Case Report

A Rare Adrenal Encounter: Case Report of Myelolipoma with Radiological and Histopathological Correlation

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Abstract

Adrenal myelolipoma is a rare, benign tumour of the adrenal gland, usually asymptomatic, unilateral, non-secreting, and an incidental finding. The reported incidence of this tumour is 0.08 to 0.2% of all primary tumours of the adrenal gland. These tumours are also referred to as incidentalomas, as they are reported as incidental findings during imaging procedures like ultrasonography, computed tomography, and magnetic resonance imaging. It is composed of a variable mixture of mature adipose tissue and trilineage hematopoietic elements. Here, we report a case of a 30-year-old female with an adrenal tumour detected on ultrasonography who underwent surgical resection. The confirmatory diagnosis was made on histopathological examination of the resected specimen.

Keywords:

Benign tumour, Myelolipoma, Incidentaloma, Hematopoietic elements.

Introduction

Adrenal myelolipoma was first described by Gierke in 1905, which was then named as "formations myelolipomatoses" in 1929 by Charles Oberling [1]. It is a rare, non-functional, benign neoplasm composed of a mixture of mature haematopoietic elements and adipose tissues. In the past, it was discovered during autopsy, but nowadays, due to advancements in imaging techniques, it is diagnosed accidentally and frequently. The use of ultrasonography, computed tomography (CT), and magnetic resonance imaging (MRI) has enhanced the detection rate up to 15% of incidental adrenal masses. The incidence of adrenal myelolipoma is 0.08–0.2% of all primary tumours of the adrenal glands [2]. There is no gender predilection, and the age range at diagnosis is between 50 and 70 years. These lesions are usually unilateral, non-secretory, and asymptomatic, though symptoms like abdominal pain and discomfort may be observed in some patients due to pressure on surrounding structures [3]. They are often smaller than

4 cm in diameter, with the largest reported adrenal myelolipoma measuring 31 cm × 24.5 cm × 11.5 cm and weighing 6 kg [4].

Here, we present a unique case, as it involved a 30-year-old female who presented with right-sided flank pain and discomfort. She then underwent ultrasonography followed by surgical resection. The final diagnosis was given after the histopathological examination of the resected specimen.

Case Report

A 30-year-old female presented to the surgery OPD with right-sided flank pain for four months. She had no significant past history. On examination, her vitals were normal, and her abdomen was soft on palpation. Routine blood and biochemical parameters were within normal limits. She was then advised to undergo ultrasonography, which revealed an approximately 4.1 cm × 5.8 cm × 7.1 cm heterogeneously echo-textured hyperechoic lesion without demonstrable vascularity in the right suprarenal region. The lesion appeared to be abutting the upper pole of the right kidney and the posteroinferior surface of the right lobe of the liver. The findings suggested the possibility of an adrenal lesion, likely an adrenal myelolipoma or lipid-rich adrenal adenoma.

Grossly, the specimen was encapsulated and yellowish-brown, measuring 5.2 cm × 4 cm × 3.6 cm. The cut surface was brownish, solid, and soft to firm, with a yellowish area measuring 1.7 cm × 1.6 cm [Figure B].

Histologically, it revealed a well-circumscribed tumor comprising mature adipocytes separated by fibrous septa. There were intervening bone marrow elements containing erythroid and myeloid precursors, as well as megakaryocytes. The hematopoietic components showed normal maturation. Normal adrenal cortical tissue was present at the periphery of the tumor. There was no evidence of any atypical cells, necrosis, or calcification [Figure C, D, E]. The final histopathological diagnosis was reported as myelolipoma of the adrenal gland.

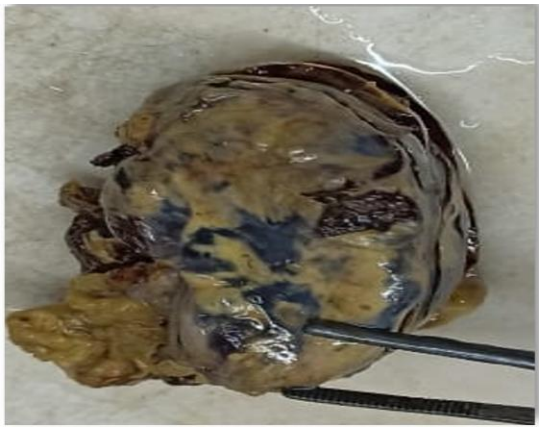

Figure 1: Gross photograph showing well encapsulated yellowish- brown mass.

Discussion

Adrenal myelolipoma is a very rare variant of adrenal lipoma. They are often referred to as “incidentalomas” because these tumors are frequently discovered incidentally, with the incidence rate being 0.08%–0.2% [2]. The most common site is the adrenal gland, but it can also occur in the retroperitoneum around the kidney, the presacral space, or the liver. There is no gender predilection, and the age range at diagnosis is between 50 to 70 years.

Figure 2: Gross photograph of cut surface showing hemorrhagic areas.

