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Case Report

Mature cystic teratoma of the fallopian tube diagnosed preoperatively with computed tomography and ultrasound: A case report[☆]

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ABSTRACT

Mature cystic teratoma of the fallopian tube is extremely rare, with fewer than 100 cases reported in the English literature. Clinical symptoms are nonspecific, and the diagnosis is most often made after surgical resection. A preoperative diagnosis has the potential to aid with surgical planning and patient counseling. We present a case of a large completely intratubal mature cystic teratoma in a 40-year-old woman who presented to her primary care provider with the gradual onset of right lower quadrant/pelvic pain. The patient's symptoms prompted evaluation with computed tomography (CT) and ultrasound. Imaging showed a dilated right fallopian tube containing fluid, macroscopic fat, and calcifications, facilitating the preoperative diagnosis of mature cystic teratoma of the fallopian tube. Because of her symptoms, she elected to undergo salpingectomy and the diagnosis was pathologically confirmed. The patient's symptoms resolved following surgery.

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Introduction

Mature cystic teratoma of the fallopian tube is extremely rare, with fewer than 100 cases reported in the English literature [1–3]. Although rare, the diagnosis can be made with a high degree of confidence on imaging when macroscopic fat is identified within the mass. The preoperative diagnosis can aid the gynecologic surgeon in determining the treatment approach and in counseling the patient. We present a case of mature cystic teratoma of the fallopian tube diagnosed preoperatively with computed tomography (CT) and ultrasound.

Case report

A 40-year-old premenopausal, nulligravida woman presented to her primary care provider for a 2-month history of gradual onset, persistent right lower quadrant/pelvic pain, not associated with activity or menses. The patient denied any gastrointestinal or genitourinary symptoms. A pelvic ultrasound performed 6 years prior was reportedly unremarkable.

Because of her symptoms, computed tomography (CT) of the abdomen and pelvis was ordered for further evaluation. CT demonstrated a tubular structure measuring approximately 3

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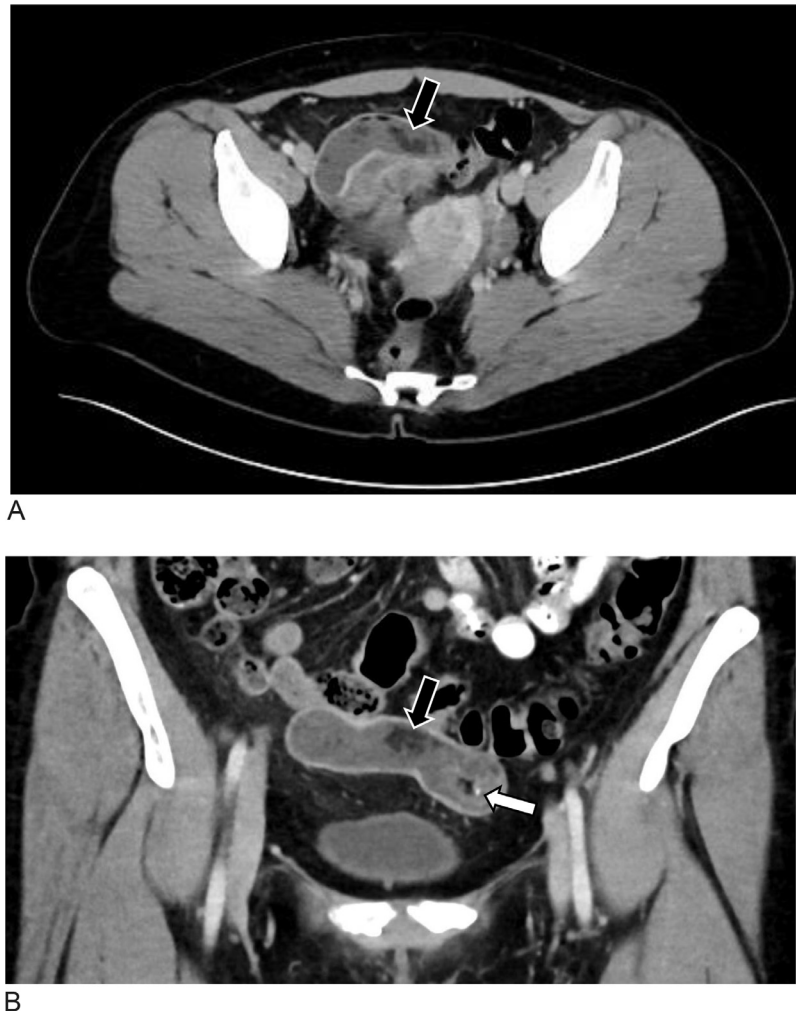


