiple cystic lesions with daughter cyst in involved organ.

On nonenhanced CT image findings ranges from a large, round, high-attenuating calcified mass arising from the posterior wall of uterus. The inner linear hypoaattenuating areas are consistent with detached membranes. Extensive calcification is a marker of a nonviable cyst to well defined cystic lesion with multiple daughter cysts.

In one patients. PD FATSAT coronal and axial MR images shows a large cystic lesion of with multiple daughter cysts in the intermuscular compartment of thigh, suggestive of intramuscular hydatid cyst.

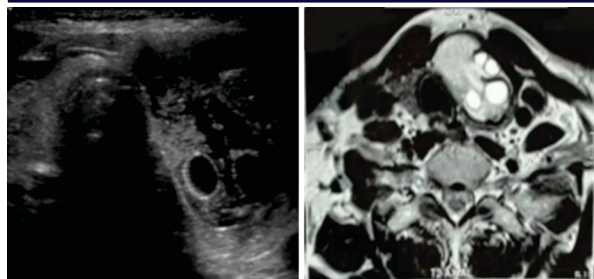


Fig 1: USG & T2W MRI- Shows a well defined cystic lesion with multiple daughter cysts in the left lobe of thyroid



Fig 2: A large multi-loculated lesion in the left anterior para-renal space with wall calcifications along the anterior and inferior aspects of the lesion



Fig 3: Axial nonenhanced CT image shows a large, round, high-attenuating calcified mass arising from the posterior wall of uterus. The inner linear hypoattenuating areas are consistent with detached membranes. Extensive calcification is a marker of a nonviable cyst

Table 1: Location, age and sex, different form of presentations, imaging investigations, management and complications of all the ten unusual cases.

Location	Age & Gender	Clinical feature	Imaging Findings	Surgical management	Complication
Retroperitoneal Hydatid Cyst	55/M	Incidental finding during a sonography examination	A large multi-loculated lesion in the left anterior para-renal space with wall calcifications along the anterior and inferior aspects of the lesion.	Under GA Elective exploratory laparotomy with pericystectomy with drainage of cyst wall done. Hypertonic saline wash given	No
Intramuscular Hydatid cyst	26/M	Swelling	PD FATSAT coronal and axial MR images shows a large cystic lesion with multiple daughter cysts in the intermuscular compartment of thigh	Total cystectomy to remove hydatid cysts involving muscle excision	No
Uterine Hydatid Cyst	36/F	PV bleeding	Axial nonenhanced CT image shows a large, round, high-attenuating calcified mass arising from the posterior wall of uterus. The inner linear hypoattenuating areas are consistent with detached membranes. Extensive calcification is a marker of a nonviable cyst	Total hysterectomy to remove hydatid cysts	No
Thyroid Hydatid cyst	29/M	Swelling in neck region	USG & T2W MRI- Shows a well defined cystic lesion with multiple daughter cysts in the left lobe of thyroid	PAIR- Aspiartaion and installation of scoicoidal agent done	No
Gluteal cyst	71/F	Swelling in the Upper outer area of her right gluteal region	a hydatid cyst in the gluteal region, which had affected the iliac bone, the coxo femoral joint	Total cystectomy to remove both the peritoneal and glu teal hydatid cysts involving muscle excision	Massive pulmonary embolism then death
splenic hydatid cyst	24/F	Incidental finding during a sonogra phy examination	of a well-defined complex cystic lesion measuring approximately 7 × 5 cm at the lower pole of the splenic parenchyma	Splenectomy : A laparotomy reveal ing the presence of a hydatid cyst oc cupying the upper pole of the spleen	No
Spermatic cord cyst	40/M	Discomfort in the right lower quadrant+ A tender mass in the right inguinal region	Inguinoscrotal hernia along with a thin-walled, cystic, anechoic mass	Cystectomy :. Upon exploration, a substantial hydatid cyst was identified protruding from the inguinal canal	No
Submandibular Hydatid cyst	38/F	Swelling in left submandibular region	Usg of swelling-cystic lesion with ring enhancement measuring 4*4cm	PAIR- Aspiartaion and installation of scoicoidal agent done	No
Pelvis hydatid cyst	35/F	Abdomen Pain	10*10 CM pelvic cyst on CT abdomen	Pericystectomy a total hysterectomy with bilateral adnexectomy	No

