Ovarian mucinous cystadenoma:
CT and MR imaging findings
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Section: Genital (female) imaging
Area of Interest: Genital / Reproductive system female
Procedure: Comparative studies
Imaging Technique: PACS
Imaging Technique: CT
Imaging Technique: MR
Imaging Technique: MR-Diffusion/Perfusion
Special Focus: Obstetrics Neoplasia Case Type: Clinical Cases
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Patient: 42 years, female

Clinical History:

A 42-year-old female patient was referred for a sonographically detected multicystic adnexal mass. Laboratory analysis revealed elevated serum CA 19-9 levels and moderate haematocrit decrease. CT of the abdomen and MR imaging examination of the pelvis followed.

Imaging Findings:

Multidetector CT revealed the presence of a multilocular cystic mass originating from the left adnexa (Figure 1). The dimensions of the lesion were 13x12x8.5 cm. The mass had a smooth contour and multiple, thin regular internal septa, some containing small calcifications. The lesion contained parts of water density and others, with a mean CT density of 45 HU. Contrast-enhanced CT demonstrated only wall and septa enhancement, detected with a thickness less than 3 mm. Neither lymphadenopathy nor ascites was revealed.

MR imaging confirmed the presence of a multicystic pelvic mass, consisting of loculi, with a signal intensity similar to that of water and others, hyperintense on both T1 and T2-weighted images, the latter suggestive of fluid with variable viscosity (Figure 2). No areas of restricted diffusion within the mass were revealed.

Imaging findings were suggestive of the presence of mucinous ovarian cystadenoma, which was confirmed histologically (Figure 3), following cystectomy.

Discussion:

Background:
Epithelial ovarian neoplasms represent 60% of all ovarian tumours and are classified as benign (60%), borderline (5%) and malignant (35%), based on histologic characteristics and clinical behavior. The two commonest subtypes are serous and mucinous tumours, with a frequency of 40% and 20%, respectively [1-6].

Ovarian mucinous cystadenomas account for 20% of benign tumours [5]. Histologically, they are lined by mucinous epithelium and contain gelatinous material or fluid of various viscosities [5, 6].

Imaging Perspective:
Determining the subtype and suspicion of malignancy of an adnexal mass on the basis of imaging features
represents a diagnostic challenge [1-3]. The CT diagnosis of mucinous cystadenoma should be suggested in the presence of a large multicystic adnexal mass, with multiple internal septa, not enhancing after contrast material administration, except perhaps the wall or septa, which are less than 3 mm in thickness and no endocystic or exocystic vegetations. The tumour often contains hyperdense parts, the latter suggestive of mucin content [7-9]. The presence of a multilocular cystic mass, with thin wall or septa, less than 3 mm in thickness, no evidence of internal solid components or invasive disease, containing hyperintense parts on both T1 and T2-weighted sequences, due to the presence of mucin should also suggest the diagnosis of mucinous cystadenoma on MR imaging. Differential diagnosis from serous cystadenoma may not always be possible, although a unilocular or multilocular adnexal tumor, filled with serous fluid, of homogeneous CT density or MR signal similar to that of water, not enhancing, except the wall or septa, of less than 3 mm in thickness is more compatible with the diagnosis of a serous cystadenoma [7-9].

Ovarian malignancy on the other hand is strongly suggested in the presence of a thick, irregular wall, of thickness more than 3 mm, thick, irregular septa, papillary projections and solid, enhancing tissue, with presence of necrosis. Ancillary findings of pelvic organ invasion, lymphadenopathy, ascites and peritoneal metastases increase the diagnostic confidence of malignancy [1-3, 7-9].

Borderline ovarian tumours are often difficult to characterize on imaging, because of their close resemblance to benign tumours. Outwater et al suggested the diagnosis of borderline malignancy in the presence of abundant papillary projections in a young woman [10]. Papillary projections are often absent in benign cystadenomas, but when present they are usually few in number and small in size.

**Differential Diagnosis List:** Ovarian mucinous cystadenoma, Serous cystadenoma, Mucinous borderline tumour, Serous cystadenocarcinoma, Mucinous cystadenocarcinoma

**Final Diagnosis:** Ovarian mucinous cystadenoma

**References:**


Description: Transverse unenhanced CT image reveals a large, multicystic left adnexal mass. The lesion contains hyperdense parts (45 HU, arrow), suggestive of mucinous content. Slight septal calcifications (arrowhead) are also seen. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Transverse contrast-enhanced CT image (portal phase) demonstrates multilocular cystic mass, with thin wall and septa, enhancing after contrast material administration. Hyperdense parts (arrow) have similar CT density, as on unenhanced images. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Coronal contrast-enhanced CT image demonstrates large, well-delineated multicystic left adnexal mass. A uterus leiomyoma (arrow) and a unilocular cystic right adnexal lesion (asterisk) are also detected. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Sagittal contrast-enhanced reformatted CT image (portal phase) depicts only peripheral wall and internal septa enhancement. The lesion contains hyperdense parts (arrow) and cystic parts (arrowhead), with attenuation values within the water range. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Transverse T1-weighted image reveals multilocular pelvic mass. The lesion has parts of low signal intensity (arrow), similar to that of water and others hyperintense (asterisk), the latter suggestive of mucinous content. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Coronal T2-weighted image shows mass, with parts of very high signal intensity (arrowhead), similar to that of water, and others, with a signal intensity, slightly higher (asterisk) than that of normal myometrium (long arrow). Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: Transverse fat-suppressed post-contrast T1-weighted image shows wall and septa enhancement. Hyperdense parts (asterisk) suggest the presence of mucinous content. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Description: ADC map (b?1000 s/mm2) depicts hyperintensity of cystic content of the lesion, signifying free movements of the water molecules. The mean ADC values are 2.9 mm2/s. Origin: Tsili AC, Department of Clinical Radiology, Ioannina, Greece.
Figure 3

Description: Tall columnar cells containing abundant intracellular mucin (? + ? X 40). Origin: Tsili A, Department of Clinical Radiology, Ioannina, Greece.