

Coexistence of Mature Cystic Teratoma and Endometrioma in an Ovarian Cyst

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Abstract

We report a rare case of association between a mature cystic teratoma (MCT) and an endometrioma in the ovary. This entity is extremely rare and its diagnostic is a challenge clinically and radiologically. To our knowledge we report the fourth case of the coexistence of a non-neoplastic endometrioma and a benign neoplastic mature cystic teratoma in the left ovary.

Keywords: Mature cystic teratoma; Endometrioma; Ovary; MRI

Introduction

This article describes a rare association between MTC and endometrioma in the same ovary and discusses imagery, pathology and treatment of this exceedingly rare entity. To our knowledge this case is only the fourth reported in the English literature.

Case Presentation

A 33-years-old patient, nulligravida, was referred to the Medical Institute for pelvic pain increasing for several weeks and bloating of the lower abdomen in progression without sign evocative of pregnancy. A gynaecological ultrasound (not shown) revealed a complex heterogeneous mass of the left ovary measuring 6 × 7 × 8 cm, solid with cystic components. The uterus and right ovary were normal. Pelvic MRI followed and showed a large heterogeneous and well-defined encapsulated cyst containing solid components with an intermediate signal in T2 and T1. It had a moderate heterogonous enhancement contrast and compressed the adjacent sigmoid tube. The iliac vascular structures were displaced but not compressed and no evidence of iliac lymphadenopathy was seen (Figure 1). Diagnosis of hemorrhagic cystic teratoma was kept. Patient underwent laparoscopic surgery with the diagnosis of hemorrhagic cyst in the left ovary, but the ipsilaterally ovary contained a cystic endometrioma which infiltrated the first layer of the sigmoid tube. The diagnosis of association between MCT and endometrioma was confirmed histologically (Figures 2-4). The uterus and the right ovary were evaluated as normal. The patient suffered no complications and was discharged one week later.

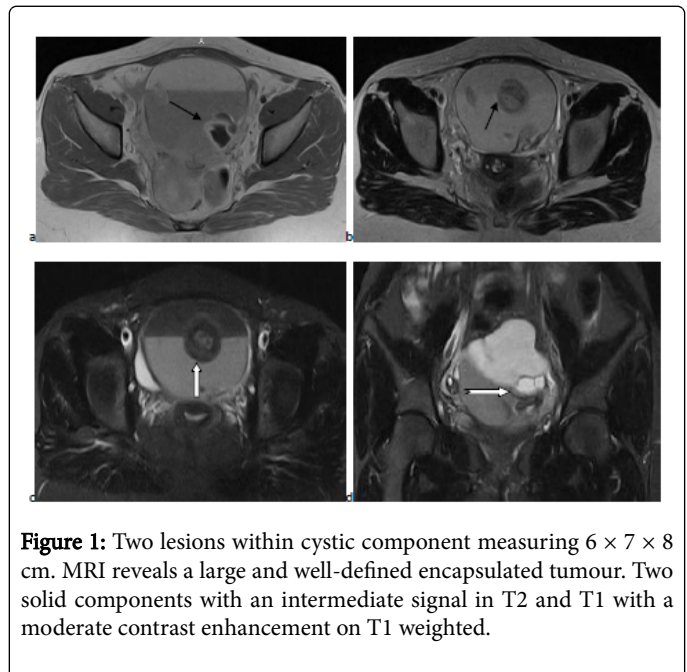


Figure 1: Two lesions within cystic component measuring 6 × 7 × 8 cm. MRI reveals a large and well-defined encapsulated tumour. Two solid components with an intermediate signal in T2 and T1 with a moderate contrast enhancement on T1 weighted.

