



Radiological and Pathological Findings in a Case of Large Left Adrenal Myelolipoma

Poonam Sharma¹, Manik Mahajan², Meenakshi Khajuria³, Puneet Gupta⁴

¹ Department of Pathology, SIMS, Hapur, Uttar Pradesh, India

² Department of Radio-diagnosis and Imaging, Pt. B.D. Sharma PGIMS, Rohtak, Haryana, India

³ Department of Pathology, GMC, Jammu, India

⁴ Department of Radio-diagnosis and Imaging, ASCOMS Hospital, Jammu, J&K, India

Abstract

Adrenal myelolipomas are rare and uncommon benign tumours of the adrenal gland. They contain mature adipose tissue and a variable amount of haemopoietic tissue. Most lesions are small, asymptomatic and discovered incidentally. However larger lesions may be symptomatic. Here we describe the radiological and pathological findings in a case of large left adrenal myelolipoma.

Keywords: Computed Tomography, chemical shift imaging, myeloid, adipose

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Corresponding Author: Poonam Sharma, 39-A Extension, Gandhi Nagar, Jammu, J&K, India

Email: sharmapoonam59@gmail.com **Phone:** +919419775550

Phone: +90-538-947 9511

Fax: +90-216-542 4407 / 4419

Introduction

Adrenal myelolipoma is an uncommon benign tumor composed of mature adipose tissue and haematopoietic tissue. Most of these lesions are discovered incidentally [1]. However myelolipomatous foci can be present in other extra-adrenal locations [2]. They are composed of mature adipocytes and normal haematopoietic tissue. Although they do not represent a haematopoietic source, they contain precursors of white and red blood cells [3].

Majority of the lesions are asymptomatic and are usually discovered incidentally when the region is imaged for other reasons. Larger lesions can present with an acute retroperitoneal haemorrhage or vague mass related symptoms. There may be a right sided predilection [3]. With the wider use of imaging modalities such as ultrasonography (USG), computed tomography (CT) and magnetic resonance imaging (MRI), particularly chemical shift imaging, the detection rate of these tumors is increasing. So here in, we describe USG, CT, MRI and pathological findings in a case of left adrenal myelolipoma.

Case Report

A 30 years old female presented to the clinician with complaints of mild dull aching pain in left flank since one month. No other relevant history was present. Findings of general physical and abdominal examination were unremarkable. USG of the abdomen revealed a well defined echogenic lesion in the left suprarenal region separate from left kidney (Figure 1). For further evaluation CT scan was carried out which revealed a well defined lesion with attenuation value of -40 to -90 HU in the left adrenal gland . Small linear mildly enhancing soft tissue components were also seen in the lesion (Figure 2). MRI of the mass revealed heterogeneously hyperintense signal on both T1 and T2 weighted images (Figure 3A and 3B). Chemical shift imaging was performed which revealed marked loss of signal on out phase images suggestive of presence of macroscopic fat (Figure 3C and 3D). A diagnosis of large left adrenal myelolipoma was made. On histopathological evaluation, mature adipose tissue and bone marrow elements were seen confirming the diagnosis of adrenal myelolipoma (Figure 4).



Figure 1. Sonographic image showing a large homogeneously echogenic lesion in the left suprarenal region.

