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Challenges in diagnostics and management of a dysgerminoma in a young female

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ABSTRACT

Introduction: A rare case of dysgerminoma led to a prolonged and complex diagnostic journey for a 17-year-old woman.

Methods: The diagnostic process involved various imaging modalities, including ultrasound, FDG-PET/CT scan and MRI, and diagnostic laparoscopy. Methotrexate was administered based on a provisional diagnosis to manage the patient's condition.

Results: Initial investigations suggested the presence of a pregnancy of unknown location, but there were inconclusive ultrasound findings. Subsequent imaging with FDG-PET/CT initially appeared to be normal, but was followed by MRI, which revealed a solid mass on the right ovary. The definitive diagnosis of dysgerminoma was made following a repeat laparoscopy. The patient received oncologic treatment and recovered fully.

Conclusion: The case emphasizes the challenges in diagnosing rare conditions which may mimic common clinical diseases, as well as the importance of a comprehensive diagnostic approach.

Keywords: Dysgerminoma; Gynecological cancer

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INTRODUCTION

Ovarian germ cell tumors account for <10% of all primary ovarian tumors. (1) Malignant ovarian germ cell tumors (MOGCTs) are clinically divided into dysgerminomas and non-dysgerminomas. (2) The main symptom is abdominal pain, associated with raised human chorionic gonadotropin (hCG) levels. (3) Considering the typically young age of these patients (4), the presentation can be mistaken for an early pregnancy.

We describe the clinical course of a 17-year-old woman with continuous severe abdominal pain who was diagnosed with a dysgerminoma after a prolonged medical evaluation. The patient's tumor was removed surgically, and she was treated with chemotherapy. The patient has consented to publication of this case report.

CASE REPORT

A young, nulliparous female consulted her general practitioner with severe abdominal pain and a positive urine hCG test. She was amenorrheic with no previous history of gynecological disease. She was referred to the regional hospital for suspected ectopic pregnancy. A transvaginal ultrasound did not detect an intrauterine pregnancy, leading to initial outpatient management for pregnancy of unknown location.

After four days, the patient was re-admitted due to abdominal pain with increased hCG. Transvaginal ultrasound was still without signs of pregnancy. A diagnostic laparoscopy was performed without a pregnancy or suspicious mass identified. A uterine evacuation was performed to definitively exclude an intrauterine pregnancy.

The hCG-levels (figure 1) raised concerns about persistent trophoblastic disease, which was not histologically verified after the operative procedures. Despite this, methotrexate treatment was initiated (5), proving ineffective.

Unsuccessful methotrexate treatment and the fluctuating hCG-levels prompted referral to the university hospital for a second opinion and continued treatment. MOGCT was considered as a potential diagnosis. According to national MOGCT-guidelines, an MRI of the abdomen and genitalia was performed (6), but was negative. Methotrexate was re-administered, but hCG continued to

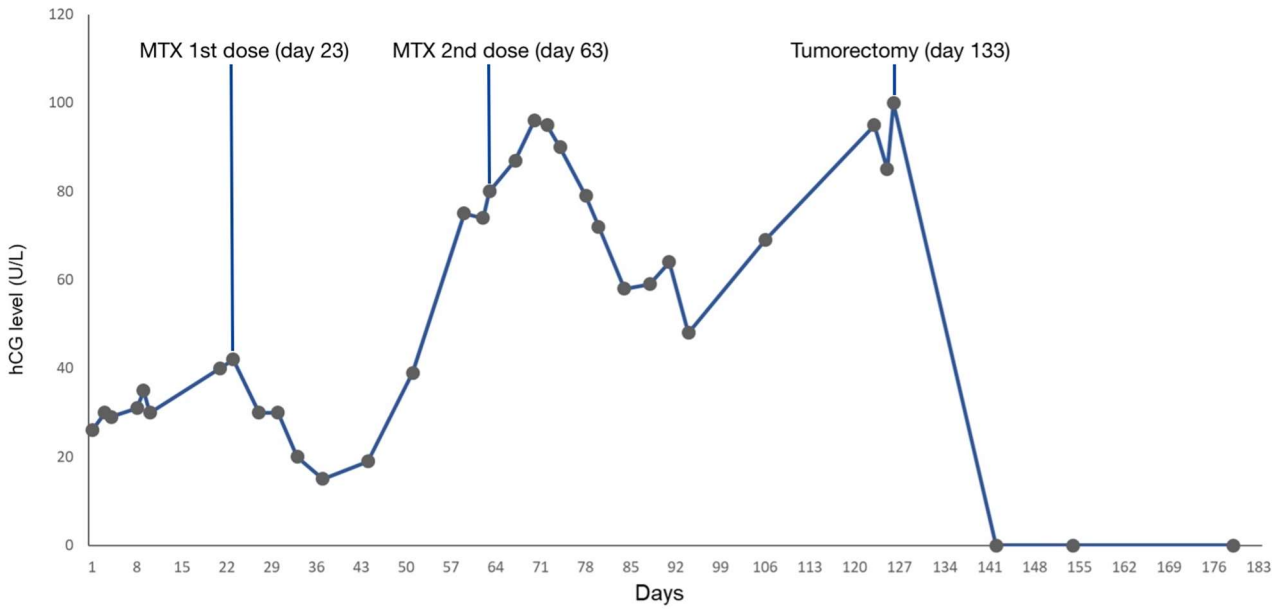

Figure 1: The patient's fluctuating plasma hCG levels. MTX-treatment was prescribed on day 23 and day 63. The tumor was removed on day 133.
Abbreviations: hCG; human chorion gonadotropin. MTX; methotrexate.