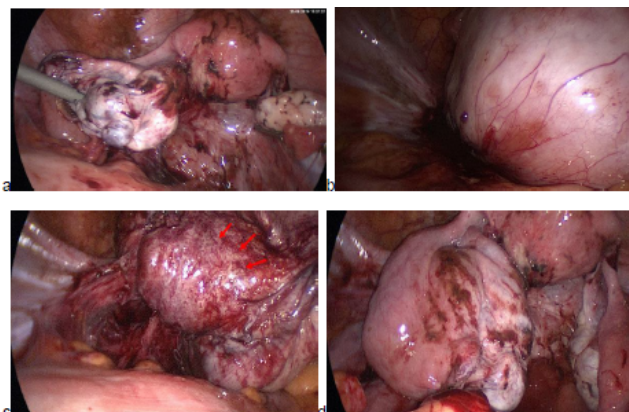


Figure 2: Surgical finding showing (a, b) left ovarian cystectomy. We visualize the cleavage plane between the pseudo-cyst wall of endometrioma and the healthy ovarian parenchyma, (c) Appearance of left remaining adnexa after cystectomy, (d) Ovarian parenchyma was preserved.

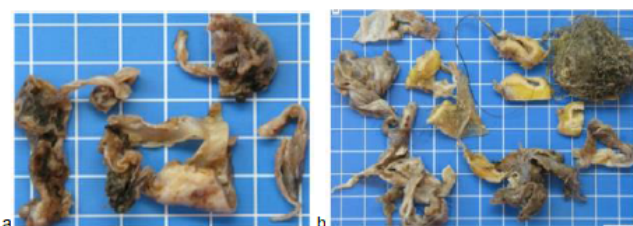


Figure 3: (a) Gross findings of the endometrioma with brown internal surface, (b) Mature cystic teratoma with fat tissue and hair.

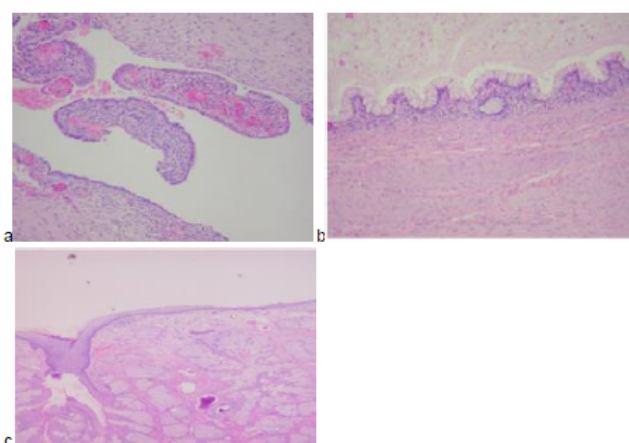


Figure 4: Histological examination (a) Cyst lined by endometrial epithelium overlying its endometrial stroma corresponding to an endometriosis cyst, (b) A portion of the cystic mature teratoma lined with intestinal-type mucosa, (c) Skin surface-like structure with many sebaceous glands found on another part of the cyst.

Discussion

Association between mature cystic teratoma (MCT) and cyst endometrioma in the same ovary is extremely rare and less than five cases of this entity have been reported in the literature.

Teratomas, habitually named dermoid cyst, predominantly occur in young women. They account for 10-20% of all ovarian tumors and are bilateral in 10 to 15% of cases [1]. They arise in the ovary but can be located at the midline and in paraxial regions of the body and unusual locations, including lungs or ilea, were described [2].

Pathologically, they are composed of tissues derived from one or more of the three primitive germ layers and have often a cystic structure with a mean larger diameter of 8 cm. Typically it contains mature tissues of ectodermal (skin, brain), mesodermal (muscle, fat) and dermal (mucinous or ciliated epithelium) origin [3]. The initial biological event that leads to teratoma is not yet understood. Stenens et al. [4] and Hiaro Y et al. [5] postulated that teratomas were derived from oocytes that undergo maturation and spontaneous parthenogenic activation followed by embryonic development within the ovarian follicles. MCT is usually asymptomatic and doesn't have any specific symptoms. MCT can be associated with acute complications including torsion, rupture, infection or haemolytic anaemia [6]. Malignant transformation occurs in 1% of cases [7].

A transabdominal or transvaginal ultrasound reveals a large hyperechoic mass with posterior shadow-cone because of the sebaceous and hair materials or a hypoechoic cyst if it contains only sebaceous material liquid. The bones and teeth appear hyperechoic [8]. MCT are sometimes difficult to distinguish on ultrasound from hemorrhagic cysts, mucinous cystic neoplasm and endometriomas [9]. In these cases, the magnetic resonance imaging (MRI) plays an important role in diagnosis. Cystic teratoma appears as a large pelvic monocular cyst with a solid nodule named Rokitansky protuberance attached to a thin wall and protrudes in the cyst lumen. Standard T1 weighted images with fat saturated T1 weighted images establish the diagnosis when the fat removed and the fluid-fat levels is also seen. The sebaceous component of cystic teratoma is hyper-intense on T1-weighted images. Findings of calcifications are variable and difficult to detect. However, 7% of MCT don't contain any fat or calcifications [10]. IV contrast gives a small nodule and wall cyst enhancement. The relationship between the teratoma and other anatomic pelvic structures can be well evaluated [11].

Endometriosis is a complex pathology with various presentations affecting 10-15% of women of reproductive age and its physiopathology is still unclear. Several pathogenic theories are proposed: metastatic theory, metaplastic theory, induction theory, growth factors and immunity. It is defined as the presence of functional endometrial glands outside of the uterine cavity, ranging from microscopic implants to large cysts (endometrioma) [12]. The ovary is the first site of occurrence but endometrioma can appear in soft tissues, the gastrointestinal or urinary tracts and the chest [13]. Clinically, endometriosis symptoms don't correlate with the severity and extension of the disease. Infertility, dyspareunia, dysmenorrhoea, and chronic pelvic pain are nonspecific for endometriosis. Ultrasound (US) shows a unilocular or multilocular structure with multiple separate cysts. Generally, the endometrioma is homogeneous, with a smooth echogenic wall, well-defined and has hypo-echoic content within the ovary. Endometrioma can have variable features sonographically and mimic other cystic ovarian neoplasms [14]. MRI reveals a hyper-intense ovarian mass on T1-weighted that doesn't

disappear in saturated fat and demonstrating a gradient of low signal intensity (shading) on T2-weighted images. Many endometrioma had shadows with varying degrees of signals of low to intermediate intensity according to the different stages of blood products present inside of the cyst. The differential diagnosis for ovarian endometriosis includes hemorrhagic cyst, mature cystic teratoma and mucinous cystic neoplasm. Large masses with wall nodularities should be carefully sampled to rule out malignancy [15].

The rarity of coexistence of teratoma with ovarian endometrioma adds to the difficulty to differentiate it from malignancy. This association constitutes a major diagnostic challenge radiologically, clinically and biologically, which ends in a treatment also challenging in itself. Since the first description of a possible link between endometriosis and ovarian cancer in 1925 by Sampson [16], many groups have investigated the association between malignant and benign tumours. Ottolenghi-Prete et al. revealed a coexistence of an ovarian carcinoma with dermoid cyst [17], and Rojas et al. [18] revealed a coexistence of the malignant melanoma with dermoid cyst. However, association between MCT and cystic endometrioma in the same ovary is extremely rare. Only few cases have been described in the English literature by E Ferrario [19], Caruso et al. [20].

This shows that there is still a lack of knowledge on the association between various types of tumours in the same ovary. Clinicians remain unable to diagnose simultaneous presence of two distinct pathologies in a single ovary. Moreover, it was reported that the level of serum CA-125 is often elevated in women with endometriomas and in cystic teratomas [21].

Conclusion

Despite advances in radiological techniques, the coexistence of dual pathology tumour in the same ovary constitutes a major diagnostic challenge in radiology. The study of Benvancalster et al. showed that ultrasound examiners assigned a correct specific diagnosis to at least 80% of endometriomas and 84% of dermoid cysts [21].

MRI characterizes with certainty the following benign injuries: cyst adenoma, serous, or fibrous tumors (Brenner tumor, fibroma and fibrothecoma), mature teratoma with fat as pathognomonic component and ovarian endometriomas [22].

However, a complex cystic appearance may be mistaken for malignancy in 1-2% of large tumours. In these instances, demonstrating fat and Rokitansky protuberance can aid in the diagnosis of MCT, but contrast material IV is not useful in the evaluation of the endometriomas and can't differentiate it from other benign or malignant neoplasms.

Despite the association between ovarian mature cystic teratoma and cystic endometrioma being uncommon, this possibility must be considered in the differential diagnosis of multiple ovarian tumors in the same ovary. The correct radiological diagnosis is of great value in planning treatment with the most favourable prognostic.

