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Case Report

MRI characteristics of primary fallopian tube choriocarcinoma: a case report

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ABSTRACT

Tubal choriocarcinoma is uncommon, and its magnetic resonance imaging characteristics have not yet been reported. In this report, a 39-year-old woman presented with irregular painless vaginal bleeding and a palpable left lower abdominal lump for 2 months following 6 weeks' amenorrhea and positive urine pregnancy test. Her serum β -human chorionic gonadotropin value was significantly increased. Ultrasound revealed a left adnexal mass, which showed no blood flow signal on Color doppler flow imaging. A further MR examination showed a well-defined cystic-solid mass with cystic component accounting for a large proportion in the left lower abdomen. The solid part with mixed signals resembled a honeycomb. Finally, the left tubal choriocarcinoma was confirmed by pathology. When the solid parts of cystic-solid mass appeared as "honeycomb appearance" and the ovaries were normal by magnetic resonance imaging, together with typical symptoms and significantly elevated β -human chorionic gonadotropin values, radiologists should feel more confident in suspecting tubal choriocarcinoma and reporting it on their differential.

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Background

Choriocarcinoma is an extremely rare malignancy of gestational trophoblastic disease. Fallopian tube choriocarcinoma accounts for 4% of choriocarcinoma [1]. Due to tubal choriocarcinoma rarity, magnetic resonance imaging (MRI) characteristics have not yet been reported, although previous case reports have discussed clinicopathologic feature, laboratory examination, ultrasonic characteristics, and treatment [1–4].

The present paper intends to deal with a MRI misdiagnosed case of fallopian tube choriocarcinoma with lung metastasis.

Case report

A 39-year-old woman gravida 3 para 1 presented to the Department of Gynecology with irregular painless vaginal bleeding and a palpable left lower abdominal lump for 2

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months following 6-week amenorrhea and positive urine pregnancy test. Her menstrual cycle had been regular, occurring every 28 days. Her past medical history and systemic examination were unremarkable. The patient had undergone 2 drug abortions because of early intrauterine pregnancy before and after a normal vaginal delivery. The second abortion was prior to the current presentation about 10 years but had no histology examination of the specimen.

Gynecological examination

Vaginal examination demonstrated large amount of bloody secretions. The size of uterus was large, similar to 10 weeks of pregnancy. A mass, about 90 mm × 90 mm × 80 mm, in the left lower abdomen was palpated, without abdominal or pelvic tenderness.

Laboratory test

Laboratory test demonstrated that her serum β -human chorionic gonadotropin (β -hCG) level significantly elevated to 7157.97 mIU/mL (normal reference less than 7 mIU/mL). Tumor markers, carcinoembryonic antigen (CEA), CA153, and alfa-fetoprotein (AFP), were within the normal range except CA125, which was 48.5 U/mL (normal reference less than 35 U/mL).

Ultrasound

Ultrasound revealed a normal uterus, a well-circumscribed round cystic-solid mass measuring 126 mm × 109 mm × 82 mm in the left adnexal region (Fig. 1). Color doppler flow imaging showed no blood flow signal inside and around the mass.

Magnetic resonance imaging

Suspected of malignancy, the patient underwent further plain MRI examination; unfortunately, contrast-enhanced MRI scan was not performed. MRI examination revealed a bigger round-like well-defined cystic-solid mass with cystic component accounting for a large proportion in the left lower abdomen,



Fig. 1 – A cystic-solid mass in the left adnexal region detected by ultrasound.

about 72 mm × 113 mm × 80 mm. The cystic component had T1 hypointensity and T2 hyperintensity. The solid part behind the cystic with multiple small cysts resembled a honeycomb, which showed high-low mixed signal intensity on both T1- and T2-weighted images (T1WI and T2WI). The intracystic papillary node revealed slightly higher and equal signals on the T1WI and T2WI, respectively (Figs 2A and B). Axial and coronal T2WI showed the similar left ovary signal below the mass, and the left uterine horn was pulled by the mass to upper left direction (Figs 2C and D). This feature suggested mass may originate from the fallopian tube. Diffusion weighted imaging (DWI) showed that a partial solid component was slightly higher signal (Fig. 2E). But a provisional diagnosis of left ovarian cystadenocarcinoma was made by radiologists. Computed tomography (CT) showed several round shaped nodules in the whole lung field (Figs 3A and B). No abnormality is found in head CT.

