

Case 2761

Mature cystic teratoma of the ovary without fat in the cystic cavity

M. Simões*, T. M. Cunha**, A. Félix**

*Hospital de Dona Estefânia, Lisboa

**Instituto Português de Oncologia de Francisco Gentil - Lisboa
1099-023 Lisboa / Portugal

Section: Genital (Female) Imaging

Published: 2006, Jan. 6

Patient: 58 year(s), female

Clinical Summary

A 58-year-old female, nullipara, who underwent a routine pelvic sonogram, was diagnosed a heterogeneous mass arising from the right adnexal region. An unenhanced CT scan and MR were performed for further evaluation.

Clinical History and Imaging Procedures

The patient was an otherwise healthy G0 P0 in menopause since the age of 53 years without a history of hormone replacement therapy. She underwent a routine pelvic sonography that revealed the presence of a heterogeneous mass located in the right adnexal region (Fig. 1). The patient was referred to our institution to undergo an abdominopelvic CT scan and to evaluate the nature of the lesion. This revealed the presence of a heterogeneous hypodense unilocular tumor measuring approximately 6 x 5 cm, with regular borders, subtle calcifications and a small amount of fat on the wall (Fig. 2). An MR study was performed for further evaluation, which showed a low-signal intensity lesion on T1 (Fig. 3a) and a heterogeneous high-signal intensity on T2-weighted images (Fig. 3c), indicating that the cystic component was mainly aqueous fluid. A small area with high-signal intensity was seen in the wall of the cyst on the T1-weighted images (Fig. 3a), which was markedly suppressed on the T1 fat-saturated sequence (Fig. 3b). The patient was submitted to surgery and pathological examination revealed the presence of a benign right ovarian mature cystic teratoma (Fig. 4). The ovary was fully occupied by a unilocular cyst lined by squamous cell epithelium with adnexal structures, containing sebaceous material and hair. Inside the cyst wall small amounts of fat tissue were present (Fig. 5).

Discussion

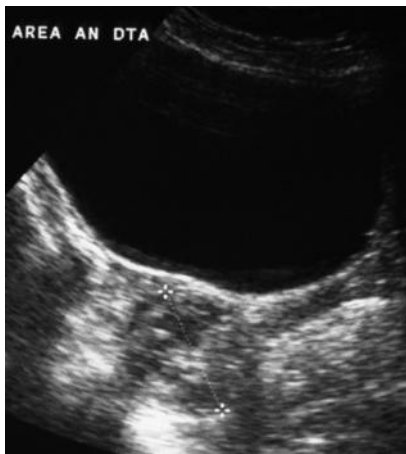
Mature cystic teratoma, also known as dermoid cyst, is a common adnexal tumor representing approximately 20% of all ovarian tumors and is composed by well-differentiated derivations of the three germ cell layers (ectoderm, mesoderm, and endoderm). These benign tumors generally affect women of young age (mean age of 30 years), are predominantly unilocular but may be multilocular, divided by multiple septa. Its diagnosis may be achieved with great accuracy by modern imaging techniques, because the fat content in the cystic cavity induces characteristic imaging features, being present in 93-96% of the cases (1). The presence of fat inside the ovarian tumor may be considered a specific sign for mature cystic teratoma, although it can be found in uncommon ovarian tumors such as immature teratoma or sebaceous tumors (1, 2). Sonographic literature emphasizes the variability in the appearance of these neoplasms and the overlap imagiological findings with other ovarian neoplasms, including ovarian carcinoma. The most common appearance of these tumors are cystic lesions with a densely echogenic tubercle (Rokitansky nodule). A diffusely or partially echogenic mass causing acoustic beam attenuation can be produced by sebaceous material, hair in the cyst cavity or calcified structures such as bone and teeth, has also been described. A third manifestation consists in the presence of multiple thin, echogenic bands caused by hair in the cyst cavity. At CT, fat attenuation within a cyst, with or without calcification, is diagnostic for mature cystic teratoma. Characteristic MR imaging such as reversed chemical-shift artifact, gravity-dependent layering or dermoid plug are usually present. Although most mature teratomas characteristically show fat in the cyst, a small number of tumors may contain a fat-poor fluid, as in our case and the diagnosis of mature cystic teratoma may be overlooked, as no fat content was demonstrate in the cavity of the cyst. The presence of fat inside the cystic wall may be use as a hint to the diagnosis, for that the cystic wall must be examined carefully in order to make the correct preoperative diagnosis. In tumors lacking characteristic findings seen in mature teratomas, the use of a fat saturated MR imaging seems to be particularly important in revealing small amounts of fat in the cyst wall (3, 4).

Final Diagnosis

Teratoma of the ovary without fat in the cystic cavity.

Figures

Figure 1



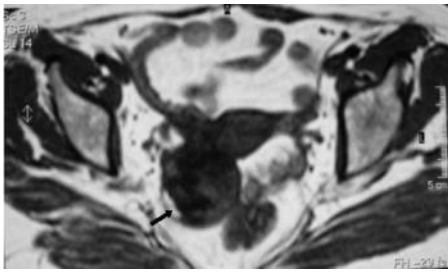
A transabdominal sonogram showing the presence of an inhomogeneously mixed right adnexal mass.