References

1. Comerci JT, Licciardi F, Bergh PA, Gregori C, Breen JL (1994) Mature cystic teratoma: a clinicopathologic evaluation of 517 cases and review of the literature. *Obstet Gynecol* 84: 22-28.

2. Rana SS, Swami N, Mehta S, Singh J, Biswal S (2007) Intrapulmonary teratoma: An exceptional disease. *Ann Thorac Surg* 83: 1194-1196.
3. Wu RT, Torng PL, Chang DY, Chen CK, Chen RJ, et al. (1996) Mature cystic teratoma of the ovary: a clinicopathologic study of 283 cases. *Zhonghua Yi Xue Za Zhi (Taipei)* 58: 269-274.
4. Stenens LC, Varnum DS (1974) The development of teratomas from parthenogenetically activated ovarian mouse eggs. *Dev Biol* 37: 369-380.
5. Hiaro Y, Eppig JJ (1997) Parthenogenetic development of Mos-deficient mouse oocytes. *Mol Reprod Dev* 48: 391-396.
6. Kimura I, Togashi K, Kawakami S, Takakura K, Mori T, et al. (1994) Ovarian torsion: CT and MR imaging appearances. *Radiology* 190: 337-341.
7. Kido A, Togashi K, Konishi I, Kataoka ML, Koyama T, et al. (1999) Dermoid cysts of the ovary with malignant transformation: MR appearance. *Am J Roentgenol* 172: 445-449.
8. Smorgick N, Maymon R (2014) Assessment of adnexal masses using ultrasound: A practical review. *J Womens Health* 6: 857-863.
9. Patel MD, Feldstein VA, Lipson SD, Chen DC, Filly RA (1998) Cystic teratomas of the ovary: diagnostic value of sonography. *Am J Roentgenol* 171: 1061-1065.
10. Outwater EK, Siegelman ES, Hunt JL (2001) Ovarian teratomas: Tumor types and imaging characteristics. *RadioGraphics* 21: 475-490.
11. Guinet C, Ghossain MA, Buy JN (1995) Mature cystic teratomas of the ovary: CT and MR findings. *Eur J Radiol* 20: 137-143.
12. Gazvani R, Templeton A (2002) New considerations for the pathogenesis of endometriosis. *Int J Gynecol Obstet* 76: 117-126.
13. Channabasavaiah AD, Joseph JV (2010) Thoracic endometriosis: revisiting the association between clinical presentation and thoracic pathology based on thoracoscopic findings in 110 patients. *Medicine (Baltimore)* 89: 183-188.
14. Woodward PJ, Sohaey R, Mezzetti TP (2001) Endometriosis: Radiologic-pathologic correlation. *Radiographics* 21: 193-216
15. Ha HK, Lim YT, Kim HS (1994) Diagnosis of pelvic endometriosis: fat-suppressed T1-weighted vs conventional MR images. *AJR Am J Roentgenol* 163: 127-131.
16. Sampson JA (1925) Endometrial carcinoma of the ovary, arising in endometrial tissue in that organ. *Arch Surg* 10: 1.
17. Ottolenghi-Prete GF (1960) Bilateral dermoid cysts of the ovary in pregnancy (presentation of 2 cases). *Quad Clin Ostet Ginecol* 15: 162-190.
18. Marcial-Rojas RA, Ramirez de Arellano GA (1956) Malignant melanoma arising in a dermoid cyst of the ovary: Report of a case. *Cancer* 9: 523-527.
19. Ferrario E (1960) Association of ovarian endometriosis and dermoid cyst. *Minerva Ginecologica* 12: 570-572.
20. Caruso ML, Pirelli M (1997) A rare association between endometriosis and bilateral ovarian teratoma. *Case Report. Minerva Ginecol* 49: 341-343.
21. Van Calster B, Timmerman D, Bourne T, Testa AC, Van Holsbeke C, et al. (2007) Discrimination between benign and malignant adnexal masses by specialist ultrasound examination versus serum CA-125. *J Natl Cancer Inst* 99: 1706-1714.
22. Glastonbury CM (2002) The shading sign. *Radiology* 224: 199-201.