During laparotomy, a cystic mass was located in the left ampulla of fallopian tube. The right fallopian tube and bilateral ovary were macroscopically normal. Total abdominal hysterectomy, bilateral salpingo-oophorectomy, and multiple specimens were performed. On macroscopic examination of the cystic mass specimen, an irregular shaped, thin-walled mass with an uneven surface, with a size of 14 cm × 14 cm × 12 cm, was visible. Histopathologic examination showed that a hemorrhagic, necrotic tumor was composed of syncytiotrophoblast and cytotrophoblast. No chorionic villi and tumor interstitial vascularity were seen (Fig. 4). Immunohistochemically, a stronger cytoplasmic immunoactivity for human chorionic gonadotropin is found in syncytiotrophoblastic cells (Fig. 5). Thus, tubal choriocarcinoma is finally diagnosed.

Ten days after the operation, the patient received chemotherapy and her β -hCG level significantly decreased to 71.14 mIU/mL after the first course of the chemotherapy. The chest CT showed the size and number of nodules decreased before the second course of chemotherapy (Fig. 3C). During our follow-up, the patient's β -hCG level returned to normal after cycle 4. But the chest CT examination found that the nodule and the quantity increased before the seventh course of treatment (Figs 3D and E). Her β -hCG was also slightly elevated to 10 mIU/mL. The patient is still being treated and followed up.

Discussion

MRI characteristics of tubal choriocarcinoma were easily misdiagnosed as pelvic malignancy, such as ovarian cystadenocarcinoma, especially with more insidious symptoms of irregular light bleeding and an adnexal mass. Try to analyze the different aspects of tubal choriocarcinoma and ovarian cystadenocarcinoma from the perspectives of MR imaging and laboratory test and intend to provide a certain basis for differential diagnosis for radiologists.

(1) The MRI manifestations of tumor:tubal choriocarcinoma showed a well-defined cystic-solid mass, and the solid component had a high-low mixed signals on both T1WI and T2WI, which looked like a honeycomb. DWI showed that the solid components had slightly high signals. Compared with