Figure 2

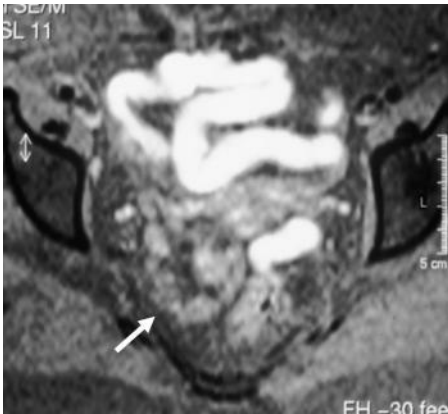


A CT image showing the presence of a heterogeneous right adnexal tumor with subtle calcifications and regular borders posterior to the uterus. A small amount of fat can be detected in the wall of the lesion (indicated by an arrow).

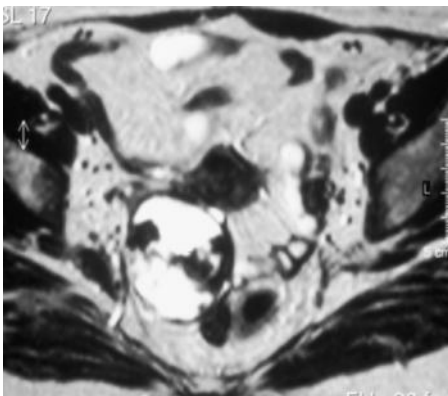
Figure 3



On T1-weighted sequence the tumor is mostly markedly hypointense. A small high-signal intensity area is seen in the wall of the mass (indicated by an arrow).



The feature in this image corresponds to pure fat content, as it is completely suppressed on a fat-suppressed sequence (T1WI).



An axial T2-weighted image showing a heterogeneous high-signal intensity on the right adnexal tumor posterior to the uterus.

Figure 4

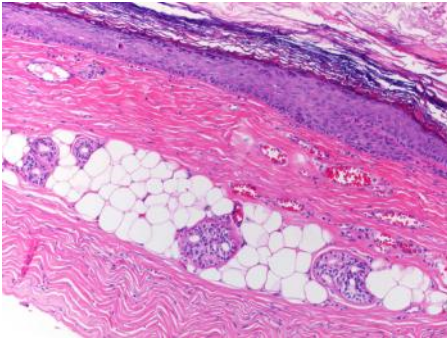


A photograph of the right adnexal specimen, showing that the ovary is fully occupied by a unilocular cyst lined by skin containing mostly sebaceous material and hair without fatty tissue.



A photograph of the right adnexal specimen taken after the removal of the internal content of the cyst.

Figure 5



Tumor wall, lined by keratinized squamous cell epithelium, with fat tissue surrounding adnexal glands.

MeSH

Ovary [A05.360.576.497]

The reproductive organ (GONADS) in female animals. In vertebrates, the ovary contains two functional parts: the OVARIAN FOLLICLE for the production of female germ cells (OOGENESIS); and the endocrine cells (GRANULOSA CELLS, THECA CELLS, and LUTEAL CELLS) for the production of ESTROGENS and PROGESTERONE.

Teratoma [C04.557.465.910]

A true neoplasm composed of a number of different types of tissue, none of which is native to the area in which it occurs. It is composed of tissues that are derived from three germinal layers, the endoderm, mesoderm, and ectoderm. They may be solid or cystic and are classified histologically as mature, immature, and malignant. (From Dorland, 27th ed & DeVita Jr et al., *Cancer: Principles & Practice of Oncology*, 3d ed, p1642)

References

- [1] Buy JN, Ghossain MA, Moss AA, et al. Cystic teratoma of the ovary: CT detection. *Radiology* 1989; 171:697-701.
- [2] Scully RE, Young RH, Clement PB. Tumors of the ovary, maldeveloped gonads, Fallopian tube, and broad ligament. In: Rosai J, ed. *Atlas of tumor pathology*. Washington, DC: Armed Forces Institute of Pathology, 1998; 23:303-304.
- [3] Rha SE, Byun JH, Jung SE, et al. Atypical CT and MRI manifestations of mature ovarian cystic teratomas. *AJR* 2004; 183:743-750.
- [4] Yamashita Y, Hatanaka Y, Torashima M, Takahashi M, Miyazaki K, Okamura OH. Mature cystic teratomas of the ovary without fat in the cystic cavity: MR features in 12 cases. *AJR* 1994; 163:613-616.
- [5] Outwater EK, Siegelman, ES, Hunt, JL. Ovarian teratomas: tumor types and imaging characteristics. *Radiographics* 2001; 21:475-490.

Citation

M. Simões*, T. M. Cunha**, A. Félix**

*Hospital de Dona Estefânia, Lisboa

**Instituto Português de Oncologia de Francisco Gentil - Lisboa

1099-023 Lisboa / Portugal (2006, Jan. 6)

Mature cystic teratoma of the ovary without fat in the cystic cavity {Online}

URL: <http://www.eurorad.org/case.php?id=2761>