Peritoneal Hydatid cyst	85/F	Mass per abdomen	CECT abdomen-cystic lesion insinuates into right perihepatic, left subhepatic space and bilateral paracolic gutter measuring 35 *25 cm with small paraumbilical hernia suggestive of peritoneal hydatidosis	Under GA Elective exploratory laparotomy with pericystectomy with drainage of cyst wall done. Hypertonic saline wash given	No
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DISCUSSION

More than 80–90% of hydatid cysts occur in the liver, lungs, or both. However unusual locations of HD have been rarely reported [2]. Furthermore, the diagnosis of hydatid cysts in unusual sites is difficult, and differential diagnosis is always posed [6].

The clinical symptomatology of HD depends on the size, the site, and the extent of the lesion [6]. Extrahepatic hydatid cysts usually remain asymptomatic for years [7]. According to our results all patients presented with symptoms

Radiological imaging plays including MRI, plays a crucial role in diagnosis, particularly in uncommon sites. Our study showed that, despite the usual presenting features, the locations of the cysts were.

Unusual and warranted further investigation into the disease. Radiological studies of such cases also need more emphasis on commonly ignored locations such as pelvic, gluteal, and spermatic cord cysts. Ultrasonography (USG) is the first-line radiological exam, it is useful for the diagnosis by detecting cystic membranes, septa, and hydatid sand [2]. CT scan represents also a routine modality for the diagnosis of HD from another differential diagnosis, and it is useful when suspecting peritoneal seedlings. CT scan findings show a “spoke wheel” pattern a water lily sign, multiple cystic lesions, or calcification in the peritoneum [7].

Hydatid cysts can affect any organ in the body but are often located in the liver and lungs [6, 8]. As per the existing literature, the prevalent sites included the CNS, musculoskeletal system, heart, and kidney. Nevertheless, infrequently documented sites encompass the spleen, pancreas, appendix, thyroid, salivary gland, adrenal gland, breast, and ovary [8].

Spleen localization of the hydatid cyst is uncommon, especially when the parasite primarily infects this organ [9]. This scenario arises in around 2% of instances where the parasite bypasses hepatic and pulmonary filters [10,11]. However, it stands as the most common extrahepatic site for hydatid cysts [12]. Diagnosing splenic hydatid cysts is typically a complex task [10]. Indeed, the symptoms are often unclear, and clinical indicators are not sufficient to establish the diagnosis [12]. Immunological findings and serology can provide valuable assistance in distinguishing between various types of splenic cysts [12]. However, imaging findings, including ultrasound (US), CT scan, and MRI, are more instrumental in confirming the diagnosis of splenic hydatid cysts [12]. Nonetheless, the peritoneal occurrence of hydatid cysts, whether originating directly or as a secondary manifestation, is a rare but noteworthy aspect of the disease, constituting a significant proportion (around 13%) [10]. Pelvic hydatid disease is a rare occurrence, manifesting in approximately 2.25% of cases. However, the incidence of hydatid cysts in the ovary is relatively infrequent, varying between 0.2% and 2.25% [11]. Instances of inguinal canal hydatid disease presenting as inguinal hernia are exceptionally rare, with the literature reporting only five cases [13]. Amongst our patients, only one had inguinal canal involvement.

The management of extrahepatic hydatid cysts is contingent upon their size and location, with total cyst removal being the preferred approach [14]. For smaller cysts, medical treatment involving antihelminthic drugs is recommended, it is also important in preventing recurrence following surgery. In our study, we did indicate it per operatively in all our patients. In the case of splenic hydatid cysts, the management approach is subject to discussion: some advocate for conservative surgical options such as partial splenectomy or cyst drainage [12].

For abdominal wall hydatid disease, treatment entails complete excision, and in some instances, abdominal reconstruction employing prosthetic materials may be performed [12]. This study contributes to the existing literature by highlighting the clinical importance of considering hydatid disease in the differential diagnosis of cystic masses in endemic regions.

CONCLUSION

Extrahepatic abdominal hydatid lesions share nearly identical imaging features, including cyst wall calcification, daughter cysts and membrane detachment. A more accurate diagnosis is achieved by combining radiologic and serologic tests, particularly in individuals living in endemic areas. Despite their rarity, a comprehensive grasp of the diverse radiologic findings in these uncommon sites proves beneficial for enhancing diagnostic precision.

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