

DOI: <https://dx.doi.org/10.18203/2320-1770.ijrcog20233319>

Case Report

## Mature cystic teratoma mimicking ectopic pregnancy: a case report

Deepak Verma\*, Sumit Kumar, Namrita Sachdev

Department Radio-diagnosis, ABVIMS and Dr. RML Hospital, New Delhi, India

**Received:** 02 September 2023

**Revised:** 05 October 2023

**Accepted:** 06 October 2023

**\*Correspondence:**

Dr. Deepak Verma,

E-mail: [verma.deepak150994@gmail.com](mailto:verma.deepak150994@gmail.com)

**Copyright:** © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

### ABSTRACT

We present a case of mature cystic teratoma resembling ectopic pregnancy in a patient with positive serum beta-hCG and an adnexal mass. A 30-year-old woman who was experiencing pelvic pain and vaginal bleeding was sent to the emergency room. An ultrasound revealed a complex right adnexal mass measuring 63×42 mm and the absence of an intrauterine gestational sac. Based on these findings, ectopic pregnancy was suspected; nevertheless, a subsequent magnetic resonance imaging (MRI) was planned, which suggested mature cystic teratoma. On a laparoscopy, later findings were verified. Cyst removal was the patient's treatment. Despite the possibility of an ectopic pregnancy being indicated by the existence of an adnexal mass without an intrauterine gestational sac and a positive beta-hCG level, a mature cystic teratoma should be considered as a differential diagnosis.

**Keywords:** Mature cystic teratoma, Ectopic pregnancy, Dermoid cyst, Transabdominal sonography, MRI

### INTRODUCTION

The most prevalent germ cell tumour is an ovarian teratoma. Teratomas are numerous histologic forms of tumours that contain mature or immature germ cell (pluripotent) tissues. The mature cystic teratoma (also known as a dermoid cyst) is the most frequent of these tumours, and it often contains mature tissues of ectodermal (skin, brain), mesodermal (muscle, fat), and endodermal (mucinous or ciliated epithelium) origin. Usually, mature cystic teratomas only affect fertile women. They are the most prevalent kind of ovarian germ cell neoplasm and are virtually always identified in the ovary.

Dermoid cysts are frequently asymptomatic and are only found incidentally during physical or radiologic examinations, during laparoscopy and/or laparotomies, or as a result of other medical procedures.<sup>1</sup>

In the first trimester, the most common reason for presenting to the emergency department is vaginal bleeding. To determine whether a normal foetus is present and alive and to rule out alternative causes of bleeding,

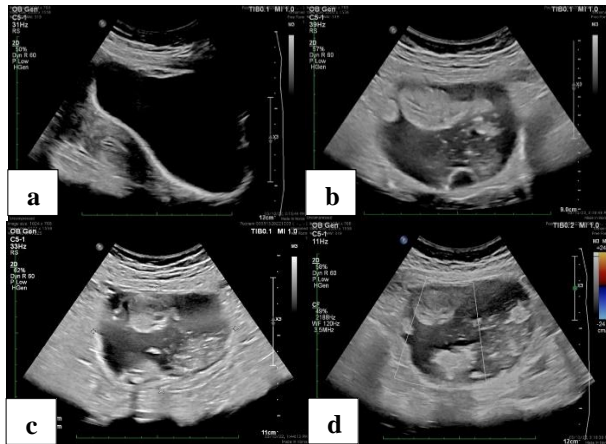
such as ectopic or molar pregnancy, clinical examination is challenging and sonography is required. Ectopic pregnancy and early pregnancy failure are frequent diagnoses in the first trimester. One to three percent of all pregnancies is ectopic, which continues to be a major factor in maternal fatalities.

The current study describes a case of mature cystic teratoma simulating ectopic pregnancy in a patient with a positive quantitative beta-hCG and a complex adnexal mass without a gestational sac in the uterine cavity.

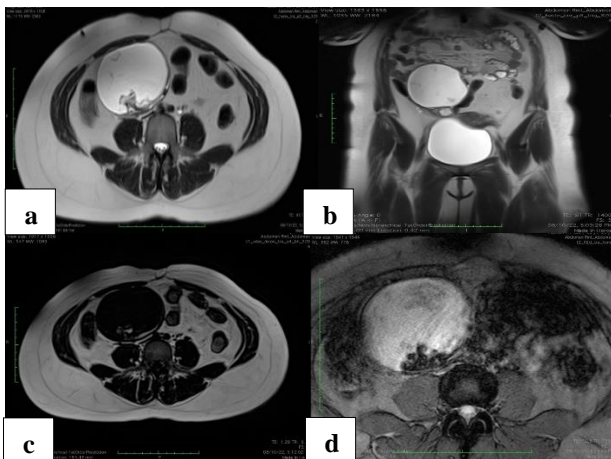
### CASE REPORT

A 30-year-old woman presented to the emergency complaining of lower abdominal pain, vaginal bleeding and amenorrhea of 5 weeks. She has no history of using an intrauterine device (IUD), having recent pelvic inflammatory disease, or having had abdominal surgery in the past. Physical examination revealed an oriented young woman with a blood pressure of 112/68 mmHg and a pulse of 89 bpm. A bimanual pelvic examination re-revealed a normal-sized, anteflexed uterus. Blood glucose levels,

liver, kidney, and thyroid function tests, as well as a complete blood count, all showed normal results. The serum quantitative  $\beta$ -hCG level was 400 IU/l. Transabdominal ultrasonography revealed no intrauterine gestational sac with an endometrial thickness of 8.5 mm and a complex solid-cystic mass in the right adnexa measuring 8.7×6.3 cm in size with fetal parts-like structures (Figure 1).



