CASE REPORT

MATURE CYSTIC TERATOMA MASQUERADING AS HYDROSALPINX: AN IMAGING PITFALL

Hina Pathan, Fatima Qaiser, Aaisha Shafiq, Anam Khan, Gulnaz Shafqat, Shaista Afzal

Department of Radiology, The Aga Khan University Hospital (AKUH), Karachi, Pakistan.

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ABSTRACT

Mature cystic teratomas, or dermoid cysts, are among the most common benign ovarian tumours seen in women of reproductive age. They usually show characteristic imaging findings such as calcifications, fat-fluid levels, or a Rokitansky nodule, which help in making the diagnosis. Occasionally, however, these cysts can appear atypical, with predominantly cystic components that resemble other adnexal pathologies, leading to diagnostic uncertainty. We describe the case of a 24-year-old nulliparous woman who presented with abdominal distension and menorrhagia. Ultrasound and MRI showed a large cystic adnexal lesion with incomplete septations, initially thought to represent hydrosalpinx. Ultrasound-guided aspiration yielded clear fluid, but the lesion recurred, prompting surgical removal. Histopathology confirmed bilateral dermoid cysts, with the right-sided one being mostly cystic. On retrospective review, the MRI showed subtle fat-fluid levels that had been overlooked initially because of the lesion's large size. This case underscores the importance of carefully reviewing fat-suppressed MRI sequences to identify small fat components that may otherwise be missed. Recognizing atypical presentations of dermoid cysts is essential to avoid misdiagnosis, unnecessary procedures, and to provide accurate patient counselling and management.

Introduction

Mature cystic teratomas account for approximately 20-25% of ovarian tumours in women of reproductive age.[1] On ultrasonography, they often show typical features such as calcifications, fat-fluid levels, or an echogenic Rokitansky nodule. Occasionally, these cysts present atypically and lack these characteristic findings, making them difficult to differentiate from other cystic adnexal lesions such as hydrosalpinx, endometrioma, or para-ovarian cysts.

Hydrosalpinx is seen in about 10-13% of infertile women on ultrasound.[2] It is uncommon in post-menarche but sexually inactive adolescents and more frequently encountered in sexually active women.[3,4] In comparison, mature cystic teratomas are slow-growing, benign tumours that can be bilateral in up to 20% of cases.[5,6] We describe a case of a young nulliparous woman with a large, predominantly cystic adnexal mass initially diagnosed as hydrosalpinx on ultrasound and MRI. Surgical excision, however, confirmed a dermoid cyst. This case highlights the importance of carefully evaluating fat-suppressed MRI sequences for subtle fat-fluid levels to avoid misdiagnosis.

Case Presentation

A 24-year-old female presented to the gynaecology clinic with menorrhagia and abdominal distension for a few months. Initial transabdominal ultrasound demonstrated a large cystic lesion extending from the pelvis to the supraumbilical region, measuring approximately 2000 cc in volume. Fine internal echoes and

Correspondence : Dr. Anam Khan
Department of Radiology,
The Aga Khan University Hospital (AKUH),
Karachi, Pakistan.
Email: anam.khan@ aku.edu

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incomplete septations were also noted without any solid component or abnormal vascularity, raising the possibility of an endometriotic cyst or hydrosalpinx (Fig.1). Both ovaries were not separately visualized due to the mass effect and obscuration by this cystic lesion.