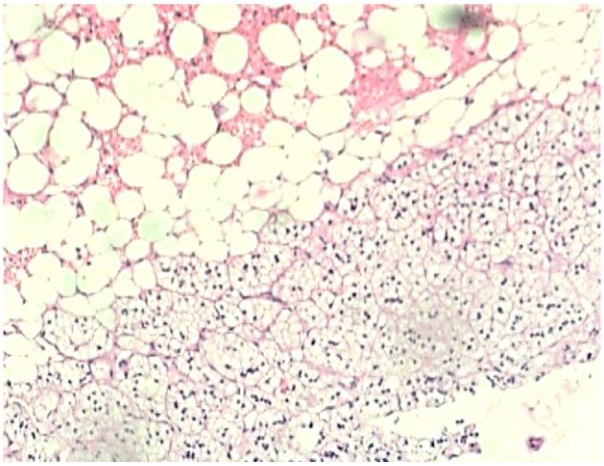

Figure 3: Microphotograph of Hematoxylin & Eosin stain section showing normal adrenal lining (Zona Fasciculata) along with mature adipocytes and bone marrow elements. (10x)

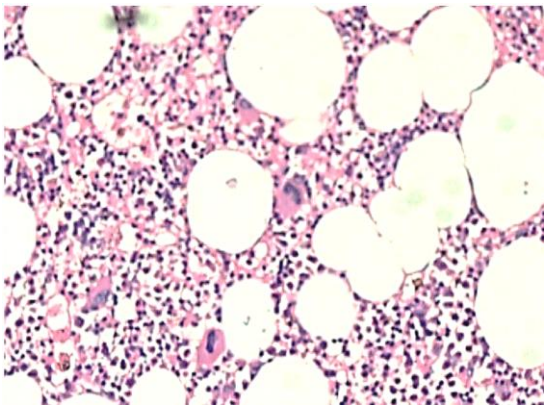

Figure 4: Microphotograph of Hematoxylin & Eosin stain section showing adipocytic areas along with mature bone marrow components. (20x)

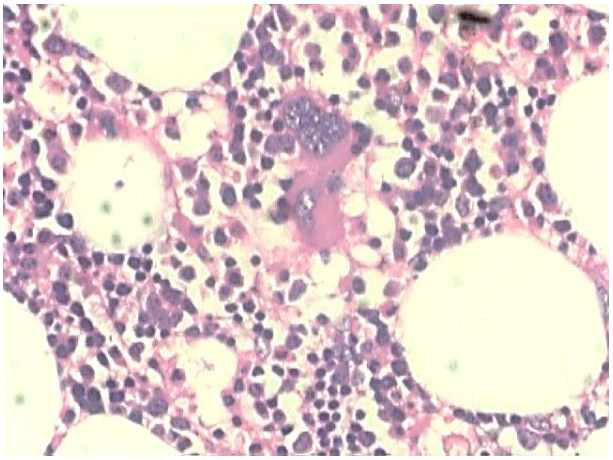

Figure 5: Microphotograph of Hematoxylin & Eosin stain section showing Megakaryocytes with erythroid and myeloid components. (40x)

These tumors are generally hormonally inactive, although some cases have been reported with overproduction of dehydroepiandrosterone sulfate (DHEAS), 21-hydroxylase deficiency, 17α-hydroxylase deficiency, Cushing's disease, Conn syndrome, adrenal insufficiency, and pheochromocytoma [3]. These tumors are usually asymptomatic but can present with abdominal pain and discomfort due to rupture and retroperitoneal hemorrhage. Hypertension and hematuria may be other symptoms reported by the patient.

The most widely accepted theory is that adrenocortical cell metaplasia occurs in response to stimuli such as necrosis, inflammation, infection, stress, or excess ACTH secretion over a long period of time [5]. Ultrasonography, CT, and MRI are effective in diagnosing adrenal myelolipomas in more than 90% of cases, with CT being the most sensitive diagnostic imaging modality [3].

The following differential diagnoses were considered: Renal angiomyolipoma, which consists of fat cells, smooth muscle cells, and blood vessels, and is often associated with genetic conditions like tuberous sclerosis. Retroperitoneal lipoma, which consists only of fatty tissue. Adrenal teratoma, which is a germ cell tumor that consists of multiple germ layers like teeth, bone, and hair.

Liposarcoma, a malignant tumor composed of abnormal fat cells with irregular borders. Adrenocortical carcinoma, a very rare malignant tumor arising from the adrenal cortex, presenting with symptoms like abdominal pain and hormonal imbalances. It has aggressive growth and cellular atypia with minimal to no fat.

If, in such cases, the diagnosis of adrenal myelolipoma cannot be made with confidence using noninvasive imaging, fine-needle aspiration (FNA) biopsy should be considered. Also, in cases where expectant management is being considered, FNA can rule out malignancy. The presence of mature adipocytes and hematopoietic elements is diagnostic of myelolipoma [3], which is not a feature of the above differentials, thus concluding our diagnosis as adrenal myelolipoma.

Thorough evaluation (gross and microscopic) is needed for confirmatory diagnosis and to exclude malignancy. Serial sections of the tumor, 1 cm apart, are required for proper examination so that malignancy can be ruled out. The presence of fat and hematopoietic elements, such as myeloid, erythroid, and megakaryocytic series, on microscopic examination along with radiological correlation leads to the diagnosis of myelolipoma.

Management of adrenal myelolipoma depends on the presentation of the patient. A conservative approach is followed for small

(less than 4 cm) and asymptomatic tumors. Surgery is indicated in symptomatic tumors, rapidly growing lesions, or tumors more than 6 cm in size, which correlates with our case [1]. The prognosis of adrenal myelolipoma is excellent, with recurrence-free survival rates of up to 12 years [4].

Conclusion

Myelolipoma is a rare, indolent tumor, mainly benign in nature. Imaging techniques like Computed Tomography present a tumor with fat and myeloid components. A thorough histopathological assessment of the tumor is necessary to confirm the diagnosis and to exclude any malignancy. There is an increasing number of cases reporting the association of myelolipoma with various endocrine disorders, which emphasizes the importance of a thorough pre-operative workup. Treatment can be planned accordingly to avoid any major complications, such as spontaneous retroperitoneal hemorrhage or cardiovascular shock.

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