Fig. 1 – Transverse (A) and coronal (B) CT images show a dilated fallopian tube containing macroscopic fat (black arrows) and a punctate calcification (white arrow in Fig. 1B).

cm in diameter in the pelvis anterior to the uterus and adjacent to a normal right ovary. Macroscopic fat, calcifications and fluid were present within the mass (Fig. 1). The left ovary and adnexa (not shown) were normal.

Ultrasound was subsequently performed and demonstrated a serpiginous right adnexal structure measuring approximately 20 cm in length and 2.5 to 3 cm in diameter. The structure contained predominantly echogenic material consistent with macroscopic fat (as seen on the prior CT) and linear echogenic foci suggesting hair (Fig. 2). 3-D ultrasound acquisition shows the dilated fallopian tube (Fig. 3).

The patient underwent laparoscopic surgery and a markedly dilated right fallopian tube was removed. Gross pathology of the hemisected right fallopian tube revealed tan/brown/gray grumous material and hair along with waxy material in the lumen of the dilated fallopian tube (Fig. 4).

Histology of the resected right fallopian tube showed serosal giant cell and histiocytic reaction to lipid material (and possibly keratin debris) with intraluminal keratin debris and

hair shafts consistent with mature cystic teratoma (Fig. 5). There was no evidence of malignancy.

The patient's symptoms resolved following surgery.

Discussion

Mature cystic teratoma consists of well-differentiated tissues from at least 2 of the 3 germ cell layers: ectoderm, mesoderm and endoderm. It is the most common germ cell neoplasm of the ovary, presenting at a mean age of 32 years [4]; however mature cystic teratoma of the fallopian tube is extremely rare. Despite being exceedingly rare, the diagnosis can be made with preoperative imaging when the characteristic feature of macroscopic fat is identified within the mass. The mass may also contain other materials such as hair, calcifications/teeth, bone, or cartilage [4].

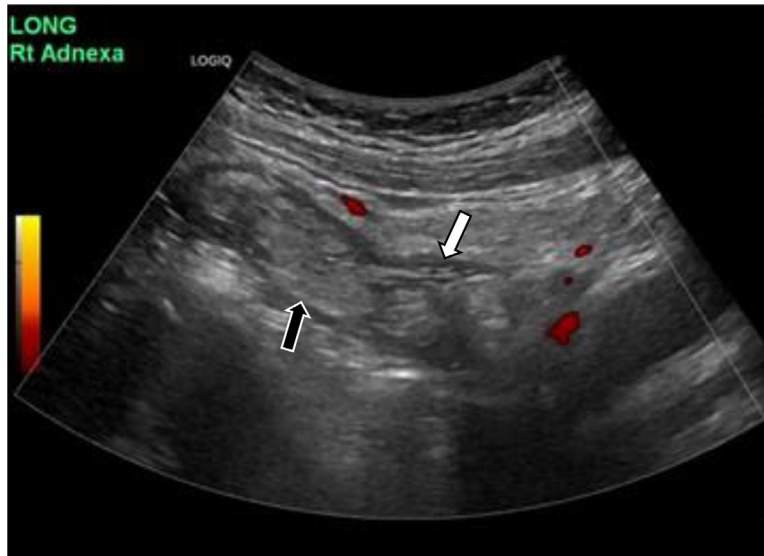


Fig. 2 – Color Doppler ultrasound image shows a dilated fallopian tube containing echogenic material consistent with macroscopic fat (black arrow) and linear echogenic foci suggesting hair (white arrow).

