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MR imaging features of nongynaecologic cystic lesions of the pelvis

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Abstract

Objective: The purpose of our article is to review the magnetic resonance imaging (MRI) features of nongynaecologic cystic lesions of the pelvis. **Conclusion:** The rising use of MRI for pelvic exploration will result in an increase in incidental detection of pelvic cystic cysts. Pelvic cysts of non gynecologic origin are less frequent than gynecologic cysts. However, they account for a wide range of abnormalities, and radiologists must be aware of their features and characteristics

Keywords: MRI; Pelvis; Gynecology; Cysts

1. Introduction

Most non gynaecologic cystic lesions of the pelvis are found incidentally, and most are congenital. They can be related to a wide spectrum of disease processes. Early accurate diagnosis, localization, and characterization of these cysts will affect surgical management. Magnetic resonance imaging (MRI) is the technique of choice in the diagnosis of these lesions because of its excellent soft-tissue resolution together with primary multiplanar imaging capability. Diagnosis consists of several steps, including determining tumor location and recognizing specific features of some cystic lesions. However, substantial overlaps exist in the imaging findings of these pelvic cystic masses. The aim of this pictorial essay is to review the key clinical and MRI differentiating features of pelvic cystic lesions of non gynaecologic origin.

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1.1. MR scanning protocol

MRI examinations are performed with a 1.5- or 3-T MR unit, using a phased-array coil. No bowel preparation nor administration of antispasmodics is necessary. Examinations are based on T2-weighted sequences in sagittal, axial, and coronal planes, using 4–5-mm thick slices. Axial T1-weighted as well as fat suppressed gadolinium-enhanced T1-weighted and diffusion-weighted MR sequences may be performed depending on MR findings on T2-weighted sequences.

2. Cystic lesions of extraperitoneal origin

2.1. Presacral space

2.1.1. Developmental cysts

Tailgut cysts are the most common of these cysts. They are thought to arise from the embryonic postanal gut [1]. The tailgut or postanal gut is the most caudal part of the hindgut, distal to the future anus. It normally involutes by the 8th week of embryonic development [2]. They are located predominantly in the retrorectal space, which is bordered by

the rectum anteriorly, superiorly by the peritoneal reflection, inferiorly by the levator ani muscle, and posteriorly by the sacrum [3]. Tailgut cysts are more common in women than in men and can be detected in patients of any age even in neonates [4]. Early accurate diagnosis, localization and characterization of the cyst will affect the surgical management. Their classic appearance is that of a multicystic lesion with small cysts adherent to a large cyst, displaying low or high signal intensity on T1-weighted images depending on the protein concentration of their content, with a fibrous wall and without evidence of sacrococcygeal involvement (Fig. 1) [2,5]. After gadolinium injection, the outer wall and internal septa may slightly enhance.

Fig. 1. (A and B) Tailgut cyst in a 45-year-old female patient fortuitously discovered. Sagittal T2-weighted MR images demonstrate a retrorectal large cystic lesion (arrows, A) associated to two inferior small cysts (arrows, B).

Other developmental cysts such as epidermal, dermoid cyst, or cystic teratoma (Figs. 2 and 3) and rectal cyst duplication may have similar characteristics, although they are more often unilocular.

Dermoid cysts are presumably due to a faulty of ectoderm when the embryo coalesces [6–8]. The clinical presentation is nonspecific and they are usually asymptomatic. There are multiple nondependant spheres of fat inside the lesions which are hyperintense on T1-weighted sequences and hypointense on T2-weighted. Loss of signal intensity in these spheres on out-phase images as opposed to in-phase images confirm their fatty nature) [6,9]. They may contain bone elements or calcifications that appear as hypointensity on all sequences [9–11].

Epidermoid cysts developing in the presacral space are quite rare. MRI generally demonstrates an unilocular cystic mass. On contrast-enhanced images, there is absent or mild enhancement of the wall [2,11].

Rectal duplications are particularly rare representing 1–8% of all duplications [12,13]. They are spherical, fluid-filled cysts that are usually located posterior to the rectum or anus. They may communicate with the rectum. MRI is able to identify individual layers of the wall and is the most accurate preoperative investigation for defining the localization, volume, and anatomic relationships of the duplicated rectal segment (Fig. 4) [12,14].

2.1.2. Spinal meningeal cysts

Anterior sacral meningocele is a rare congenital disorder [14]. Meningoceles are protrusions of the membrane-lined spinal content through a ventral or dorsal osseous defect of a portion of the anterior sacrum. They are associated with

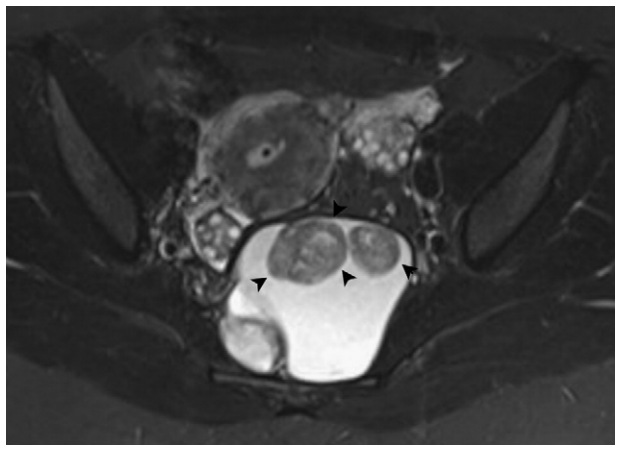

Fig. 2. Epidermoid cyst in a 25-year-old woman with a history of lower abdominal pain. Fat suppressed T2-weighted MR images show a bilobulated cystic lesion with spheres of keratin debris inside the largest cyst (arrowheads).