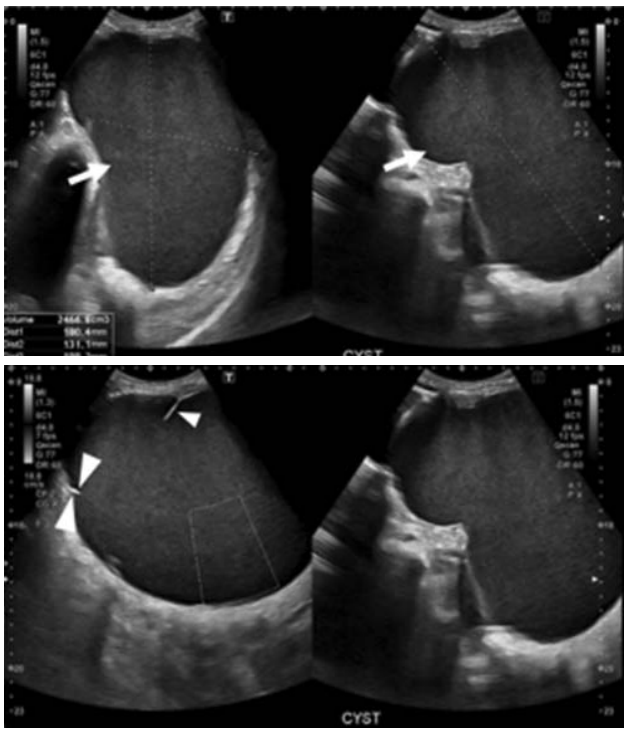

Figure 1: Grayscale ultrasound images showing a cyst with homogeneous internal echoes (arrows) and incomplete internal septations (arrowheads).

MRI revealed a large cystic lesion occupying the right hemipelvis with extension up to the supraumbilical region. Incomplete septations were noted, but no enhancing solid component or T2 shading sign was identified (Fig.2). It measured 205 x 116 x 180 mm (CC x TR x AP dimensions). The right ovary was not separately visualized. These imaging features favoured benign findings such as gross right-sided hydrosalpinx, and the differential of endometrioma suggested on ultrasound was excluded based on its imaging characteristics. The left ovary was of normal size, showing a small dermoid cyst measuring 15 × 11 mm (Fig.3). Tumour markers, including alpha-fetoprotein, beta-hCG, and CA-125, were within normal limits. Given the massive size of the lesion, ultrasound-guided drainage was performed to reduce the risk of rupture and facilitate laparoscopic access. Approximately 2400 ml of clear yellow fluid was aspirated, leaving no residual fluid. The