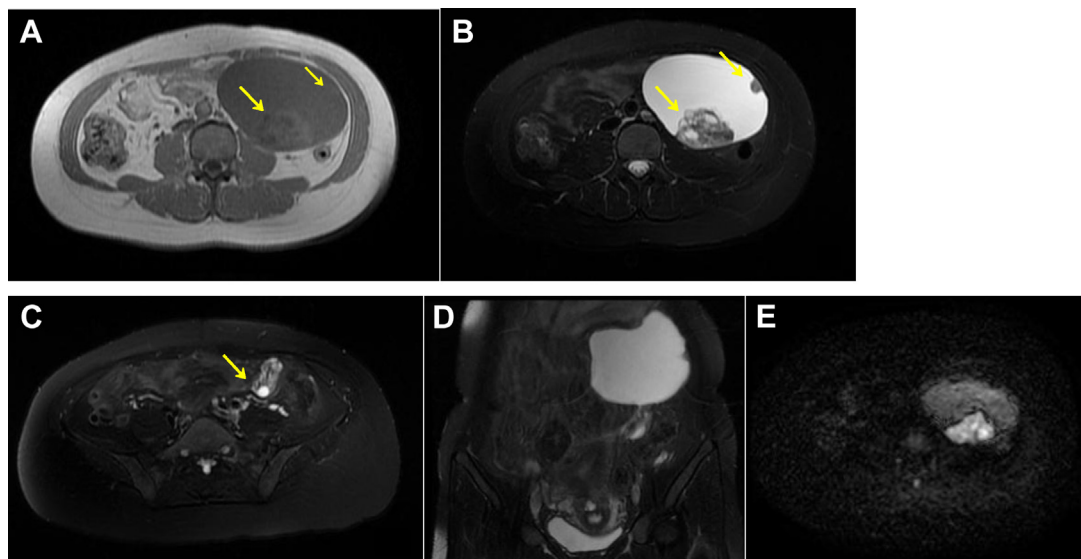


Fig. 2 – (A and B) T1WI and T2WI detected that a round-like solid cystic mass with sharp margin was located at the left lower abdomen, and nodular protrusion and solid portion were attached to the capsule wall. Solid component resembled “honeycomb.” (C and D) T2WI detected that the similar left ovarian signal and the left uterine horn were pulled by the mass to upper left direction. (E) a partial solid component of the mass showed apparent diffusion limited slightly.

tubal choriocarcinoma, many small cystic structures were not found in the solid components of ovarian cystadenocarcinoma. The solid parts of ovarian cystadenocarcinoma show papillary nodes on the wall and septum, even solid soft tissue mass. DWI revealed marked high signals due to apparent diffusion limited. (2) The boundary of tumor and its relationship with surrounding structures: tubal choriocarcinoma was featured by a clear border, without relationship with ovarian. In this case, we reviewed MR images again after the pathologic result came out and found that the left ovary was normal and clearly

distinct from the mass on coronal T2WI. This suggested that the cystic and solid mass in the adnexal region may originate from the fallopian tube when the ovarian structure is clear. However, ovarian cystadenocarcinoma showed an irregular shape cystic-solid mass. Its cystic wall and septum showed irregularly thickened. The mass appears as blurred outline to adjacent structure. The diseased side of ovary often lost its normal structure. (3) Blood supply of tumor: related literatures have reported tubal choriocarcinoma appears to be highly vascular on color-flow Doppler [2,3]. But no blood flow signal was found in this case, the possible reason may be that a large

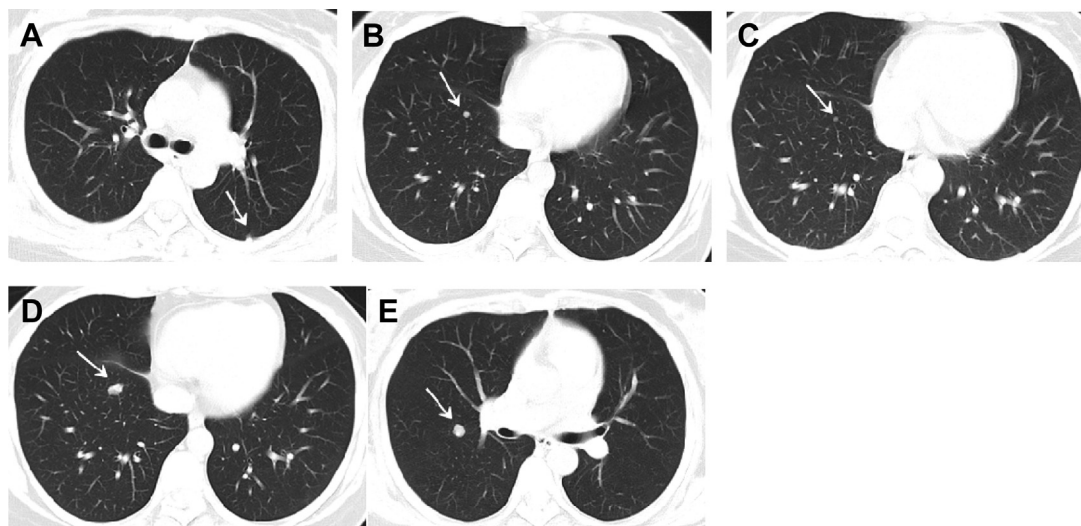


Fig. 3 – (A and B) CT detected the left lung subpleural nodule and right pulmonary nodule before operation and chemotherapy. (C) The size and density of right pulmonary nodule decreased before the second course of chemotherapy. (D and E) The size of nodule in right pulmonary lower lobe increased, and a new nodule appeared on the upper lobe of the right lung.