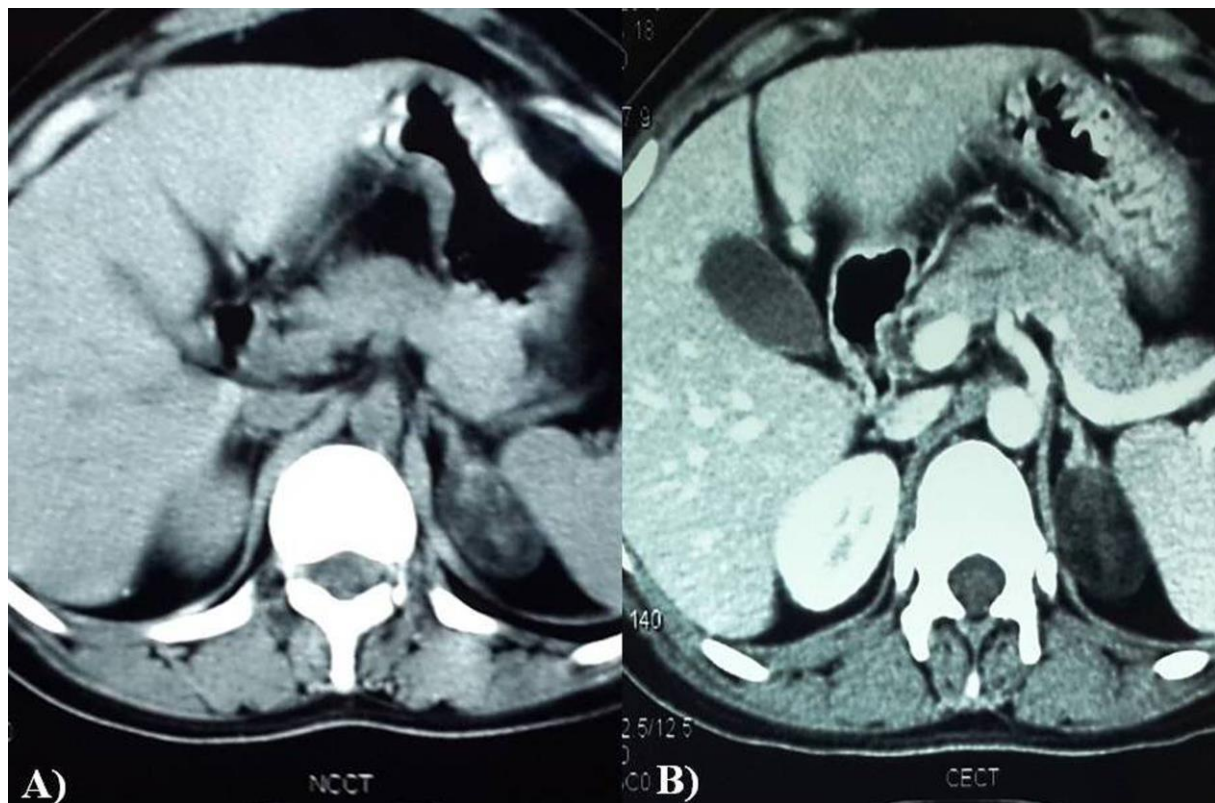


Figure 2. A) Non contrast and B) Contrast enhanced CT images showing a large left adrenal lesion with hypodensity of fat attenuation and presence of mildly enhancing linear soft tissues.

