CASE REPORT

Unilateral Giant Myelolipoma of the Left Suprarenal Gland: A Rare Case Report

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ABSTRACT

Adrenal myelolipoma is a rare, benign, non-functioning tumor composed of mature adipose and hematopoietic tissue. Adrenal myelolipoma is the second most common benign tumour of the adrenal glands after adrenocortical adenoma. While usually small and asymptomatic, giant variants (>10 cm) can cause mass effect and pain. We report a case of a unilateral giant myelolipoma arising from the left suprarenal gland, detected incidentally on ultrasonography and confirmed by computed tomography (CT) scans. Her ultrasonography revealed a large, delineated mass superior to the left kidney, showing mixed echogenicity with both bright fat-like areas and comparatively hypoechoic soft-tissue regions. A contrast-enhanced CT scan of the abdomen identified a large well-encapsulated left adrenal mass exhibiting fat-equivalent attenuation, with scattered soft-tissue densities suggestive of hematopoietic material. No calcification, necrotic change, hemorrhage, or infiltration of adjacent organs was observed. The left kidney was pushed downward and slightly anteriorly. Imaging plays a central role in diagnosis, characterization, and management of adrenal myelolipoma. Surgical removal of large or symptomatic tumors yields excellent postoperative outcomes.

Keywords: Adrenal myelolipoma, adrenal gland, giant adrenal mass, computed tomography, ultrasonography

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INTRODUCTION

Myelolipoma of the adrenal gland is an infrequent benign tumor made up of mature fat intermingled with hematopoietic cells. Its incidence ranges from 0.08% to 0.2% in autopsy series.[1] Many remain clinically silent and are detected incidentally during imaging for other conditions. Occasionally, these tumors enlarge substantially and can give rise to abdominal pain or pressure effects. Giant myelolipomas, typically defined as those exceeding 10 cm, are particularly rare.[2] The exact cause of adrenal myelolipoma remains unclear. However, various risk factors have been identified that may contribute to its development, including degeneration, inflammation, stress, obesity, trauma, hypertension, diabetes, and Cushing's syndrome.[1] Hypotheses concerning stem cells and hormonal factors have been proposed in relation to its unclear pathogenesis. Although adrenal myelolipoma is considered benign, it is clinically significant because it can create substantial challenges in the differential diagnosis of adrenal tumours.[1] This case report describes a woman with a large left adrenal myelolipoma with classic ultrasonographic and CT characteristics.

CASE SUMMARY

A 53-year-old woman reported a year-long history of dull discomfort and a sensation of

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heaviness in the left upper abdomen. She had no history of hypertension, weight loss, or endocrine symptoms. Examination revealed mild tenderness in the left hypochondrium without a palpable mass.

Ultrasonography revealed a large, delineated mass superior to the left kidney, showing mixed echogenicity with both bright fat-like areas and comparatively hypoechoic soft-tissue regions. The lesion measured approximately 12.0 cm × 8.9 cm and displaced the left kidney inferiorly, though renal architecture remained intact (Fig. 1 & 2). A contrast-enhanced CT scan of the abdomen identified a large well-encapsulated left adrenal mass measuring about 12.0 cm × 9.0 cm. Most of the lesion exhibited fat-equivalent attenuation (–90 to –30 HU), with scattered soft-tissue densities (20 to 40 HU) suggestive of hematopoietic material. No calcification, necrotic change, hemorrhage, or infiltration of adjacent organs was observed. The left kidney was pushed downward and slightly anteriorly (Fig. 3 & 4). Hormonal evaluation including serum cortisol, plasma metanephrines, and aldosterone did not indicate functional adrenal activity. Later, given the size of the mass and persistent symptoms, an open left adrenalectomy was performed. Intraoperatively, a large, encapsulated yellowish mass originating from the adrenal gland was removed intact. Histopathology demonstrated mature adipose tissue admixed with hematopoietic elements, confirming myelolipoma. The patient was discharged from the hospital after 5 days following an uneventful postoperative course. A follow-up CT after six months showed no residual or recurrent mass.

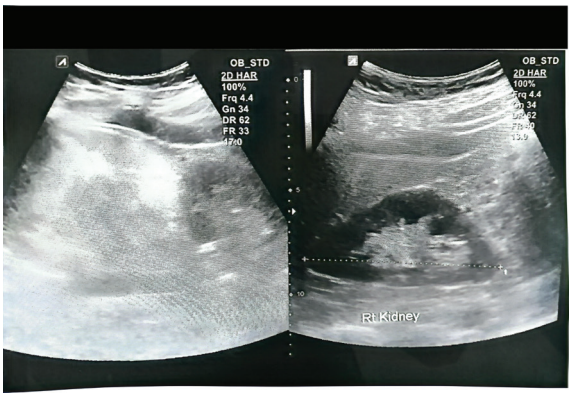

Figure 1: Ultrasound image depicting a well-defined heterogeneous mass at the left suprarenal region displacing the kidney inferiorly.