**Figure 1: Transabdominal ultrasonography images of 30-year-old female with mature cystic teratoma shows (a) normal uterine cavity with no G-sac, (b) and (c) complex solid -cystic mass in right adnexa, the right ovary is not visualized separately, and (d) color doppler images shows no internal vascularity within the solid component.**



**Figure 2: Magnetic resonance images of 30-year-old female with mature cystic teratoma shows (a) axial T2WI shows a cystic lesion in right adnexa with eccentric solid component within, (b) coronal T2WI shows that right ovary is displaced upwards and a cystic lesion seen arising from it, left ovary was normal (not shown), (c) axial T1W Dixon (fat only) images shows few hyperintense foci within corresponding with fat component, and (d) axial GRE images shows blooming foci within the cystic lesion corresponding with calcification.**

Colour doppler shows no internal vascularity within. The right ovary was not visualized separately from the mass. The left ovary was normal. We performed an MRI pelvis because the beta-hCG level was not very high. A large complex solid-cystic mass that arises from the right ovary is seen on MRI, and T1- weighted Dixon (fat only) images reveal the presence of fat inside. Additionally, foci of blooming seen on GRE that correspond to calcific/dental components suggest a mature cystic teratoma (Figure 2). She had undergone diagnostic and surgical laparoscopy, as is the standard procedure for ectopic pregnancies at our facility. A mature cystic teratoma with normal tubes and a nongravid uterus was seen at laparoscopy. It was about 7 cm in size and included teeth with thick, yellow-white sebum (Figure 3). Cyst removal was the patient's treatment. Mature cystic teratoma was also confirmed in the final pathology report. The patient's postoperative course was uncomplicated, and she was discharged on the second postoperative day.



**Figure 3: Post-operative gross intact specimen of cystic teratoma of ovary with tooth like components.**

## DISCUSSION

Mature cystic teratomas are cystic tumours made of well-differentiated progenitors from at least two of the three germ cell layers (ectoderm, mesoderm, and endoderm), which is a more accurate word than the widely used "dermoid cysts". When compared to epithelial ovarian neoplasms, they affect a younger age group (mean patient age, 30 years). The most prevalent type of mature cystic teratoma is a germ cell tumour. The majority of mature cystic teratomas have no symptoms. A small percentage of people have abdominal pain or other vague symptoms. 10% of the time, there are bilateral tumours.<sup>2</sup>

Most mature cystic teratomas can be diagnosed by ultrasound; however, because these tumours can show a variety of appearances, the ultrasound diagnosis is made more challenging. The most frequent manifestations are as follows: (a) a cystic lesion with a Rokitansky nodule (densely echogenic tubercle) protruding into the cyst lumen, (b) an echogenic mass, with attenuation of sound beams due to the presence of sebaceous material and hair inside the cyst cavity, and (c) multiple tiny, echogenic bands caused by hair in the cyst cavity (dot-dash pattern).

The cyst's pure sebum may be anechoic or hypoechoic. Sometimes fluid-fluid levels may be seen.<sup>3</sup>

The diagnosis of mature cystic teratoma at CT and MR imaging is straightforward because these modalities are more sensitive to fat. Fat attenuation within a cyst, with or without wall calcification, is diagnostic for mature cystic teratoma. The fat-aqueous fluid interface can sometimes be seen. 93% of cases had fat, while 56% have teeth or other calcifications.

MRI is the imaging modality of choice. The sebaceous component of dermoid cysts appears hyperintense on T1-weighted images and variable signal intensity on T2-weighted images. T1 weighted fat-saturated images will suppress the high signal of teratomas and help to distinguish them from haemorrhagic lesions. Chemical-shift imaging can be used in the frequency-encoding direction to detect fat and distinguish it from haemorrhage.<sup>3</sup>

Mature cystic teratoma can be associated with complications like ovarian torsion (most commonly), rupture leading to peritonitis or malignant degeneration. Features suggestive of torsion include ipsilateral deviation of the uterus with engorged blood vessels, mass with a hyperintense rim on T1-weighted images, a hypointense torsion knot and lack of post-contrast enhancement.

Mature cystic teratomas requiring removal can be treated with laparoscopic cystectomy.

