MRI findings in uterine adenomyosis

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Section: Genital (female) imaging
Case Type: Clinical Cases
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Patient: 40 years, female

Clinical History:
A 40-year-old woman presented with menorrhagia and dysmenorrhoea for the past 1-year.

Imaging Findings:
A 40-year-old woman presented with menorrhagia and dysmenorrhoea for the past 1-year. There was no significant past medical history and no weight loss or fever. General physical and local examination was unremarkable. Laboratory results showed normocytic normochromic anaemia, with a serum haemoglobin (Hb) of 9 gm%. Trans-abdominal sonography showed mildly bulky uterus with heterogeneous myometrial echotexture. She was further evaluated with a pelvic-MRI examination. On MR imaging, the uterus was seen to be mildly enlarged in size. It demonstrated an abnormally low signal intensity lesion diffusely infiltrating the myometrium on the T2-weighted images. Its interface with the remaining normal myometrium was ill-defined and fuzzy. There were associated multiple high signal intensity foci scattered within this low signal abnormality. These foci had signal intensity characteristics similar to those of endometrium on the T2-w images. On T1-w MRI, many of these foci appeared markedly hyperintense. Not all the T2-w MRI hyperintense foci were hyperintense on T1-w images. The endometrial stripe was otherwise normal in thickness. Both ovaries were normal and there was no significant pelvic lymphadenopathy seen. Based upon the MR imaging findings and relevant clinical history, diagnostic possibility of uterine adenomyosis was considered. The patient was subsequently subjected to hysterectomy and diffuse adenomyosis was confirmed on histopathology.

Discussion:
Adenomyosis is a common, however an underdiagnosed gynaecologic disorder that predominantly affects women of reproductive age. It has a reported incidence ranging from 5 to 70 %. Adenomyosis is characterised by presence of ectopic endometrial tissue within the myometrium. There is associated hypertrophy and hyperplasia of the adjacent smooth muscles of the myometrium. It has been postulated, that this dysfunctional hypertrophied muscular tissue surrounding the ectopic endometrial glands prevents uterine contractions from tamponading bleeding myometrial arterioles, hence these patients frequently present with dysfunctional uterine bleeding or menorrhagia. Patients may also present with increasing pelvic pain or dysmenorrhoea at times.

Myometrial muscular hyperplasia forms the basis of the imaging manifestation of adenomyosis. The hypertrophied myometrial stroma demonstrates hypointense signal compared to the outer myometrium on T2 weighted images. Since its signal intensity is indistinguishable from that of the junctional zone, it manifests as widening of the junctional zone. A junctional zone of 12 mm or more is seen in the “diffuse” form of adenomyosis. Additionally there is poor definition of the junction zone due to fuzzy endo-myometrial interface. Within this thickened junctional zone the ectopic endometrial glands are located, which demonstrate hyperintense signal on T2 weighted images. Few of these are haemorrhagic and demonstrate punctate hyperintense signal on T1 weighted images. Small sub-
endometrial cysts may also be encountered which are very well seen on sonography. The “focal” form of the disease, the so called “adenomyoma” owing to its T2- hypointense signal mimics uterine leiomyoma. Focal adenomyosis are often infiltrative and demonstrate a fuzzy interface with the remaining myometrium, in contrast to the distinct margins of a leiomyoma. A globular enlargement of the uterus with a relatively less distortion of its shape is a feature of adenomyosis. In contrast, leiomyomas show greater mass effect and cause distortion of the endometrial stripe and/or the serosal surface. Contrast enhanced MR evaluation is usually not indicated in adenomyosis, however if performed, it shows enhancement of the ectopic endometrial glands. There is a correlation between severity of dysfunctional uterine bleeding and the depth of adenomyosis. Based upon the imaging findings Bazot et al graded adenomyosis into Grade 1, 2 and 3 i.e. involvement of the inner third of the myometrium, two-thirds of the myometrium, and the entire myometrium, respectively. Conservative treatment such as endomyometrial ablation may be of some help in patients with superficial (grade 1) adenomyosis. However, hysterectomy is considered the preferred treatment. The diagnosis can be confirmed on hysteroscopic myometrial biopsy; however, it is often made following hysterectomy. Rarely adenomyosis may demonstrate extensive glandular cystic changes as well as haemorrhage. This has been referred to as “cystic adenomyosis or adenomyotic cyst”. Although adenomyosis is a benign entity, there have been few reports of adenocarcinomas arising from adenomyosis. However, these adenocarcinomas were present in the myometrium without involvement of the ectopic endometrium.

To conclude, MRI is an excellent tool for diagnosing and classifying adenomyosis. Based upon T2-weighted images, a junctional zone thickness of 12-mm or more is considered diagnostic of adenomyosis.

**Differential Diagnosis List:** Uterine adenomyosis

**Final Diagnosis:** Uterine adenomyosis

**References:**


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