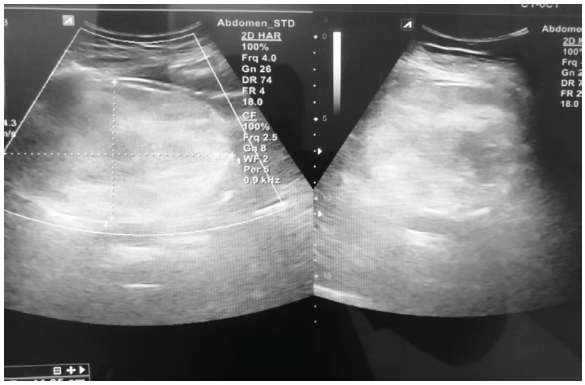

Figure 2: Ultrasonography showing heterogeneous echotexture with hyperechoic and hypoechoic regions corresponding to mixed fat and soft-tissue components.

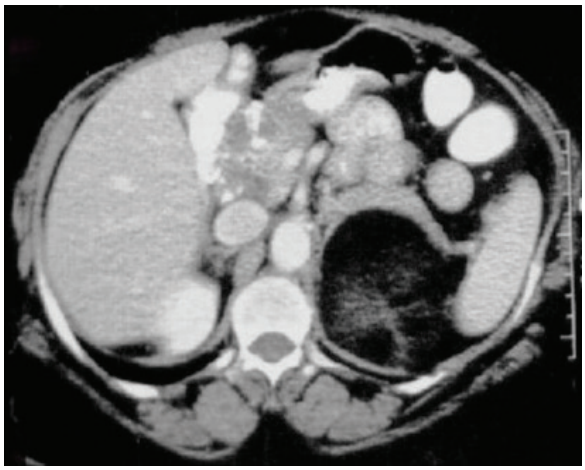

Figure 3: Axial contrast-enhanced CT showing a large, well-circumscribed left suprarenal mass containing fat density with interspersed soft-tissue components.

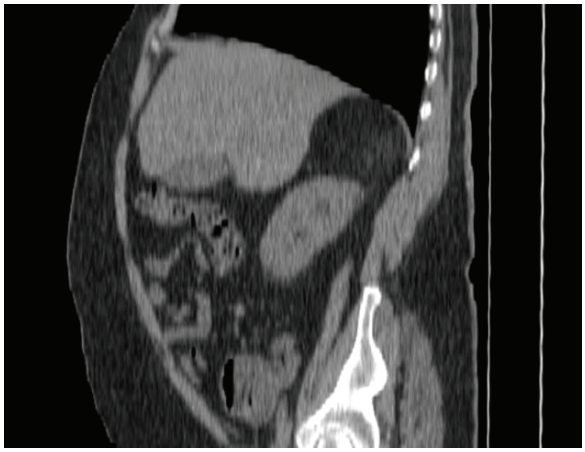

Figure 4: Sagittal CT reconstruction confirming adrenal origin of the lesion and displacement of the left kidney inferiorly.

DISCUSSION

Adrenal myelolipoma is an uncommon benign tumor made up of mature fatty tissue and myeloid tissue, which may contain varying amounts of hematopoietic components. While most individuals remain asymptomatic, some may experience pain or endocrine complications. Adrenal myelolipomas are usually unilateral (in 95% of cases), variable in size, most often found during midlife, and affect both sexes almost equally.[2]

The increased use of CT and MRI scans has resulted in a higher detection rate of adrenal myelolipomas in recent years. Surgical intervention is typically indicated for symptomatic patients and for lesions larger than 5 cm or those raising suspicion for malignancy.[1-3] One prevailing hypothesis suggests metaplastic transformation of adrenal stromal cells under chronic stress, inflammation, or hormonal influence.[1,2] Most lesions are <5 cm and asymptomatic, discovered incidentally during imaging for unrelated reasons. In contrast, giant myelolipomas (>10 cm) may present with flank pain, abdominal fullness, or complications including mass effect, rupture, or retroperitoneal haemorrhage.[2-5] Evidence showed that congenital adrenal hyperplasia was associated to 10% cases, while other adrenal hypersecretory disorders were found in 7.5% of cases.[1]

Cross-sectional imaging plays a pivotal role in diagnosis of adrenal myelolipoma. CT is particularly reliable because it can clearly differentiate fat from soft-tissue components, allowing a confident pre-operative diagnosis in most cases. Fat-containing retroperitoneal masses can mimic other conditions such as liposarcoma, angiomyolipoma, or adrenal cortical tumors with fatty degeneration, but a well-circumscribed adrenal origin with dominant fat content strongly supports myelolipoma.[6,7]

Management depends on tumor size, symptoms, and complication risk. In general, small asymptomatic adrenal myelolipomas that are <4 cm are usually treated conservatively.[8] However, asymptomatic lesions <7 cm also can be monitored with periodic imaging, while symptomatic masses or those exceeding 7 cm – due to the risk of hemorrhage or rapid growth – generally warrant surgical excision.[1,4] Complete adrenalectomy, either open or laparoscopic depending on size and surgeon expertise, is curative, and recurrence is exceptional.[1,2]

CONCLUSION

Adrenal myelolipoma is the second most common benign tumour of the adrenal glands after adrenocortical adenoma.[2] Giant adrenal myelolipomas are uncommon but important considerations when evaluating bulky retroperitoneal fat-containing masses. CT scans offer excellent diagnostic clarity and facilitates treatment planning. Surgical removal of large or symptomatic tumors yields excellent postoperative outcomes.

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Authors' contribution: Both of the authors were equally involved in patient selection, clinical diagnosis, and data collection. They were also equally involved in literature search and review as well as manuscript preparation, editing and final submission.

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