The case presented here is thought to be ectopic pregnancy initially, in the setting of raised  $\beta$ -hCG, the presence of a complex adnexal mass seen in sonography and the absence of an intrauterine gestational sac with clinical findings such as pelvic pain and irregular vaginal bleeding. However, later diagnosis was proved to be mature cystic teratoma.

In the literature review, we found six similar case reports of neoplasms mimicking ectopic pregnancy. Three mixed germ cell tumours, one mature teratoma, one ovarian choriocarcinoma, and one mediastinal germ cell tumour that did not involve the adnexa.<sup>4-9</sup>

### **Differential diagnosis**

#### *Ectopic pregnancy*

Ectopic pregnancy is still a leading cause of maternal mortality. 45% of patients with ectopic pregnancy experience the classic triad of pain, abnormal vaginal bleeding, and a palpable adnexal mass. Maternal mortality and morbidity were reduced by early identification of abnormal and ectopic pregnancies made possible by improved ultrasound technology and high-frequency transvaginal transducers. Although the presence of an extra-uterine gestational sac with a yolk sac or an embryo is the most conclusive sonographic result, the presence of

an adnexal mass can serve as a pre-diagnosis of ectopic pregnancy in the case of a positive beta-hCG level above 1500 to 2000 IU/l and the absence of an intra-uterine gestational sac.<sup>10</sup> Since the fallopian tube is the most typical location for an ectopic pregnancy, the presence of an extra ovarian adnexal mass is the most frequent sonographic finding in ectopic pregnancy. The sonographic appearance varies based on the location and if there is a hematoma.

#### *Endometrioma*

Endometrioma is caused by bleeding of an ectopically located endometrial tissue in the ovary, which bleeds following the menstrual cycle. Eventually, a hematoma forms a cyst called an endometrioma. On US, the most common finding is a cystic lesion with ground glass echoes. Some less common findings include the presence of multiple locules, a hyperechoic cyst wall, and a peripheral solid component with concave margins due to a retracted clot. On MRI, T1 weighted imaging show hyperintensity without signal loss in T1 fat-suppressed sequence and hypointensity on T2 in variable portion (T2 shading), indicating haemorrhage in various stages.

### **CONCLUSION**

It is crucial to carefully assess patients and take neoplasms like teratomas into account as a source of beta-hCG generation in the presence of an adnexal mass. Diseases like ectopic pregnancy must be excluded to prevent improper surgical operations carried out in insufficient and inappropriate circumstances.

### **ACKNOWLEDGMENTS**

Authors would like to acknowledge gynaecology department of the institute for providing post-operative follow-up of the patient.

*Funding: No funding sources*

*Conflict of interest: None declared*

*Ethical approval: Not required*

### **REFERENCES**

1. Kutteh WH, Albert T. Mature cystic teratoma of the fallopian tube associated with an ectopic pregnancy. *Obstet Gynecol.* 1991;78(5 Pt 2):984-6.
2. Moraloglu OT, Özban SG, Altinkaya O, Bilge Ü. Mature Cystic Teratoma Mimicking Ectopic Pregnancy in A Patient with Spontaneous Abortion: A Case Report. *Gynecol Obstet Reprod Med.* 2009;15:168-70.
3. Outwater EK, Siegelman ES, Hunt JL. Ovarian teratomas: Tumor types and imaging characteristics. *RadioGraphics.* 2001;21(2):475-90.
4. Ozkaya O. Mixed germ cell tumour of the ovary mimicking unruptured ectopic pregnancy presenting

- with unusually high serum alpha-fetoprotein level. *Gynecol Surg.* 2005;2(4):307-10.
5. Rozenholc A. A pelvic mass on ultrasonography and high human chorionic gonadotropin level: not always an ectopic pregnancy. *BMJ Case Rep.* 2012;2012.
  6. Kucera C, Cox-Bauer C, Miller C. Apparent ectopic pregnancy with the unexpected finding of a germ cell tumour: A case report. *Gynecol Oncol Rep.* 2017;21:31-3.
  7. Heo EJ, Choi CH, Park JM, Lee JW, Bae DS, Kim BG. Primary ovarian choriocarcinoma mimicking ectopic pregnancy. *Obstet Gynecol Sci.* 2014;57(4):330-3.
  8. Dawley B., Acuna A., Grasu B. Ectopic production of HCG by a benign ovarian mature cystic teratoma simulating an extra-uterine pregnancy: a case report. *W V Med J.* 2012;108(1):15-7.
  9. Rivera C. A mediastinal germ cell tumour mimicking an ectopic pregnancy. *J Gynecol Oncol.* 2011;22(4):288-91.
  10. Perriera L, Reeves MF. Ultrasound criteria for diagnosis of early pregnancy failure and ectopic pregnancy. *Semin Reprod Med.* 2008;26(5):373-82.

**Cite this article as:** Verma D, Kumar S, Sachdev N. Mature cystic teratoma mimicking ectopic pregnancy: a case report. *Int J Reprod Contracept Obstet Gynecol* 2023;12:3403-6.