



COLLISION TUMOUR OF OVARY – IMAGING FEATURES OF TWO RARE CASES

Radio-Diagnosis

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ABSTRACT

Collision tumors of the ovary are rare lesions characterized by co – existence of two distinct histologies within the same organ. Here, we report two cases of collision tumors of the ovary. In the first case, the tumor was composed of unmixed serous cystadenoma and fibroma in the ovary of a pregnant lady. The second case, a combination of sero- mucinous cystadenoma and mature cystic teratoma was seen in the same ovary of a post-menopausal woman. We discuss these cases highlighting the imaging features of the individual component tumors.

KEYWORDS

INTRODUCTION

Collision tumors are a rare group of neoplasms characterized by co-existence of two histologically distinct tumors adjacent to each other without microscopic admixture at the interface, in the same tissue or organ.¹ The pathogenesis of such tumors is not clearly understood. They can be found to occur in the liver, lung, esophagus, stomach and thyroid gland, but their occurrence in the ovary is a rare phenomenon.² Here, we report two cases of unusual combination histologically distinct tumors in the ovary- one detected in a pregnant lady and another in a post-menopausal woman. Collision tumors can be a combination of two benign, a benign and a malignant and two malignant tumors. Hence, their identification by radiological features is essential to guide biopsies and for their comprehensive management.³

CASE – 1

28-year-old primigravida, with regular cycles and no known comorbidities, who had undergone initial workup and regular antenatal check-up elsewhere presented for further management to the Department of Obstetrics and Gynecology at our center at 33 weeks and 3 days gestation. Antenatal history was unremarkable except for undergoing medical management for borderline oligohydramnios at the previous center.

Ultrasound imaging revealed a single live fetus in cephalic presentation, with just adequate liquor - AFI: 11.8cm, normal fetal biometry and Doppler parameters. Imaging also showed a large cystic lesion with moving internal echoes and eccentric echogenic areas with posterior acoustic shadows arising from the left adnexa (Fig 1:A, 1:B). Another smaller cyst was also noted in the right iliac fossa region. CA-125 (13.5) and CA 19.9 (12.9 U/ml) levels were normal.

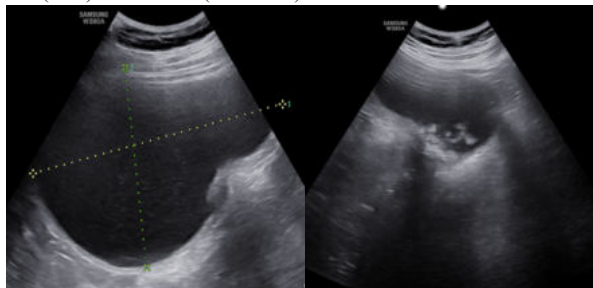


Fig 1: Ultrasound images showing a large cystic lesion measuring 15.6 x 10.7 x 14.8cm in the left adnexa with eccentric echogenic area (1:A) and posterior acoustic shadowing (1:B)

She underwent non-contrast MR imaging for evaluation of the adnexal masses. MR imaging showed a large well defined left adnexal unilocular thin-walled cystic lesion with multiple papillary projections and a markedly T2 hypointense soft tissue component along the posterior-inferior wall of this lesion (Fig 2:A and 2:B). A well-defined thin walled unilocular cyst was also noted in the right adnexa (Fig 2:C) without any solid areas. No ascites or enlarged lymph nodes were seen.

Imaging features were suggestive of left ovarian serous cystadenoma (intermediate) with fibroma and right adnexal benign cystadenoma.

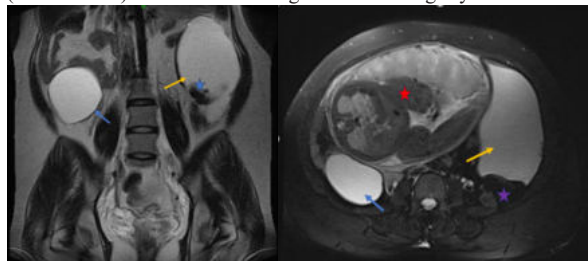


Fig 2: MR images (T2 weighted) Coronal (2:A) and axial sections (2:B) showing right adnexal cystic lesion (blue arrow); left adnexal large cyst (orange arrow) with papillary projections (blue star). A solid component (purple star) is seen along the postero-inferior wall of the lesion. The gravid uterus and fetus can be seen anteriorly (red star).

She underwent elective lower segment Caesarean Section along with left salpingo-ovariectomy and right ovarian cystectomy at 35 weeks 6 days of gestation, delivering a baby of birth weight 2.64kg. The left ovary with cyst was seen enlarged and showed papillary excrescences and an adjacent solid area was identified. Frozen section sample was reported as benign serous cyst and so, further biopsies were not performed and only peritoneal washings were obtained.

On histopathologic examination, the right adnexal cyst wall was found to be lined by flattened to ciliated cuboidal epithelium and composed of collagenous stroma; without evidence of atypia – suggestive of serous cystadenoma. The left adnexal cyst wall was lined by simple flattened to cuboidal epithelium. The wall was composed of collagenous stroma and showed papillary projections and focus of calcification. Sections from the solid areas showed a neoplasm composed of cells arranged in fascicles with dense collagenous stroma without atypia or necrosis – consistent with benign serous cystadenoma with ovarian fibroma. Peritoneal washings and cell block showed no atypical cells. Post operative period was uneventful and she is on regular follow up.