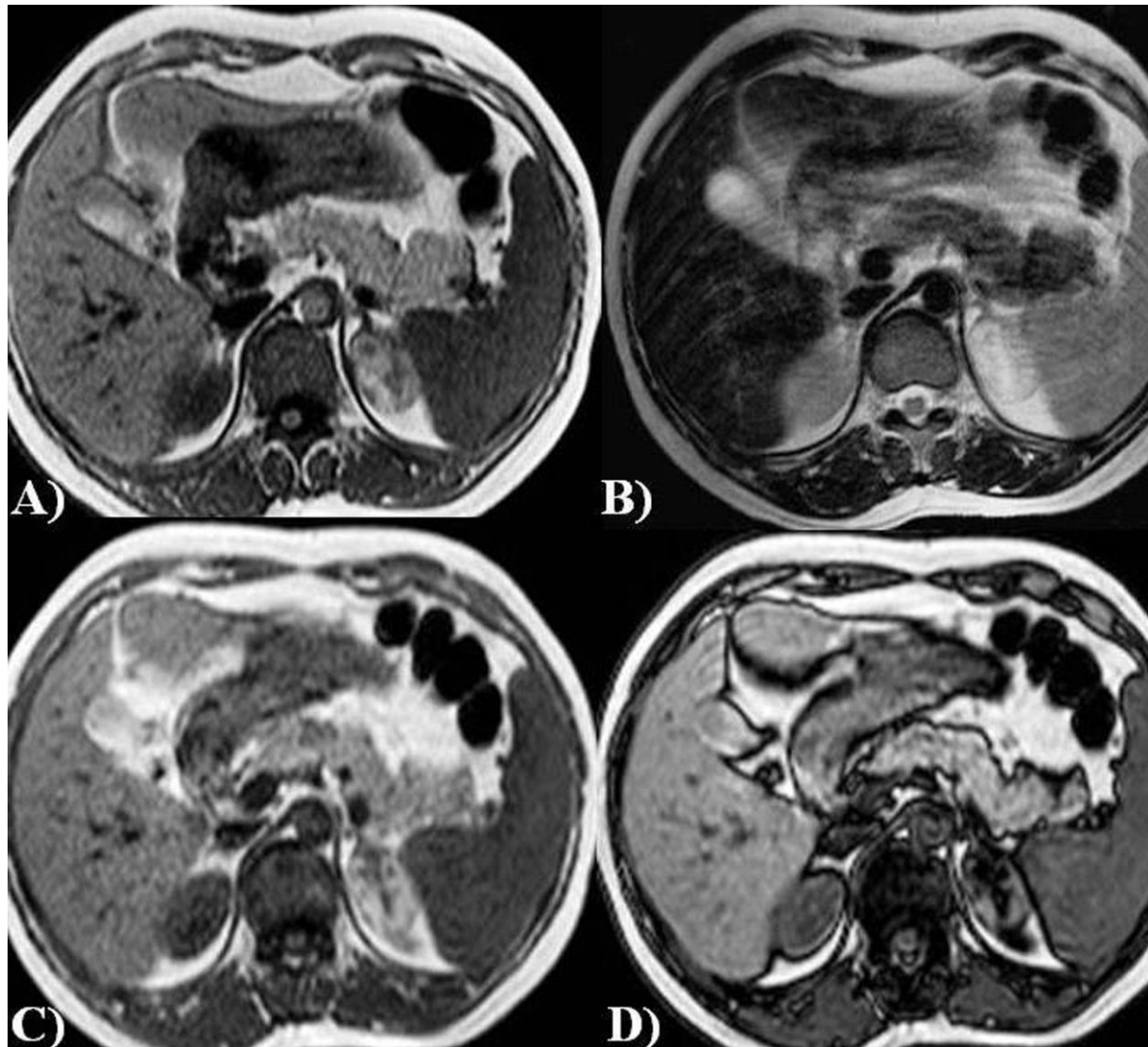


Figure 3. A) and B) T1 and T2 weighted images showing heterogeneously hyperintense signal in the lesion. C) and D) In phase and out of phase MR images respectively showing marked loss of signal on out of phase images consistent with macroscopic fat.

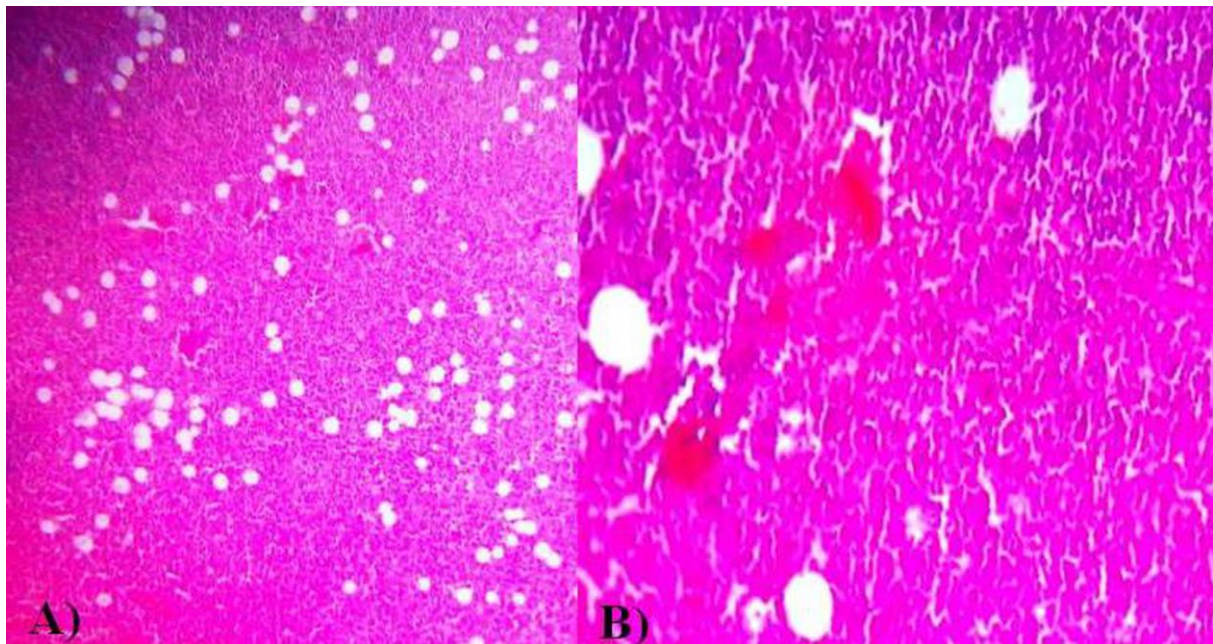


Figure 4. Photomicrographs H&E A) 4x and B) 10x) showing presence of myeloid and adipose tissue.

Discussion

The adrenal gland is a common site of a large spectrum of abnormalities like primary tumors, hemorrhage, metastases, and enlargement of the gland from external hormonal stimulation. Cross-sectional imaging readily characterizes benign adrenal masses such as lipid rich adenomas, myelolipomas, adrenal cysts and adrenal hemorrhage as they have characteristic diagnostic imaging features that show the presence of lipid, intralesional fat, water, or blood [4].

