Gynecologic Oncology Reports 25 (2018) 11–14

Contents lists available at ScienceDirect

Gynecologic Oncology Reports

journal homepage: www.elsevier.com/locate/gynor

Case report

Ovarian microcystic stromal tumor: Radiologic-pathologic correlation

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ARTICLE INFO

Keywords:
Ovarian microcystic stromal tumor
Ovarian neoplasm
Radiology

ABSTRACT

Ovarian microcystic stromal tumor (MST) is characterized by microcysts, solid cellular regions with lobulated growth, and collagenous or fibrous stroma forming hyaline plaques. While several reports have evaluated the unique pathologic and immunohistochemical profile of these tumors, there has been limited description of the radiologic findings of ovarian microcystic stromal tumor in the literature. We present a case of a 66 year old female who presented for evaluation of a new cystic pelvic mass found to have ovarian microcystic stromal tumor. To our knowledge, this is one of the first reports to evaluate the radiologic features associated with this tumor. An enhanced understanding of the correlation between imaging appearance and specific histopathologic findings may aid in the early recognition of this rare neoplasm.

1. Introduction

Microcystic stromal tumor (MST) of the ovary was first described in 2009 by Irving and Young and introduced into the World Health Organization (WHO) classification of sex cord-stromal tumors in 2014 (Irving & Young, 2009; Kurman, 2014). This rare subtype of ovarian tumor is characterized by a distinguishing triad of elements: regions of microcysts; solid cellular areas with lobulated growth; and collagenous or fibrous stroma forming hyaline plaques (Oliva, 2014; Irving et al., 2015; Yang & Bhattacharjee, 2014). Additionally, these tumors lack the morphologic features to diagnose alternate sex-cord stromal, epithelial, teratomatous or other germ cell tumors (Yang & Bhattacharjee, 2014). While several reports have evaluated the unique pathologic and immunohistochemical profile of these tumors, there has been limited description of the radiologic findings of ovarian microcystic stromal tumor in the literature. We present a case of a 66 year old female who presented for evaluation of a cystic pelvic mass and was found to have ovarian microcystic stromal tumor. To our knowledge, this is one of the first reports to evaluate the radiologic features associated with this tumor. An enhanced understanding of the correlation between imaging appearance and specific histopathologic findings may aid clinicians in the early recognition of this rare neoplasm.

A 66 year old female, gravida 3, para 3 presented with an incidental finding of a 7 × 6 cm cystic pelvic mass discovered on imaging. Her past medical history included hypertension, asthma, chronic kidney disease stage 3, diabetes mellitus, hyperlipidemia, and obesity. She underwent hysterectomy at age 30 for benign disease and a surgical breast reduction at 46 years of age. She had been taking estradiol for 16 years following symptomatic menopause at age of 50. Her mother was diagnosed with lung cancer in the past, but the patient had no family history of breast, ovarian, or uterine cancer. Exam was notable for a palpable left adnexal mass. Laboratory testing revealed normal cancer antigen 125 (CA 125) and carcinoembryonic antigen (CEA). F18 Fluorodeoxyglucose (FDG) Positron emission tomography-computed tomography (PET-CT) performed during work-up of a benign pulmonary nodule showed an incidental cystic pelvic mass suspicious for malignancy. The patient underwent pelvic mass resection with bilateral salpingo-oophorectomy. The initial frozen section of the pelvic mass was suggestive of possible carcinoma with typing deferred for permanent sections with due to serous carcinoma remaining on the differential. Therefore, laparascopic staging procedure was performed including bilateral pelvic and para-aortic lymphadenectomy and infracolic omentectomy with peritoneal biopsies. Although sex cord and stromal tumors rarely present with metastases, the decision for surgical staging was based conservatively on the somewhat inconclusive frozen section results.

2. Radiologic features

PET-CT revealed a 7 × 6 cm complex cystic mass in the left adnexal region (Fig. 1). No fluorodeoxyglucose (FDG) avidity was seen centrally in the cystic portion, although some peripheral focal areas of FDG uptake were seen which correspond to solid components, with a maximum standard uptake value (SUV max) 3.8. Transvaginal ultrasound (US)

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https://doi.org/10.1016/j.gore.2018.05.004
Received 20 February 2018; Received in revised form 6 May 2018; Accepted 7 May 2018
Available online 08 May 2018

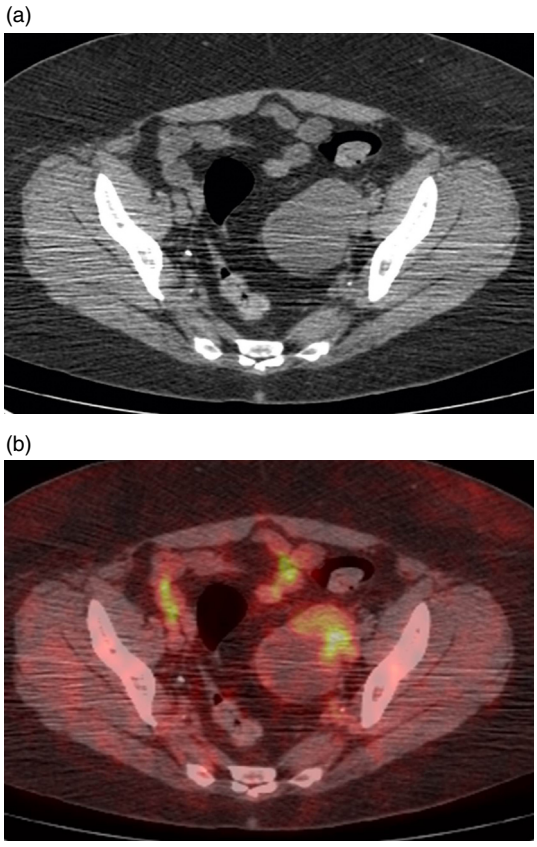

Fig. 1. 66 year old female with an incidental asymptomatic left pelvic mass. A. Axial non-enhanced CT image through the pelvis shows the left predominantly cystic mass with anterior soft tissue components. B. Fused axial FDG PET-CT image shows the nodular nature of the hypermetabolic activity within the solid component of the left adnexal mass.

