Ovarian teratoma in a paediatric patient
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Section: Genital (female) imaging
Case Type: Clinical Cases
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Patient: 6 years, female

Clinical History:
A 6-year-old girl presented at the emergency unit with a two-week history of diffuse lower abdominal pain. Clinical examination of the abdomen revealed tenderness in the right iliac fossa, with a palpable mass.

Imaging Findings:
A 6-year-old girl presented at the emergency unit with a two-week history of diffuse lower abdominal pain. Clinical examination of the abdomen revealed tenderness in the right iliac fossa, with a palpable mass. Laboratory tests including alfa fetoprotein (AFP) were unremarkable. Ultrasonographic examination of the abdomen revealed the presence of a large pelvic complex mass containing anechoic fluid and both peripheral and central echogenic components (Figure 1 a, b, c). Low dose CT of the lower abdomen verified the presence of a large lobulated and well defined pelvic mass that had mixed hypodense and hyperdense components consistent with mixed cystic and solid nature of the mass with calcifications (Figure 2). Consequently, laparotomy was performed and the histology of the resected pelvic mass was consistent with ovarian teratoma originating from the right ovary (Figure 3 a,b,c,d).

Discussion:
About 65% of ovarian tumours in children and adolescents are benign. Cystic teratoma is the most common tumour, accounting for more than 90% of all benign ovarian neoplasms. About 90% of the teratomas are benign and only 10% are malignant [1]. Teratomas are congenital germ cell tumours arising from the pluripotential germinal cells. They contain all three germ cell layers (ectoderm, mesoderm and endoderm), while dermoids contain only two layers (ectoderm and mesoderm). Ovarian teratomas are usually unilateral, but bilateral tumours have also been reported in 10% to 20% of patients. Tumour size varies from 0.5 to 30cm, but most measure between 5 and 10cm in diameter [2]. Although ovarian teratomas can occur in premenarchal and postmenarchal girls, the majority (>80%) in the pediatric population is diagnosed in pubertal girls. Most affected patients present with an asymptomatic palpable mass, which may be abdominal in location, due to extension outside the pelvis. A minority of patients may present with acute abdominal or pelvic pain caused by haemorrhage, torsion or rupture of the tumour [3]. The sonographic appearance of teratomas is variable, depending on the relative amounts of sebum, serous fluid, calcium, hair and fat. The spectrum of sonographic findings includes: a. a mixed solid-cystic mass with echogenic and hypoechoic components (75%), b. an anechoic mass (12,5%), and c. solid mass (12,5%). The hypoechoic components correspond to sebum. Pure sebum mimics simple fluid on sonography, since it is liquid at body temperature and lacks any significant number of interfaces. The echogenic foci represent soft tissue, hair, fat or calcification and have a variable sonographic appearance ranging from a single mural nodule or dermoid plug, projecting from the inner cyst wall, to large central soft tissue masses. Mural nodules occur in 70% of teratomas in postpubertal girls and in 40% of teratomas in prepubertal girls. They typically are round and form an acute angle with
the cyst wall. As an overall, benign cystic teratomas contain less than 50% of soft tissue elements [4].

Acoustic shadowing is another classic sign of cystic teratoma, occurring in about 50% of ovarian lesions. Shadowing does not necessarily imply calcified material, but instead it may represent a mixture of sebum and hair. Large amounts of these tissues can completely obscure visualisation of the back wall of the tumour, producing the "tip of the iceberg" sign. Occasionally sonography depicts a fat-fluid, hair-fluid or fluid-fluid level. In patients with fat-fluid or hair-fluid levels, the solid components float on the sebum or serous fluid. This appearance differs from that seen in haemorrhagic ovarian cysts, where the serous fluid lies on top of the dependent proteinaceous debris [5, 6].

**Differential Diagnosis List:** Ovarian teratoma

**Final Diagnosis:** Ovarian teratoma

**References:**


Description: A well defined ovoid mass with mixed echogenic (yellow arrow) and cystic (green arrow) component. Note also the acoustic shadowing (red arrow) behind the solid component. Origin:
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**Description:** Low dose CT of the lower abdomen reveals a large, lobulated, well defined mass with mixed hypodense and hyperdense components, consistent with a lesion presenting calcifications (white arrow) as well as fatty (arrowhead) and cystic components (asterisk). **Origin:**
Description: Large lobulated mass (asterisk) in continuity with the right ovary (white arrow) demonstrating a large amount of sebum (green arrow), hair (red arrow) and bone (blue arrow). Origin:
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