Case Report

Myelolipoma of the adrenal gland diagnosis and management

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ABSTRACT

Myelolipoma of the adrenal gland is a rare benign tumor. It is diagnosed incidentally in most cases because of its non-functioning nature, unless it causes symptoms due to its size. It has specific sonographic and computed tomographic features. A case is presented, magnetic resonance findings are reported for the first time and a review of the literature is conducted.

Keywords: Adrenal gland, myelolipoma, hematopoietic cells, encapsulated tumour, magnetic resonance imaging findings.

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Myelolipoma is a benign non-functioning tumor composed of mature adipose tissue and hematopoietic cells. Although they are commonly found in the adrenal glands, extraadrenal myelolipomas are rare but documented.[1] With the development and improvement of imaging techniques a greater number of the so-called rare "incidentalinoma" is witnessed. The management of myelolipoma is controversial: surgical treatment or watching are options depending on the size of the tumor and the presence of symptoms.

Case report. A 67-year-old hypertensive lady presented with vague abdominal symptoms of several months duration. Physical examination was negative. Laboratory studies including; serum electrolytes, cortisol, 24 hour urine collection for valinyle mandilic acid (VMA) and catecholamines were all normal. On ultrasound (US) evaluation a 10.8x10.8x7.7 cm mass was seen with fat density in the left suprarenal area. A computerized tomography (CT) confirmed the non-homogeneous fatty nature of the tumor (Figure 1). Magnetic resonance imaging (MRI) showed the mass to be compressing the left kidney caudally (Figure 2). The mass is hyper-intense with foci of isotonisity scattered inside in T2 weighted images, while it appeared to be heterogeneously hypo-intense in T1 weighted images with a hyper-intense foci that is suppressed by fat suppression technique. A CT-guided fine needle aspiration (FNA) was attempted, however the tissue diagnosis was inconclusive. Surgical exploration through a left Chevron incision was carried out. The descending colon was reflected medially and the splenorenal attachments were freed. The tumor was seen well encapsulated having smooth yellow surface with scattered areas of red-brown coloration (Figure 3). It was removed in total. Microscopically, the tumor showed scattered large islands of fat cells intermingled with hematopoietic stem cells; a picture which confirm the diagnosis of myelolipoma.

Postoperatively, the patient did well and left the

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hospital within 6 days on antihypertensive medication.

Discussion. Gierke first reported this entity of benign adrenal tumors in 1905.[2] Since then around 200 cases have been reported in the literature.[3] Most of them were measuring 1 to 2 cm in diameter; only 3 cases with tumors weighing more than 3 kg were published.[4] In the reported literature, myelolipoma was surgically removed in less than 100 cases.[5] However, autopsy studies showed an incidence of 0.03%.[6] Myelolipoma occurs more in obese patients, with female to male ratio of 3:2. The usual age at diagnosis is the seventh decade of life;[7] however, it has been reported in patients between 12 and 93 years of age.[8] Various medical conditions were associated with the disease including; obesity, hypertension, atherosclerosis, diabetes mellitus, cancer and burn injuries.[5,9,10] Only 4 cases of bilateral tumors have been reported.[11,12] Endocrine evaluation is not reliable since it is hormonally inactive.[13,14] However, 10 cases have documented an association of myelolipoma with Cushing's syndrome and congenital 21-hydroxylase deficiencies.[15,16]

The microscopic appearance of the tumor entails a mixed component of fat cells and bone marrow elements of myeloid, erythroid and megakaryocytic cells in varying degrees.[17,18] No malignant features are present.[19,20] Grossly, it is pseudo-encapsulated due to compression of the adrenal tissue. It has a smooth surface and is yellow in color with varying amounts of red-brown hematopoietic elements.[19] Many theories were postulated on the etiology of myelolipoma to justify the presence of myeloid cells in the adrenal gland; one is that bone marrow emboli probably lodged in the adrenal gland, second theory is probably due to metaplasia of the reticuloendothelial cells within the capillaries of the gland and the third one is due to deviation of the embryonic primitive mesenchymal stem cells.[17,20,21] The characteristic fatty component of the tumor can be detected with the aid of US, CT scan and recently MRI. Myelolipoma is highly suspected if the US shows, a highly echogenic mass, in a hormonally inactive adrenal mass. Findings can be confirmed when the CT scan shows low-density measurements (Figure 1). Computerized tomography guided FNA can be utilized to confirm the diagnosis,[11] however, it did not prove in our case.