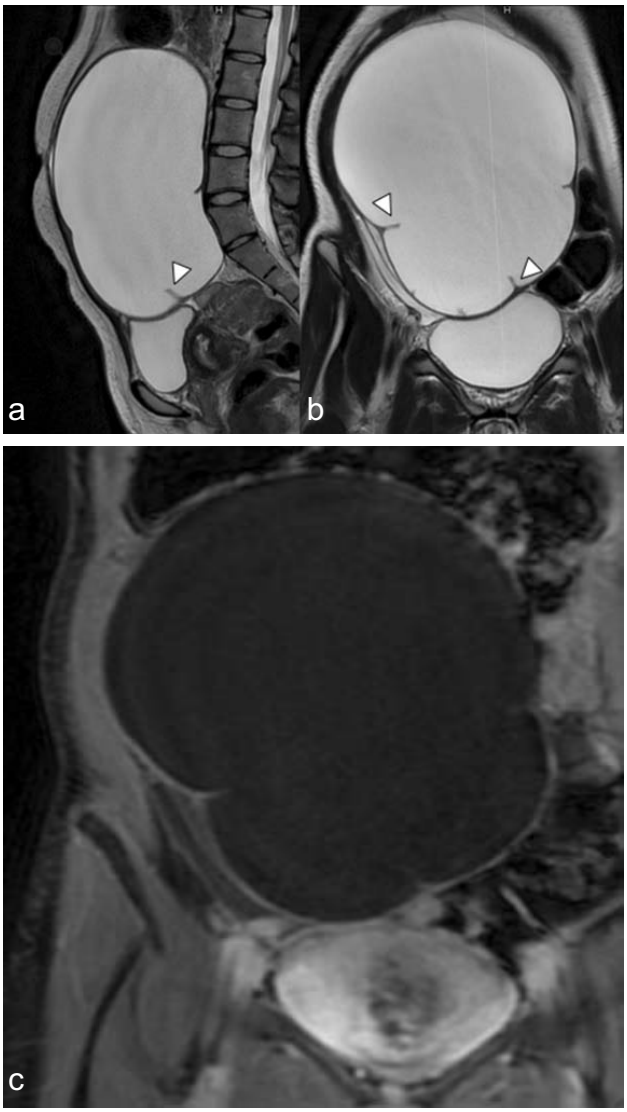

Figure 2a,b: T2-weighted sagittal and coronal MRI show a hyperintense lesion with incomplete internal septations (arrowheads). **c:** T1 fat-sat post-contrast MRI shows hypointense signals without an enhancing solid component.

cytology revealed proteinaceous material but no malignant cells.

The patient presented again after two months with abdominal distension and discomfort. Repeat pelvic ultrasound demonstrated a large right-sided cystic lesion measuring 205 x 116 x 180 mm with an estimated volume of 1337 cc. Surgical excision was performed after multidisciplinary team discussion. Bilateral cystectomy was carried out due to the presence of a contralateral dermoid. Histopathological examination confirmed bilateral ovarian dermoid cysts, with the right-sided lesion showing predominantly cystic morphology.