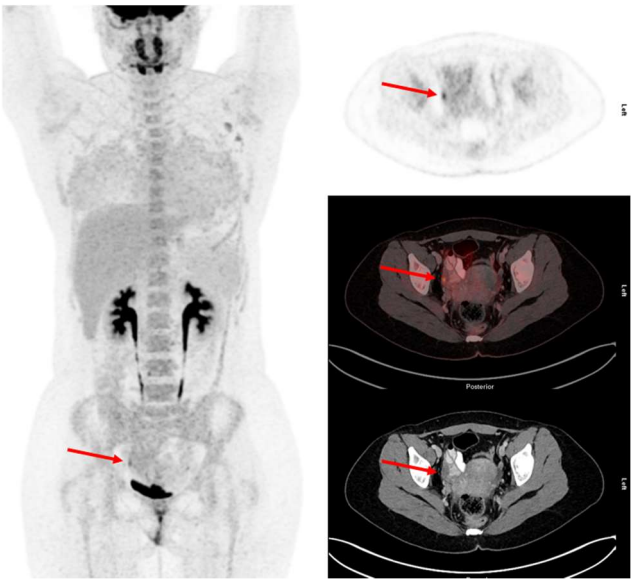

Figure 2: FDG PET/CT scan showing slightly increased FDG uptake corresponding to a structurally normal right ovary on CT (arrows). The uterus and left ovary were normal on FDG PET/CT. No suspicious findings in lymph nodes or the peritoneal cavity. The FDG uptake corresponding to the right ovary was interpreted as physiological uptake which was supported by a magnetic resonance scan without any significant pathological findings.
Abbreviations: FDG PET/CT; 18F-fluorodeoxyglucose positron emission tomography/computed tomography.

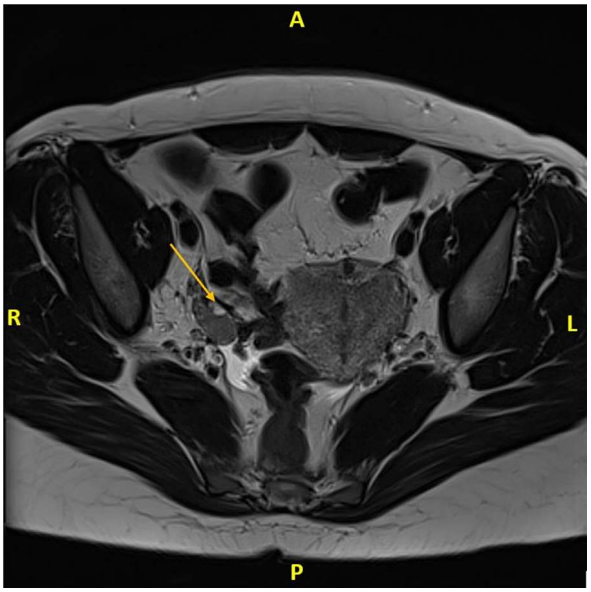

Figure 3: MRI demonstrating a solid mass on the right ovary (arrow) measured to 15x10 mm in size. An MRI performed 2 months prior did not identify the mass and was without abnormal findings. The uterus and left ovary were normal on the MRI. No suspicious findings in lymph nodes or the peritoneal cavity.
Abbreviations: MRI; magnetic resonance imaging
120x120mm (300x300 DPI)

fluctuate. On suspicion of MOGCT and persistent trophoblastic disease, an 18F-FDG PET/CT scan was performed (6), revealing minimal activity near the right ovary, interpreted as physiological (figure 2).

The patient had several admissions due to abdominal pain. After two months, a repeat MRI showed a solid tumor on the surface of the right ovary (figure 3). A diagnostic laparoscopy revealed a resectable 20x10 mm solid mass. Histopathology confirmed a dysgerminoma, FIGO stage IC2. (7) The patient received adjuvant chemotherapy.

DISCUSSION

There were two consistent findings in this case: abdominal pain and elevated hCG-levels. No ultrasonically identifiable pregnancy was found, and no detectable mass at diagnostic imaging or laparoscopy in the initial evaluation phase. The obvious diagnoses in patients with increased hCG and abdominal pain are pregnancy of unknown location, ectopic pregnancy, and more rarely, persistent trophoblastic disease. Those were the initial tentative diagnoses, and she was treated accordingly. Malignancy was suspected at the university hospital, leading to the request for additional imaging and tumor markers (LDH and AFP), all of which were normal. Despite thorough testing, the obtained information was insufficient to diagnose a dysgerminoma.

The initial laparoscopy at the regional hospital was performed by an experienced practitioner and considered sufficient. In the multidisciplinary setting re-laparoscopy versus expectant management was considered several times. An earlier repeat laparoscopy could potentially have spared the patient chemotherapy, but was delayed based on the absence of pathological findings at the initial laparoscopy and no suspicious findings during repeated imaging.

The tumor was limited to the surface of the right ovary. According to guidelines, a unilateral, en-bloc-salpingo-oophorectomy is recommended to preserve fertility. (8) In our case, the tumor could

be resected without compromising the structural integrity of the ovary, and fertility sparing surgery (FSS) was preferred due to the patient's age and the high chemosensitivity of MOGCTs. (8)
The delayed consideration of dysgerminoma led to multiple hospitalizations due to severe pain. This case should not be viewed as an ideal way of dysgerminoma management. It is rather presented to illustrate how we were led astray. The diagnostic challenge arose from the inconsistency between the severe abdominal pain, the low plasma hCG-levels, and limited findings on diagnostic imaging. Despite the rarity of these cases, a dysgerminoma should be considered when young women present with severe abdominal pain and elevated hCG levels without evidence of an ectopic pregnancy or impending miscarriage.

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