To our knowledge, we are the first to report the MRI findings in myelolipoma. The lesion in T1 weighted images is hypo-intense with scattered hyper-intense foci, while in T2 weighted images; it is hyper-intense with the foci being iso-intense. After the contrast, the foci will be enhanced. These findings are compatible with a lipomatous tumor (Figure 2). With the advent of the advanced technology of US, CT scan and MRI probably more

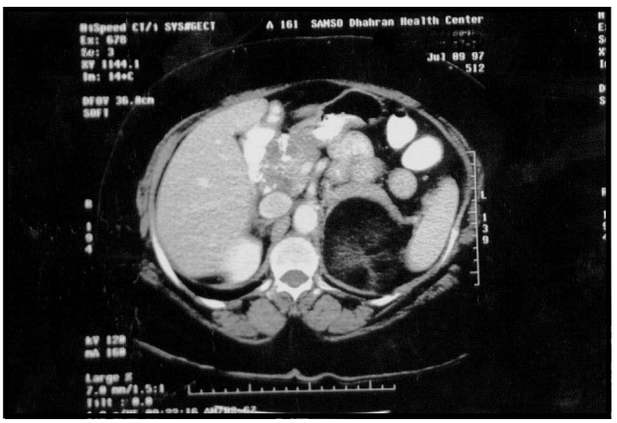

Figure 1 - CT scans findings in myelolipoma. Left sided retroperitoneal structure that is non-homogeneous with fatty low-density measurement.

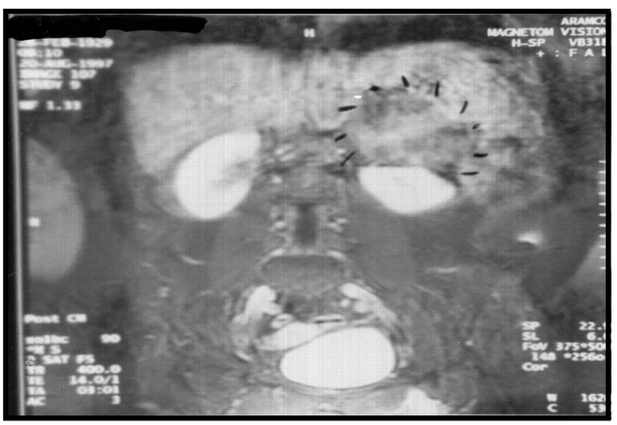

Figure 2 - MRI findings of the myelolipoma. A well-defined, heterogeneous left suprarenal mass is shown displacing the left kidney inferiorly. The arrows in the picture point to the boundaries of the mass.

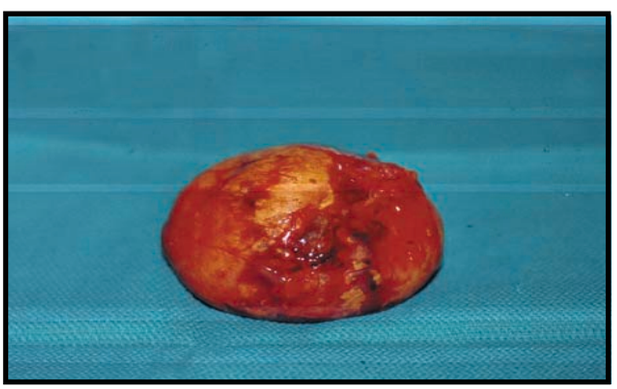

Figure 3 - Gross specimen of the tumour. It is pseudoencapsulated having smooth surface and is yellow in color with varying amounts of red-brown hematopoietic elements.

cases of myelolipoma will be diagnosed and the main concern of the treating surgeon will then be how to spare the patient a surgical exploration if the lesion is not malignant? In a benign condition like myelolipoma FNA biopsy can be utilized to confirm the diagnosis. However, despite the diagnostic value of the FNA biopsy, we still believe that any rapidly growing mass should be explored and removed surgically.

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