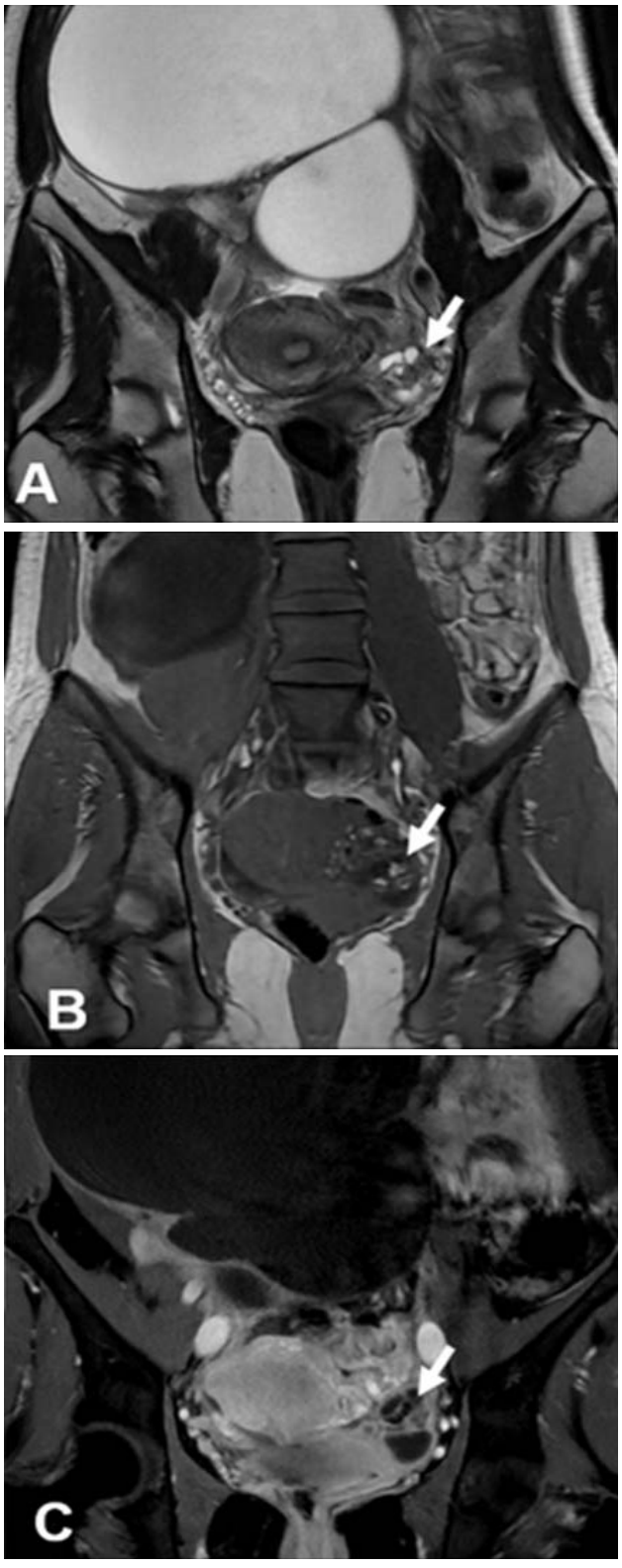

Figure 3a,c: Coronal T2, T1, and T1 fat-suppressed MRI images showing a small left ovarian lesion with hyperintense foci on T1 and T2 and signal drop-out on fat-suppressed sequence (arrow), consistent with a dermoid cyst.

Figure 4a-d: Axial T2, axial T1 fat-suppressed, coronal T1, and post-contrast T1 fat-suppressed MRI images demonstrate a small layering fat component (arrow) located inferior and posterior to the large cystic lesion. The fat shows hyperintense signal on T2 and T1 (a and c) with signal drop-out on fat-suppressed images (b and d).

Discussion

This case illustrates an unusual presentation of a dermoid cyst that, both radiologically and clinically, mimicked a hydrosalpinx. Typically, dermoid cysts contain calcified material, fat, or hair, features that help establish the diagnosis on imaging.[1] In this patient, however, the lesion's predominant cystic component with incomplete septation led to an erroneous impression of hydrosalpinx. Retrospective MRI review revealed a subtle fat-fluid level (Fig.4) that had been overlooked initially. This highlights the importance of meticulous evaluation of fat-suppressed sequences and actively searching for subtle fat components and calcifications, even in lesions that morphologically resemble hydrosalpinx or endometrioma. Recognition of these features can prevent misdiagnosis and guide appropriate preoperative counselling and management.

Atypical dermoid cysts with little to no fat have been described in a few cases, which makes identification more challenging. Despite its high sensitivity, MRI might not reliably distinguish between these variants. Since

recurrence is unavoidable and cytology frequently misses the various tissue types, aspiration is not advised as a diagnostic procedure. In our case, retrospective analysis revealed small fat-laden signals adjacent to the cystic lesion that had been missed due to the lesion's size, highlighting the diagnostic pitfalls.

Only a few cases of misdiagnosed ovarian dermoid cysts are described in the literature.[7] Ryan J. Spencer reported a 14-year-old female with a history of fever and abdominal pain, initially diagnosed as acute appendicitis with a right-sided dermoid cyst, later found to have an infected dermoid cyst rather than acute appendicitis.[8] Another case reported by Versha SS described an ovarian dermoid that was misdiagnosed as intrauterine fetal demise, where bilateral dermoid cysts were interpreted as fetal parts in the adnexa.[9] These reports, along with our case, emphasize that dermoid cysts can present atypically and mimic a range of conditions.

The diagnosis of dermoid cysts can be complicated by their peculiar symptoms, which can cause them to be mistaken for other illnesses. The differential diagnosis can be challenging when a dermoid cyst coexists with other conditions such as ovarian torsion or acute appendicitis. Although ultrasound and MRI remain the primary imaging modalities for evaluation, small lesions or atypical imaging features may occasionally be missed, leading to diagnostic difficulty.

Careful review of imaging, paying particular attention to fat-suppressed sequences, is essential. A thorough evaluation helps ensure an accurate diagnosis and allows clinicians to anticipate possible complications, such as rupture or torsion, guiding appropriate management and reducing the risk of adverse outcomes.

Conclusion

Dermoid cysts may sometimes show atypical imaging features that resemble other adnexal pathologies, such as hydrosalpinx, and can lead to diagnostic confusion. Careful review of MRI, particularly fat-suppressed sequences, is important to identify small amounts of fat or calcification that confirm the diagnosis. Recognizing these unusual appearances helps improve diagnostic accuracy, allows better preoperative counselling, and supports safe surgical planning.

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