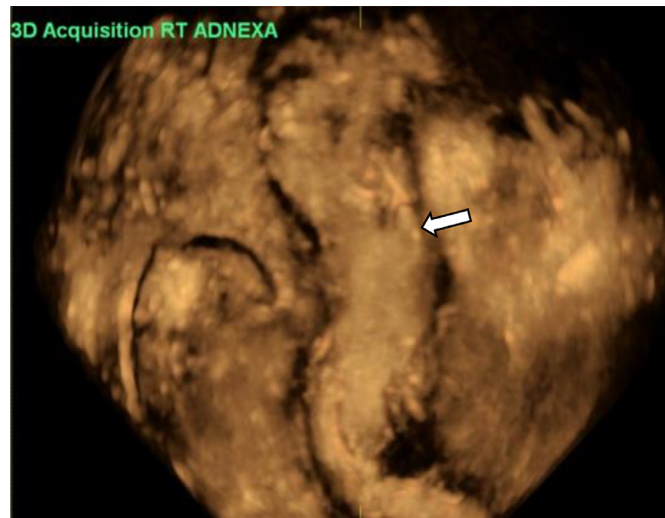


Fig. 3 – Three-D ultrasound acquisition depicts a dilated fallopian tube (white arrow).

Making the diagnosis preoperatively can help the gynecologic surgeon determine the appropriate treatment strategy, including a less invasive surgical approach, and assist in counseling the patient [5,6].

Mature cystic teratoma of the fallopian tube is a benign neoplasm. Malignant transformation (most often to squamous cell carcinoma) is known to occur with low frequency (less than 2%) in ovarian mature cystic teratomas [4,7,8], and it is therefore conceivable that a similar risk applies to mature teratomas of the fallopian tube. There have been a couple of reported cases of carcinoid tumor arising within a fallopian tube mature teratoma [9,10]. Tumor markers such as CA-125 and CA 19-9 are usually normal in the setting of a fallopian

tube mature teratoma, however there has been at least one reported case of a patient who presented with elevated CA 19-9 [11].

Fallopian tube teratoma has also been reported in association with infertility and tubal ectopic pregnancy [12–18]. In 1 case report, a patient presented with a fallopian tube teratoma and elevated β -hCG mimicking an ectopic pregnancy [19].

The paraneoplastic syndrome Anti-N-methyl-d-aspartate receptor (anti-NMDAR) limbic encephalitis has been diagnosed in a couple of patients with fallopian tube teratoma [20,21], and imaging should be performed to evaluate for an adnexal teratoma in the appropriate clinical setting.



Fig. 4 – Hemisected gross pathology specimen demonstrates a markedly dilated right fallopian tube containing tan/brown/gray grumous material, hair, and waxy material.

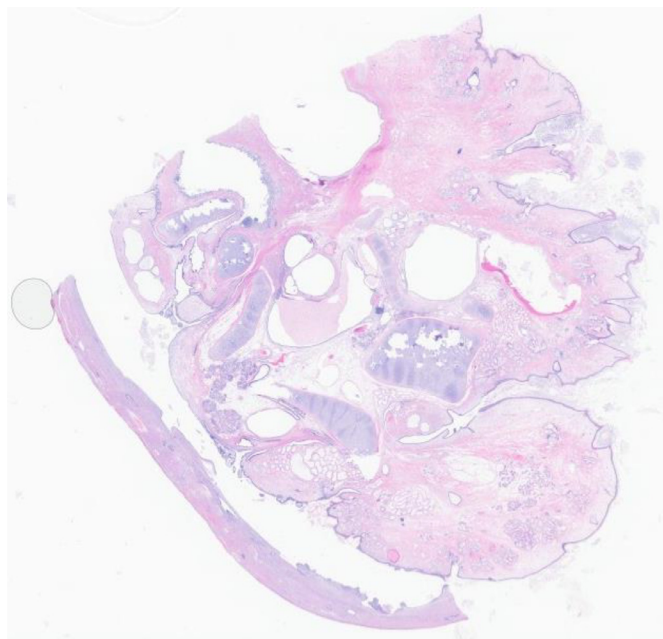


Fig. 5 – H&E stain of the resected fallopian tube demonstrates tissues from several germ cell layers, including adipose tissue, cartilage, keratin, hair shafts and epidermis.

Conclusion

Although rare, mature cystic teratoma of the fallopian tube can be recognized and diagnosed on preoperative imaging when the key finding of macroscopic fat is identified in the mass. This will enable the surgeon and the patient to make informed decisions about the optimal treatment strategy and facilitate the best possible outcomes.

Patient consent

Written informed consent for the publication of this case report was obtained from the patient.

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