Case 1927

Bilateral adrenal myelolipomas: CT and MR imaging findings
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Section: Uroradiology & genital male imaging
Imaging Technique: CT
Imaging Technique: MR
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Case Type: Clinical Cases
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Patient: 72 years, female

Clinical History:
The patient was admitted with worsening of chronic pain on the right side of her abdomen. The physical examination and the complete biochemical work-up were normal.

Imaging Findings:
The patient was admitted with worsening of chronic pain on the right side of her abdomen. She also complained of mild pain on the left side of the abdomen. Physical examination did not reveal any clinical signs and there was no significant past medical history. The complete biochemical work-up was normal. Abdominal ultrasonography disclosed a mass lesion, which was originally thought to be intrahepatic. Computed tomography (CT) showed well-delineated hypodense mass lesions on both adrenal glands. For further evaluation, MR imaging of the adrenals was performed. The MR imaging study was performed with a body phased array coil applying T2-weighted TSE, T2-weighted TSE with fat suppression and contrast enhanced T1-weighted Spin Echo with fat suppression. The examination revealed bilateral adrenal masses, 44mm in longitudinal diameter on the right side and 12mm on the left side. The lesions were heterogeneously hyperintense on T1- and T2-weighted images, with a marked decrease in the high signal following fat suppression. After administration of paramagnetic contrast, only the non-fatty components of the right lesion were enhanced. A second mass was detected, 15mm in diameter, originating from the outer limb of the left adrenal. The imaging findings suggested a diagnosis of bilateral adrenal myelolipomas associated with left adrenal adenoma.

Because the right-side tumour had been symptomatic, it was treated by right adrenalectomy. Histology confirmed the imaging findings.

To the best of our knowledge only 14 cases of bilateral adrenal myelolipomas have been reported in the literature.

Discussion:
Adrenal myelolipomas were first described in 1905. They are rare benign neoplasms that consist of mature fat tissue, bone-marrow elements and a pseudocapsule (1,2). These tumours are more frequent in males aged 40-60 years. Adrenal myelolipomas are typically unilateral, small and non-functioning (3). Although usually asymptomatic, they may cause discomfort or flank pain due to compression or haemorrhage (3). Their incidence at autopsy has been estimated to be 0.08-0.2%. Myelolipomas can be isolated, extra-adrenal, complicated by haemorrhage, usually when larger, and associated with other adrenal disease (4).
US, CT and MR imaging during workup for unrelated symptoms identify most myelolipomas. CT images depict the location and size of the myelolipoma and may detect calcification, haemorrhage, fat and pseudocapsule. The typical image demonstrates a well-delineated mass, which has fatty tissue with areas of haematopoietic tissue exhibiting higher attenuation. On MR imaging, T1-weighted images show a high intensity mass with heterogeneity. The high intensity areas correspond to fat. On the T2-weighted images the fatty tissue and the bone marrow have a heterogeneously hyperintense appearance. Fat-suppressed images prove the existence of fat tissue in the lesion (5).

Differential diagnosis includes lipoma, liposarcoma (in cases with high lipid content), haemorrhagic adrenal adenoma, adrenocortical carcinoma, and adenocarcinoma metastatic to the adrenal gland (5). Radiologically-guided fine-needle aspiration is helpful in establishing the diagnosis. Acute haemorrhage is a complication of adrenal myelolipomas. Surgical excision of asymptomatic myelolipomas is not necessary.

**Differential Diagnosis List:** Bilateral adrenal myelolipomas and left adrenal adenoma

**Final Diagnosis:** Bilateral adrenal myelolipomas and left adrenal adenoma

**References:**

Figure 1

Description: Axial CT image shows an ovoid heterogeneously hypodense lesion originating from the right adrenal. Origin:
Description: Axial CT image at a lower level shows a small myelolipoma in the medial limb of the left adrenal and a typical benign adenoma in the lateral limb. Origin:
Description: Axial T2-weighted Turbo Spin Echo image shows a high signal intensity lesion on the right side. Origin:
Description: Axial T2-weighted Turbo Spin Echo image shows a high signal intensity small lesion corresponding to a myelolipoma of the medial limb and an intermediate signal intensity lesion of the lateral limb corresponding to a benign adenoma. Origin:
**Description:** Coronal fat-suppressed T2-weighted Turbo Spin Echo image shows the elimination of the signal of the fatty elements. **Origin:**
Description: Fat-suppressed contrast-enhanced T1-weighted Spin Echo image in the axial plane shows heterogenous enhancement of the capsule and some central parts, presumably corresponding to marrow elements. Origin: