Case Report

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Pathology Section

Symptomatic Adrenal Myelolipoma: A Case Report

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ABSTRACT

Adrenal myelolipomas are lipomatous tumours containing myeloid cell elements that typically have a benign course. They account for 3.3-6.5% of all adrenal masses and are usually unilateral in 95% of cases. These tumours affect both sexes equally during midlife. While they are often asymptomatic, symptomatic cases may require surgery. The pathogenesis is believed to involve either metaplastic changes in mesenchymal cells or overstimulation by Adrenocorticotropic Hormone (ACTH). The present case involves a 49-year-old male who presented with abdominal pain and fullness lasting three months. Serum ACTH levels were within normal limits, with a mild elevation of 17-Hydroxyprogesterone (17-OHP). Radiological investigations, including both Ultrasonography (USG) and Computed Tomography (CT), described the lesion as a large, well-circumscribed, heterodense lesion in the left adrenal gland, which was identified as adrenal myelolipoma. Histopathological examination revealed a tumour comprised of adipocytes and extramedullary trilineage haematopoietic elements, confirming the diagnosis of adrenal myelolipoma. The significance of presenting this case lies in its large size, the definite clinical symptoms of abdominal pain and fullness, and the fact that it was unrelated to serum ACTH levels.

Keywords: Abdominal pain, Heterogenous mass, Myeloid elements

CASE REPORT

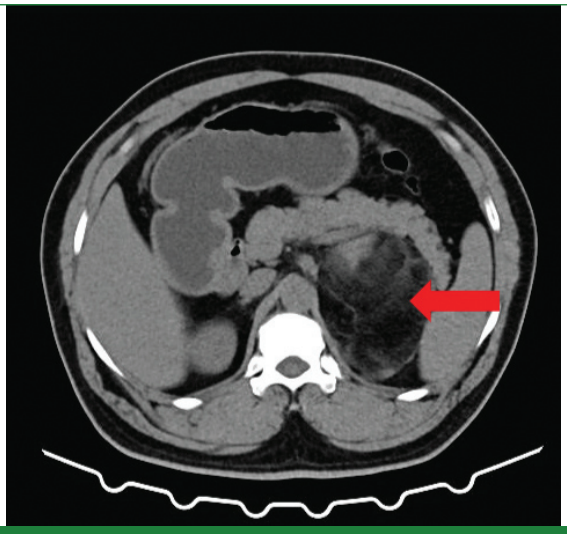
A 49-year-old male, diagnosed with hypertension for the past three months, presented to the hospital with a chief complaint of intermittent abdominal pain and abdominal fullness for the same duration. He had previously undergone an USG of the whole abdomen at an outside facility, which revealed a heterogeneous hyperechoic lesion in the left suprarenal region, suggestive of an adrenal myelolipoma.

The patient was admitted for further evaluation and management of the adrenal mass. On admission, his vital signs were stable, except for elevated blood pressure of 150/98 mmHg. Hypertension was controlled with oral Prazopress XL 5 mg tablets, administered twice daily after food. There was no evidence of lymphadenopathy, pallor, icterus, or oedema.

A Contrast-Enhanced Computed Tomography (CECT) scan of the abdomen with adrenal washout protocol was performed. It revealed a large, well-circumscribed, heterodense lesion measuring 94×81×80 mm [Table/Fig-1], with internal areas of fat attenuation (Computed Tomography Hounsfield Unit (CTHU) -60 to -100) arising from the left adrenal gland and displacing the left kidney inferiorly-likely representing an adrenal myelolipoma or adrenal adenoma. Renal artery Doppler study and CECT of the right adrenal gland were normal.

Laboratory investigations showed a haemoglobin level of 9.9 g/dL (reference range: 13.0-17.0 g/dL), total leukocyte count of 4.78×10³/µL (4.0-10.0×10³/µL), and platelet count of 150×10³/µL (150-410× 10³/µL). Serum 17 OHP was 2.55 ng/mL (0.29-2.06 ng/mL), and serum ACTH was 12.1 pg/mL (7.2-63.6 pg/mL) [Table/Fig-2]. Serum urea, creatinine, sodium, potassium, lipid profile, liver function tests, and urine routine and microscopy were within normal limits.

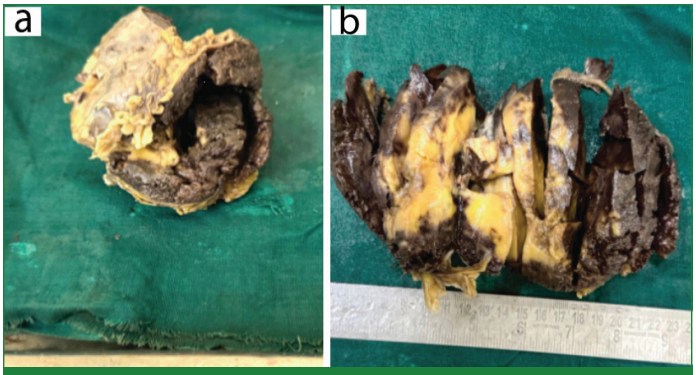
The patient underwent laparoscopic left adrenalectomy, and the excised adrenal mass was sent for histopathological examination. The adrenal mass weighed 265 grams and measured 10×9.8×7 cm in size [Table/Fig-3a]. The external surface was greyish white with attached fat. On cut section, the mass appeared solid, greyish brown to greyish yellow in colour [Table/Fig-3b].



[Table/Fig-1]: Radiology image (CECT)- Reveals a large well circumscribed heterodense lesion (red arrow) measuring 94×81×80 mm with internal areas of fat attenuation arising from left adrenal gland.

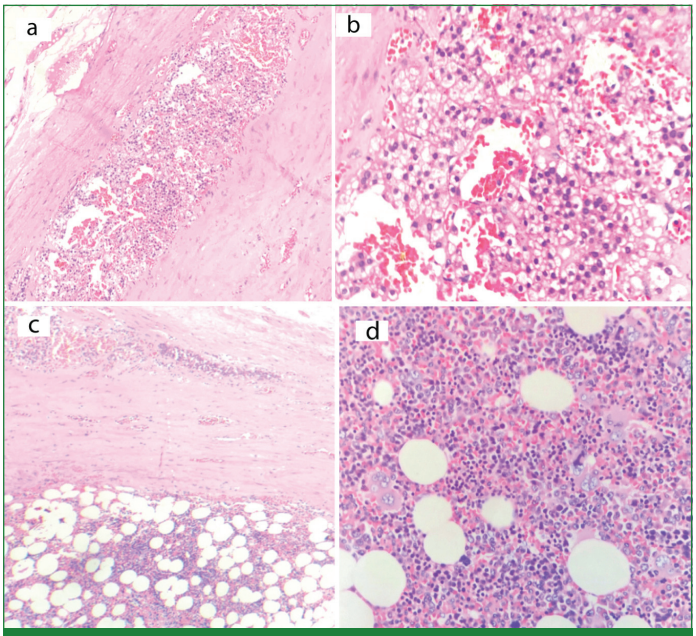
Laboratory parameters	Results with reference limits
Haemoglobin	9.9 (13.0-17.0 gm/dL)
Total RBC count	3.79 (4.5-5.5 ×10^6 uL)
Haematocrit	32.4 (40.0-50.0%)
Mean Corpuscular Volume (MCV)	85.5 (83.0-101.0fl)
Mean Corpuscular Haemoglobin (MCH)	26.1(27.0-32.0 pg)
Mean Corpuscular Haemoglobin Concentration (MCHC)	30.6 (31.5-34.5 gm/dL)
Red Cell Distribution Width (RDW-cv)	15.7 (11.6-14.0%)
Total leukocyte count	4.78 (4.0-10.0×10³/uL)
Total platelet count	150 (150-410×10³/ul)
Serum Adrenocorticotrophic Hormone (ACTH)	12.1 (7.2-63.6 pg/mL)
17-hydroxy progesterone	2.55 (0.29-2.06 ng/mL)
Serum urea	25.0 (12.0-42.0 mg/dL)
Serum creatinine	1.14 (0.7-1.3 mg/dL)

[Table/Fig-2]: Laboratory results.



[Table/Fig-3]: a) Gross image of adrenal mass weighing 265 gm. b) Cut-section of the adrenal mass showing greyish yellow and greyish brown areas.

Multiple blocks were prepared from different areas of the mass, including the capsule. The slides were stained with Haematoxylin and Eosin (H&E) stain. Microscopic examination revealed compressed but normal-looking adrenal parenchyma with a capsule and a well circumscribed tumour. The tumour showed an admixture of mature adipocytes along with extramedullary trilineage haematopoiesis comprising erythroid, myeloid, and megakaryocytic lineage cells [Table/Fig-4a-d]. The presence of megakaryocytes, erythroid cells, and granulocytic cells confirmed trilineage haematopoiesis. No evidence of atypia or mitosis was noted. Areas of fibrosis and haemorrhage were also present. Surgical margins were free of tumour invasion.



[Table/Fig-4]: a) Normal looking adrenal parenchyma at the periphery of the lesion (H&E stain, 100X). b) Normal looking adrenal parenchyma at the periphery of the lesion (H&E stain, 400X). c) Lesion comprising of admixture of adipocytes and extramedullary trilineage haematopoiesis (H&E stain, 100X). d) Lesion comprising of admixture of adipocytes and extramedullary trilineage haematopoiesis (H&E stain, 400X).

A final histopathological diagnosis of adrenal myelolipoma was made. The patient was discharged in a clinically stable condition, and two-year postoperative follow-up was uneventful.

DISCUSSION

Adrenal myelolipomas are benign lipomatous tumours containing haematopoietic elements [1]. These tumours are rare, with an incidence rate of only 3.3-6.5% among all adrenal masses [1], and are mostly unilateral. They affect both sexes equally, typically in middle-aged individuals, with a median age of 55-65 years. Adrenal myelolipoma is the second most common benign tumour of the adrenal gland after adrenocortical adenoma [2,3].

The majority of myelolipomas are indolent, slow-growing tumours but may occasionally cause pressure symptoms [4,5]. They are most often detected incidentally, hence the term “incidentaloma” [6]. Surgical resection is indicated in cases of significant tumour growth or hormonal hypersecretion [7]. Despite being a rare entity, it remains relatively unfamiliar to many clinicians.

The etiopathogenesis of adrenal myelolipoma is not clearly understood, and several hypotheses have been proposed. One hypothesis suggests that necrosis or inflammation may stimulate metaplasia of reticuloendothelial cells, leading to the development of adrenal myelolipoma. Another proposes that adipocytes develop from mesenchymal stem cells in the endothelium, and the resulting inflammation stimulates the adrenal cortex to secrete mediators responsible for the recruitment of haematopoietic progenitors. A third hypothesis implicates elevated ACTH levels, as these lesions are frequently reported in patients with Cushing’s disease or Congenital Adrenal Hyperplasia (CAH) [2,8-10].

However, in the present case, the serum ACTH level was within the normal range, while 17-OHP was mildly elevated. Literature suggests that a 17-OHP level above 10 ng/mL is highly indicative of CAH [11]; in this case, however, the elevation was mild. Patients with CAH are usually at risk of developing large and bilateral adrenal myelolipomas, whereas in our patient, the lesion was unilateral and confined to the left adrenal gland.

Differential diagnosis based on imaging studies include retroperitoneal lipoma, liposarcoma, upper pole renal angiomyolipoma, retroperitoneal teratoma, adrenal cortical adenoma, and adrenal carcinoma [6]. The histomorphological findings of adrenal myelolipoma are straightforward on routine haematoxylin-eosin staining. The tumour is composed of mature adipose tissue admixed with haematopoietic elements of all three lineages. However, rare differential diagnosis with lipomatous appearances of clinical importance should not be overlooked, such as liposarcoma, myxoid liposarcoma, and myxofibrosarcoma [1]. These malignant tumours show nuclear atypia and mitotic activity, which were absent in the present case.

Management of adrenal myelolipoma ranges from routine observation and follow-up to surgical excision. Surgical excision is indicated for symptomatic patients, lesions larger than 5 cm, or those suspicious for malignancy [6]. Although midline laparotomy is traditionally considered more suitable for masses larger than 10 cm or in cases with adhesions and infiltration into surrounding structures, laparoscopic adrenalectomy has been successfully performed even for large myelolipomas [2], as was done in the present case.

CONCLUSION(S)

Adrenal myelolipomas are indolent tumours composed of adipose and myeloid elements. They are usually detected incidentally when patients present with abdominal pain or fullness. Radiological imaging and histopathological evaluation play key roles in diagnosis. Serum assays for 17-OHP and ACTH are also important to rule out concomitant adrenal hormone excess disorders such as adrenocortical adenoma or CAH. Due to their large size, these tumours may mimic malignant lesions. Surgeons should be aware of this benign entity to avoid diagnostic pitfalls.

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