Mature teratoma with secondary infection: a rare complication

A 37-year-old woman was admitted to the hospital due to a sustained fever during postpartum period (caesarean). Two weeks after partum she started complaining of suprapubic pain and fever. Antibiotherapy was introduced for a urinary tract infection, but she didn't improve. After ten days, she attended the emergency room with fever and WBCs of 21.9×10^3 cells/uL.

Imaging Findings:

A renal and pelvic ultrasound was requested as part of the diagnostic workup. A pelvic ultrasound revealed a round well-defined solid mass with heterogeneous echogenicity at the retrouterine pouch (Fig. 1). It seemed to have a small calcification and a thin echogenic band, with posterior acoustic shadowing. The left ovary had normal morphology and the uterus was homogeneous. Pelvic computed tomography (CT) was performed, confirming the presence of a retrouterine mass measuring 63 x 75 x 73 mm, containing fat attenuation and a tiny calcification, characteristic features of mature teratoma (Fig. 2). Additionally a thick enhancing wall was noted, as well as peritoneal fat stranding (Fig. 3, 4). These features were suggestive of a secondarily infected ovarian teratoma.

Discussion:

There are three major categories in which most ovarian tumours can be included: surface epithelial-stromal tumours, sex cord-stromal tumours and germ cell tumours [1]. Mature cystic teratomas represent approximately 25% of all ovarian neoplasms and are the most common neoplasm (>95%) arising from the germ cell category [1, 2]. The most common complications are torsion (16%) and rupture (1-4%) [3, 4]. One of the rarest complications of ovarian teratomas is infection, occurring in only 1% of patients. Other complications include malignant transformation (2%) and autoimmune haemolytic anaemia (<1%) [3, 4]. The ultrasound appearance of cystic teratomas variably ranges from completely anechoic to completely hyperechoic [5]. Some features are considered specific, such as the presence of a mural hyperechoic named Rokitansky nodule (dermoid plug) and the “tip of the iceberg” sign concerning acoustic shadowing caused by multiple tissue interfaces,
such as sebaceous material and hair within the cyst cavity [5]. Other common ultrasound manifestation is a dermoid mesh representing multiple linear hyperechogenic interfaces caused by hair fibres. Other common finding is the presence of a fat-fluid or hair-fluid level [5].
The diagnosis at CT and MRI (magnetic resonance imaging) isn´t a hard one, and both modalities are very sensitive for detection of intratumoral fat [6, 7, 8, 9]. CT was performed because the patient presented as an emergency. Moreover MR imaging is preferable, allowing accurate differentiation between teratomas and haemorrhagic cysts and does not use ionizing radiation. The presence of fat attenuation within an ovarian cyst is a diagnostic sign of mature cystic teratoma, being reported in 93% of cases [6, 7, 8, 9].
Other common CT findings are a fat-fluid level (12% of cases), presence of teeth and other calcifications (56–84% of cases), tufts of hair (65% of cases) and a Rokitansky protuberance (81%-91% depending on the series) [2, 7, 8, 9]. Exploratory laparoscopy was performed to further characterize the mass lesion, revealing an increased ovarian size and an adjacent mass with output pus and hair. This supports the hypothesis of infected teratoma. After surgical and antibiotic treatments, the patient improved rapidly.
The results of culture studies showed an infection by Staphylococcus caprae and the histological examination of the resected ovary revealed that the lesion was a bilinear mature cystic teratoma (Fig. 5, 6). In addition, an extensive inflammatory infiltrate with areas of suppuration was identified (Fig. 7).
Differential Diagnosis List: Infected ovarian teratoma, Immature teratoma, Mature teratoma with malignant transformation, Infected ovarian teratoma

Final Diagnosis: Infected ovarian teratoma

References:
Carol M. Rumack, Stephanie R. Wilson, J. William Charboneau, and Deborah Levine. Diagnostic Ultrasound. 4th edition.
Description: Mature cystic teratoma of the ovary in a 37-year-old woman. US scan shows a heterogeneous echogenic mass at the retrotubine pouch (white arrows). **Origin:** Gomes, F, Department of Radiology, Hospital de Braga, Portugal
**Description:** Axial unenhanced CT scan shows intra-tumoral fat (blue arrows) and calcifications (red arrow). **Origin:** Gomes, F, Department of Radiology, Hospital de Braga, Portugal.
Figure 3

**Description:** Axial enhanced CT scan shows a thick enhancing wall (green arrows), as well as peritoneal fat stranding (yellow arrow). **Origin:** Gomes, F, Department of Radiology, Hospital de Braga, Portugal
Description: Detail of previous figures showing intratumoral fat. Origin: Gomes, F, Department of Radiology, Hospital de Braga, Portugal
Figure 5

Description: Neural tissue and choroid plexus (ectodermal structures) within mature cystic teratoma (H&E, 100x) Origin: Gomes, F, Department of Radiology, Hospital de Braga, Portugal
Description: Adipose tissue (mesodermal structures) within mature cystic teratoma (H&E, 100x)
Origin: Gomes, F, Department of Radiology, Hospital de Braga, Portugal
Description: Suppurative inflammation (H&E, 40x) Origin: Gomes, F, Department of Radiology, Hospital de Braga, Portugal