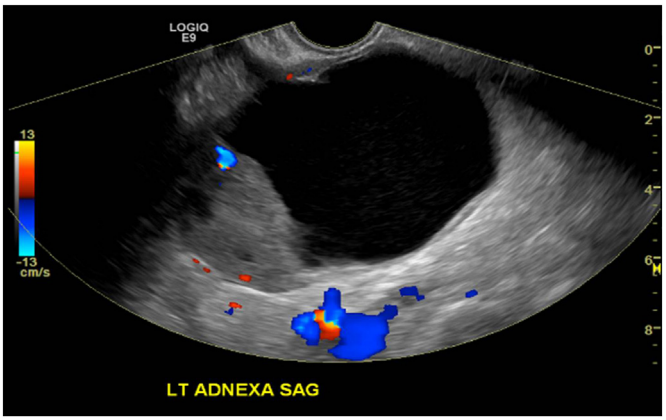

Fig. 2. 66 year old female with an incidental asymptomatic left pelvic mass. Sagittal Doppler Color flow image demonstrates a predominantly cystic mass with a thick mural nodule and mild internal vascularity within the solid component of the mass.

revealed a complex cystic left adnexal mass measuring 7.4 × 6.0 × 5.5 cm (Fig. 2). A dominant homogenously anechoic cystic component was identified with peripheral solid wall thickening and nodularity. Minimal color flow was noted along the peripheral nodular solid portions of the mass suggesting vascular solid tumor.

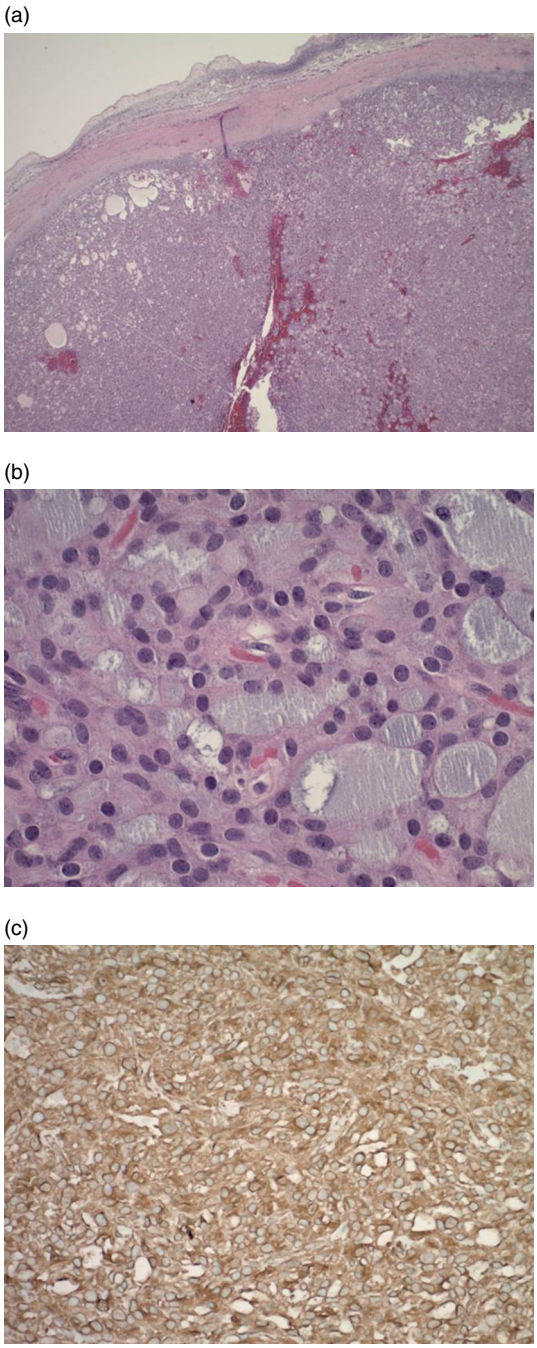

Fig. 3. 66 year old female with an incidental asymptomatic left pelvic mass. (a) Hematoxylin and eosin stained sample at 2× magnification shows cells with abundant eosinophilic granular cytoplasm. (b) Hematoxylin and eosin stained sample at 20× magnification shows largely bland round to oval nuclei, inconspicuous nucleoli and occasional bizarre nuclei with numerous micropseudocysts throughout the tumor. (c) Immunohistochemistry test for WT-1 shows the stromal cell nuclei highlighted by WT-1 staining. Immunohistochemistry tests for vimentin, CD10, B-catenin, and cyclin D1 were also positive (not shown).

3. Pathologic features

Gross examination revealed a well demarcated 9.5 × 7.2 × 6.5 cm cyst within the left ovary with a smooth surface and serosanguinous cystic fluid. The cyst wall was approximately 0.1–0.5 cm in thickness and no areas of necrosis or hemorrhage were seen. Microscopic examination revealed a uniform population of cells with abundant