Clinical history and working diagnosis on the referral:

**Multi-cystic lesion of pelvis without adnexal pathologies in US**: Referral of an asymptomatic patient to our university hospital for pelvic magnetic resonance tomography (MRI). The transvaginal Ultrasound (TV-US) showed a multi-cystic tumorous lesion of pelvis of unknown aetiology, without adnexal pathologies, depicted in gynaecologic routine examination. The **origin** and the differentiation between **benign and malignant** aetiology of the pelvic cystic formation was the main question to be answered on MRI. No ascites was seen on TV-US. The tumour markers were not yet taken at that moment.

Features and exact location of lesion in question:

**Lesion 1**: Multiple multiloculated mostly thin septated T2 hyperintense lesions in Fossa Douglas along the peritoneal lining, without papillary formations, without diffusion restriction. No free fluid.

**Lesion 2**: Left ovary of 30 mm diameter showing a small calcification and T1 hyperintense, T1 fat sat hypointense components corresponding to fatty lesions and further small components showing T1 fat sat hyperintensity. ADC values varied from very restricted to mildly restricted (0.2-0.8x10^-3mm^2/s) without showing major hyperintensity on DWI.

**Suggested Radiologic Diagnosis**: DD Ovarian teratoma, DD struma ovarii with syndrome pseudomeigs

Submitted by:
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Please add pictures (radiograph, ultrasound, CT or MR images) by clicking on the symbols within the boxes below:
Case-Based Diagnosis Training

Additional information

Potential pitfall:

Pitfall 1: Without careful analysis of all sequences a possibility considering the small left ovary as normal is given due to T2w sequence. Key findings suggesting teratoma: Fatty and calcificated components of the lesion!

Pitfall 2: Considering the cystic formation as free fluid. This assumption, together with diffusion restriction of the ovary and as by later known, tumor marker CA-125 elevation (60 kU/L, norm. <35), a possible false diagnosis of ovarian cancer could be concluded, which psychologically burdens the patient and guides to an extensive treatment planning by gynaecologist colleagues.

Important to rule out or recommend:

In case of cystic lesions aligning the peritoneum of the female pelvis:

1) Multicystic peritoneal Mesothelioma (Prior surgery or inflammation /IUD?)

2) Inclusion cysts (Prior surgery?)

3) Meigs Syndrome (Triad of ascites, pleural effusion, benign ovarian tumor)

4) Ovarian cancer (Ovaries suspicious for malignancy?: diffusion restriction or contrast enhancement not explained by other than malignant imaging morphology? Peritoneal carcinomatosis? Ascites?)

Final diagnosis:

Left Ovarian Mature Teratoma (MT) with Fossa Douglas Teratoma

Notice: only 12 FD teratomas have been reported since the first case was described in 1978 (Oshima K. 2015). This differs from peritoneal gliomatosis associated with MT (originating from pluripotent peritoneal Müllerian stem cells, Ferguson AW 2001).

In case you want to submit further pictures, please add these (radiograph, ultrasound, CT or MR images) by clicking on the symbols within the boxes below:

**Picture 3:** T2W cor. Showing the larger ovary left and multiple fluid filled cysts of the pelvis.

**Picture 4:** T2W sag. Showing suspicious thin soft tissue component of septations in Fossa Douglas.
Additional pictures

In case you want to submit further pictures, please add these (radiograph, ultrasound, CT or MR images) by clicking on the symbols within the boxes below:

**Picture 5:** T1TSE ax. without contrast media (CM). Left ovarian MT with hyperintense fatty areas

**Picture 6:** T1TSE_fs ax. Without CM. Left ovary containing hypointense macroscopic fat

**Picture 7:** T1_fs sag. with CM. Slightly enhancing septations of the multicystic Fossa Douglas MT

**Picture 8:** Histopathology of left ovarian mature teratoma containing sebaceous glands and squamous cells. No thyroid tissue depicted

**Picture 9:** Second focus of histopathologically proven mature teratoma in Fossa Douglas (FD) containing squamous epithelium

**Picture 10:** Immunohistochemistry against cytokeratine CK5/6 in Fossa Douglas, excluding f.i. serosal inclusion cysts
Additional pictures

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**Picture 11:** Transaxial DWI \((b=800)\) showing heterogenic, rather iso- than hyperintensity of the left ovary

**Picture 12:** Transaxial ADC map showing hypointense diffusion restriction of the left ovary

**Picture 13:** Intraoperative situs with multiple pelvic cystic formations

**Picture 14:** Wider view of the intraoperative situs. The ovaries macroscopically with normal appearance