CASE – 2

55-year-old postmenopausal lady, obstetric score: P2L2, known hypertensive and hypothyroid on treatment, presented with complaints of abdominal distension. On examination, a large mass was palpable in the right iliac fossa region and right lumbar region. On prevaginal examination the lower border of the aforementioned mass was palpable high up through the right fornix. CA 19.9 was elevated: 122.1 U/ml (0- 37U/ml). CA-125 (12.8) CEA (1.51ng/ml) and alpha feto protein (1.37ng/ml) were normal.

Ultrasound examination of the abdomen and pelvis revealed few intramural and subserous fibroids and a large abdomino- pelvic thin-walled cystic lesion with multiple internal echoes and few thin incomplete septations within (Fig 3). No solid components were seen. Left hydrosalpinx and minimal fluid in the Pouch of Douglas were

also noted.



Fig 3: Ultrasound image showing a large cystic lesion measuring 20.2 x 11.6 x 20 cm with multiple internal echoes and no solid component.

She was subsequently evaluated with MRI abdomen which demonstrated a well-defined, T1 hypointense and T2 hyperintense large thin walled abdomino-pelvic cystic lesion arising from the right adnexa with thin incomplete internal septations. A T1 hyperintense component was seen at the periphery towards the right, which appeared hypointense in fat suppressed images. (Fig 4:A, 4B).



Figure 4: MR images: 4:A: T2 weighted images sagittal and axial sections: A large thin walled T2 hyperintense cyst with thin internal incomplete septations. 4:B: Axial T1 weighted and T1 fat suppressed images: Cyst appears T1 hypointense and T2 hyperintense with a peripheral T1 hyperintense component which is seen as hypointense in fat suppressed images.

She underwent total laparoscopic hysterectomy and bilateral salpingo-oophorectomy. Intraoperatively, a large right ovarian cyst with serous fluid within was seen with a focal hard area. The left ovary and rest of the abdominal organs were normal. Sections from the mass showed cyst wall lined by mucous epithelium and partly by cuboidal to flattened epithelium. Sections from the hard area shows cyst lined partly by squamous epithelium and partly by columnar epithelium. The cyst wall showed skin appendages with foci of hair shaft surrounded by foreign body giant cell reaction, adipose tissue, bone, cartilage, muscle, glial tissue, salivary gland tissue, colonic mucosa and melanin pigment. The histopathology was reported as a combination of seromucinous cystadenoma with mature cystic teratoma. Post operative period was uneventful and she is on regular follow up.

DISCUSSION:

MR imaging plays an important role in determining origin and

characterization of ovarian tumors especially indeterminate tumors.⁴ Serous cystadenoma is the most common ovarian epithelial tumor.⁵ It is a benign tumor and resemble the fallopian tube histologically. On ultrasonography, it appears as anechoic adnexal lesion which may show septations, with no flow on Doppler. Papillary projections may be present in borderline and malignant serous tumors.⁶ Typical MR appearance is a unilocular thin-walled adnexal cyst. It appears T1 hypointense in uncomplicated cases and T2 hyperintense and usually don't show enhancement on contrast administration.⁷

Mucinous ovarian tumors, are larger, unilateral multiloculated cysts, often manifesting with abdominal distension. Often, they demonstrate varying signal intensity, attenuation and echogenicity in MR, CT and US imaging. In T1 and T2 MR sequences, signal intensity of locules vary depend on the mucin concentration. This combination of different intensities may result in a "stained glass appearance."⁸

Fibroma of the ovary is a benign tumor of sex cord stromal origin. They are seen in middle aged woman, and may be associated with ascites or pleural effusion. It is composed of stromal cells forming collagen. On ultrasound, the manifest as solid hypoechoic masses with ultrasound beam attenuation. On T1 weighted MR images, they demonstrate homogeneous low signal intensity with heterogeneous enhancement on post contrast images. In T2 sequence it appears as a well circumscribed mass with low signal intensity. But may show hyperintense areas representing edema or cystic degeneration. In diffusion weighted images, they are seen as hypointense masses.⁹

Mature cystic teratomas are identified in young women and are encapsulated tumors composed of well differentiated derivatives of at least two of the three germ layers. They are the most common histology seen in collision type tumors.¹⁰ On ultrasound, a diffusely or partially echogenic mass can be demonstrated with posterior attenuation. It may demonstrate "tip of the iceberg sign": echogenic interface at the edge of the mass obscuring deep structures. Echogenic calcific or dental components, hyperechoic mural nodule (Rokitansky nodule), fluid-fluid level may be demonstrated. Doppler imaging shows no internal vascularity. Other characteristic signs include: "dot-dash pattern" (multiple thin echogenic bands due to hair within the cyst) and "floating ball sign" (sebaceous or keratinoid spherules floating at fat-fluid interface).¹¹

Ovarian collision tumors are rare, and knowledge of imaging features is essential for pre-operative planning, biopsies and comprehensive management of such tumors.

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