Section: OBS and Gynae

Case Report

A RARE CASE OF GIANT ADRENAL LEIOMYOMA IN A YOUNG FEMALE

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ABSTRACT

Adrenal leiomyoma is an extremely rare benign mesenchymal tumor that often presents a diagnostic challenge due to non-specific clinical and radiological features. We report a case of a 37-year-old female with a giant right adrenal mass clinically suspected to be pheochromocytoma. Gross examination revealed a large encapsulated mass measuring 19 × 17 × 14 cm and weighing 2.4 kg. Histopathological evaluation showed a low-grade spindle cell neoplasm composed of monomorphic spindle cells arranged in fascicles with minimal mitotic activity and no necrosis or atypia, suggestive of leiomyoma. The patient underwent complete surgical excision with a favourable outcome. This case highlights the importance of histopathological assessment in the diagnosis of adrenal spindle cell tumors and emphasizes surgical excision as definitive management.

Keywords: Adrenal Leiomyoma, Tumour.

INTRODUCTION

Leiomyomas are benign mesenchymal tumors arising from smooth muscle cells and are most commonly found in the uterus and gastrointestinal tract; however, primary involvement of the adrenal gland is exceedingly rare.[1] Adrenal leiomyomas are believed to originate from the smooth muscle of the adrenal vein or its tributaries and are often detected incidentally during imaging performed for unrelated symptoms.[2,3] Due to their non-specific clinical presentation and overlapping radiological features, these tumors frequently mimic malignant adrenal neoplasms such as pheochromocytoma or adrenocortical carcinoma, making preoperative diagnosis challenging.[4,5] Imaging studies typically demonstrate a heterogeneously enhancing adrenal mass, which lacks specificity for distinguishing benign from malignant lesions.[6] Therefore, definitive diagnosis relies on histopathological examination supported by immunohistochemistry, which characteristically shows spindle-shaped tumor cells arranged in fascicles with positivity for smooth muscle markers such as smooth muscle actin and desmin, and negativity for S-100 protein.[1,3] Complete surgical excision remains the treatment of choice and is associated with an excellent prognosis. Given the extreme rarity of giant adrenal leiomyomas, particularly in young females, reporting such cases is important to enhance clinical awareness.

CASE PRESENTATION

A 37-year-old female was evaluated for a right-sided adrenal mass that was clinically suspected to be pheochromocytoma. Based on clinical and radiological assessment, surgical excision of the adrenal mass was performed, and the specimen was submitted for histopathological examination.Gross examination revealed a single, encapsulated, nodular grey-white soft tissue mass measuring 19 × 17 × 14 cm and weighing 2.4 kg. The external surface was smooth and nodular. Serial sectioning showed multiple firm grey-white nodules with areas of congestion. Representative sections were submitted for microscopic evaluation.

Microscopic examination demonstrated a tumor composed of relatively monomorphic spindle cells arranged in intersecting fascicles and whorled bundles, set within a collagenous stroma. The tumor cells showed oval nuclei with occasional mitotic figures (0–1 per 10 high-power fields). There was no evidence of marked nuclear atypia, tumor necrosis, or increased mitotic activity. Foci of hemorrhage were noted. Based on these histomorphological features, a

diagnosis of a low-grade spindle cell neoplasm suggestive of leiomyoma was rendered. Immunohistochemical evaluation was advised to confirm smooth muscle differentiation.

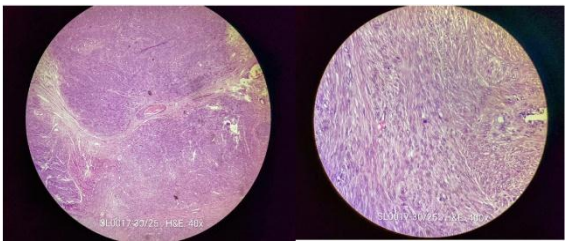

Figure 1: The tumor cells showed oval nuclei with occasional mitotic figures

DISCUSSION

Adrenal leiomyoma is an exceedingly uncommon benign tumor of mesenchymal origin, with the majority of knowledge derived from isolated case reports rather than large clinical series. Earlier pathological reviews have emphasized that these tumors likely arise from smooth muscle elements of the adrenal vasculature, particularly the central adrenal vein, explaining their rarity compared to leiomyomas at other anatomical sites.[7] The present case contributes to the limited literature by documenting a giant adrenal leiomyoma occurring in a young female, a demographic in which such large adrenal smooth muscle tumors are infrequently reported.

Clinically, adrenal leiomyomas are often asymptomatic or present with vague, non-specific complaints related to mass effect, especially when the tumor attains a large size. Several published cases have described abdominal discomfort, flank pain, or incidental detection during evaluation for unrelated conditions.[8] In the present case, the tumor was clinically suspected to be pheochromocytoma, underscoring the diagnostic difficulty associated with adrenal leiomyomas and their frequent misclassification as functional or malignant adrenal neoplasms. Radiological differentiation of adrenal leiomyoma from other adrenal tumors remains challenging. Prior studies have demonstrated that imaging features such as heterogeneous enhancement, large size, and well-defined margins overlap substantially with pheochromocytoma and adrenocortical carcinoma.[9] As a result, radiological evaluation alone is insufficient for definitive diagnosis, and histopathological examination remains the cornerstone for accurate tumor characterization. Histologically, adrenal leiomyomas show characteristic features including spindle-shaped cells arranged in intersecting fascicles and whorled patterns, minimal nuclear atypia, low mitotic activity, and absence of tumor necrosis. These features help distinguish leiomyoma from its malignant counterpart, leiomyosarcoma, which demonstrates marked pleomorphism, increased mitotic activity, and necrosis.[10] The histomorphological findings in the present case were consistent with a benign smooth muscle tumor, supporting the diagnosis of leiomyoma.

Immunohistochemistry is essential in confirming smooth muscle differentiation and excluding other spindle cell neoplasms of the adrenal gland. Previous reports have consistently demonstrated positivity for smooth muscle actin and desmin, with negative staining for S-100 protein, aiding in the exclusion of neural tumors and gastrointestinal stromal tumors.[11] Although immunohistochemistry was advised in the present case, the classic histological features strongly favored leiomyoma.

Complete surgical excision is regarded as the definitive treatment for adrenal leiomyoma and is associated with an excellent prognosis. Long-term follow-up data from previously reported cases have shown no evidence of recurrence or malignant transformation following complete resection.[12] The surgical approach may be tailored according to tumor size and local extension, with open adrenalectomy often preferred for giant tumors to ensure complete excision and avoid intraoperative complications.[13]

CONCLUSION

Adrenal leiomyoma is a rare benign tumor that often mimics malignant or functional adrenal neoplasms due to non-specific clinical and imaging features. Definitive diagnosis relies on histopathology with immunohistochemical confirmation, and complete surgical excision is curative with an excellent prognosis. Reporting such rare cases enhances awareness and aids accurate diagnosis of adrenal spindle cell tumors.

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