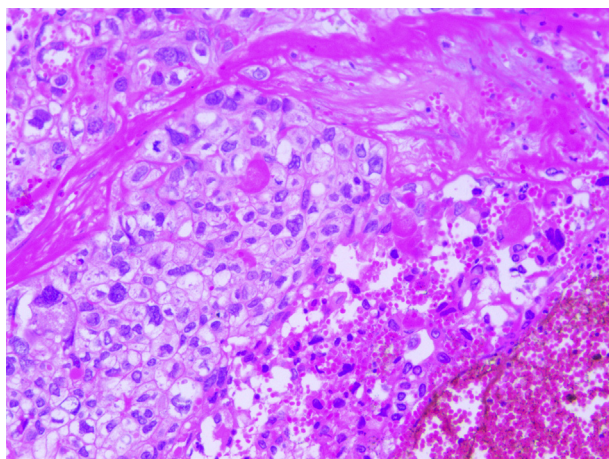


Fig. 4 – Microscopic findings: syncytiotrophoblast and cytotrophoblast amidst extensive areas of hemorrhage and necrosis (H-E stain, ×200).

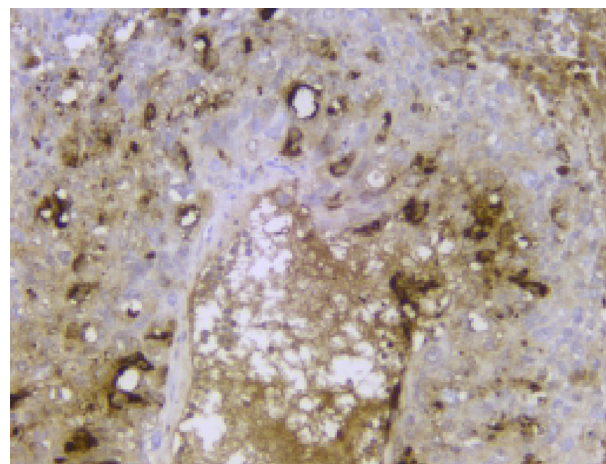


Fig. 5 – Immunohistochemical findings: the cytoplasm of syncytiotrophoblastic cell was strong positive in the HCG (cytoplasmic staining). HCG, human chorionic gonadotropin.

proportion of cystic component affects the observation or blood cannot keep up with the tumor growth in a relatively short clinical course. Tumor torsion can also cause a reduction in blood supply, but without relevant evidence, because the patient had no acute abdominal pain and the pedicle of the torsion was not discovered during operation. The solid parts of ovarian cystadenocarcinoma were enhanced obviously. (4) There was an elevated serum β -HCG in tubal choriocarcinoma. And β -HCG surveillance plays an important role in the clinical management of women with GTD [5]. However, β -HCG level was normal in ovarian cystadenocarcinoma.

Fallopian tube choriocarcinoma could be gestational or nongestational. The distinction between the two is difficult, but necessarily, especially when the patients are in child-bearing age, the nongestational type has bad prognosis. In this case, no intrauterine pregnancy was discovered, and the patient has no history of molar pregnancy. Moreover, the patient had taken contraceptive measures for about 10 years after the second abortion. So, it was unlikely developed from a new ectopic pregnancy. Otherwise, the patient would be presented with abdominal cramping caused by ruptured gestational sac, as MR examination was performed more than 3 months later after this presentation. In general, it most likely is a primary tubal nongestational choriocarcinoma.

Fallopian tube choriocarcinoma can be suspected on MRI when specific fallopian tube-related signs are present, such as

solid part showing a “honeycomb appearance,” normal ovaries. In combination with the presence of amenorrhea, vaginal bleeding typical symptoms, and serum β -HCG levels which increase significantly, radiologists who are aware of fallopian tube neoplasms may include the diagnosis of tubal choriocarcinoma in their reports with more confidence.

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