Adrenal myelolipoma is a rare and incidentally diagnosed benign tumor. It is composed of mature adipose tissue and haematopoietic elements. The reported incidence of adrenal myelolipoma varies from 0.08% to 0.4 % .The male to female ratio is 1:1 and are commonly found in the fifth to seventh decade [5]. Most of them are asymptomatic lesions and discovered incidentally. They constitute 15% of adrenal incidentalomas because of frequent use of non invasive imaging techniques [6]. Occasionally, patients present with abdominal pain secondary to haemorrhage (more likely when it is predominantly composed of myeloid

tissue), tumour necrosis, or mechanical compression from tumour bulk decade [5]. Very uncommonly, presenting symptoms include haematuria and abdominal mass [7].

Four distinct clinico-pathological patterns have been described - isolated adrenal myelolipoma, adrenal myelolipoma with haemorrhage, extra adrenal myelolipoma, and myelolipoma associated with other adrenal diseases such as non-functioning adrenal adenomas or endocrine disorders. Tumour size varies from a few mm to more than 30 cm, but rarely exceeds 5 cm [5].

The appearance of myelolipoma on imaging depends on the fat content of the lesion. So these appear echogenic on ultrasound, and as low attenuation lesions on CT scan. Ultrasound of the abdomen is able to differentiate the supra renal mass from the kidneys, but it cannot confirm a myelolipoma. On CT scan, adrenal myelolipoma appears as a hypodense lesion with attenuation values suggestive of fat. On contrast enhanced CT scans, myelolipoma show enhancement of the highly vascularised myeloid component.

MRI characteristically reveals a bright signal on T1- weighted and intermediate signal on T2-weighted sequences, consistent with fat. Myelolipomas can be categorized into three main groups on the basis of their MR imaging features as follows: (a)homogeneous, hyperintense masses on T1-weighted images with intermediate signal intensity on T2-weighted images, findings that are suggestive of lesions that are predominantly composed of fat; (b) heterogeneous masses containing foci with the same signal intensity as that of fat intermixed with focal high-signal-intensity areas on T2-weighted images and contrast-enhanced T1-weighted images, findings that are indicative of mixed fatty and myeloid elements; and (c) nodules that are hypointense relative to liver on T1-weighted images and hyperintense relative to liver on T2-weighted images and that enhance after administration of gadolinium chelate contrast material, resulting in an appearance of focal mass like areas primarily composed of myeloid cells [1]. Marked decrease in signal with fat suppression or phase cancellation is confirmatory of adrenal myelolipoma [5].

On gross visualisation, myelolipoma show yellow areas with the appearance of adipose tissue alternating with hemorrhagic foci composed of bone marrow tissue. The characteristic microscopic appearance of adrenal myelolipoma is the presence of bone marrow elements and mature fat.

The differential diagnosis includes retroperitoneal liposarcoma and adrenal adenoma. In a CT scan detection of a fatty component (-30 to -90 HU) within an adrenal mass is virtually diagnostic of myelolipoma [8].

Thus we conclude that adrenal myelolipoma is a rare adrenal tumour. Cross sectional imaging is extremely helpful in making a near confirmatory diagnosis and thus prevent unnecessary aspirations, biopsies or surgeries thus reducing morbidity or mortality from these procedures.

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References

1. Elsayes KM, Mukundan G, Narra VR, Lewis JS Jr, Shirkhoda A, Farooki A, Brown JJ. Adrenal masses: MR imaging features with pathologic correlation. Radiographics. 2004;24 Suppl 1:S73-86.
2. Al Harthi B, Riaz MM, Al Khalaf AH, Al Zoum M, Al Shakweer W. Adrenal myelolipoma a rare benign tumour managed laparoscopically: Report of two cases. J Minim Access Surg. 2009;5(4):118-20.
3. Kenney PJ, Wagner BJ, Rao P, Heffess CS. Myelolipoma: CT and pathologic features. Radiology. 1998;208(1):87-95.
4. Guerrisi A, Marin D, Baski M, Guerrisi P, Capozza F, Catalano C. Adrenal lesions: spectrum of imaging findings with emphasis on multi-detector computed tomography and magnetic resonance imaging. J Clin Imaging Sci. 2013;3:61.
5. Doddi S, Singhal T, Leake T, Sinha P. Management of an incidentally found large adrenal myelolipoma: a case report. Cases J. 2009;2:8414.
6. Polamaung W, Wisedopas N, Vasinanukorn P, Pak-art P, Snabboon T. Asymptomatic bilateral giant adrenal myelolipomas: case report and review of literature. Endocr Pract. 2007;13(6):667-71.
7. Bhansali A, Dash RJ, Singh SK, Behra A, Singh P, Radotra BD. Adrenal Myelolipoma: Profile of Six Patients With a Brief Review of Literature. Int J Endocrinol Metab. 2003; 1:33-40.
8. Rao P, Kenney PJ, Wagner BJ, Davidson AJ. Imaging and pathologic features of myelolipoma. Radiographics. 1997;17(6):1373-85.