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CASE REPORT

Clinical and Histopathological Characteristics of Adenomatoid Tumor: A Case Report and Literature Review

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Abstract

Background: Adenomatoid tumor is a rare benign neoplasm of mesothelial origin that can occur in both genital and extragenital sites. Diagnosis is often challenging because of its broad histopathological spectrum. Accurate diagnosis is essential to avoid misdiagnosis and unnecessary radical surgical procedures. **Case Presentation:** A 53-year-old man presented with a five-month history of mild right testicular pain. Clinical and radiological evaluation revealed a firm, well-circumscribed 2^{-cm} mass arising from the tail of the epididymis, with normal serum tumor markers and unremarkable staging investigations. The lesion was surgically excised. Gross examination demonstrated a solid yellowish-black cut surface. Histopathological examination revealed a well-circumscribed benign neoplasm composed of vacuolated cuboidal cells arranged in nests and trabeculae within a fibrous stroma, without nuclear atypia, mitotic activity, or necrosis. The findings were consistent with an epididymal adenomatoid tumor. **Conclusion:** Adenomatoid tumor of the epididymis is a rare benign mesothelial neoplasm that requires careful clinicopathological evaluation to ensure accurate diagnosis and to avoid unnecessary radical surgery.

Keywords: Adenomatoid tumor, epididymis, spermatic cord, WT-1, calretinin

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Introduction

Adenomatoid tumor is a rare, benign neoplasm of mesothelial origin that occurs predominantly in the genital tract of both males and females. Although the epididymis is the most common site in men and the uterine corpus in women, adenomatoid tumors have also been reported in extragenital locations, including the pleura, peritoneum, mesentery, omentum, liver, adrenal gland, and hernia sac, where they are consistently found adjacent to mesothelial surfaces, supporting their mesothelial origin [1- 3].

The lesion was first described by Masson et al. in 1942 as a "benign mesothelioma," and the term adenomatoid tumor was subsequently introduced by Golden and Ash in 1945 to emphasize its benign biological behavior [1, 4]. Clinically, adenomatoid tumors in males usually present as painless or mildly painful intrascrotal masses, whereas lesions in the female genital tract are frequently asymptomatic and are often detected incidentally during surgery for other gynecologic conditions [1, 5].

Histopathological diagnosis may be challenging because these tumors exhibit a broad spectrum of architectural patterns, including tubular, glandular, adenoid, angiomatoid, cystic, and oncocytic variants. Characteristic microscopic features include bland cuboidal cells with abundant cytoplasmic vacuoles and delicate cytoplasmic bridging strands. Immunohistochemically, the tumor typically expresses mesothelial markers such as calretinin, Wilms tumor-1 (WT-1), and D2-40, which are useful in confirming the diagnosis [1, 2].

Here, we report a case of epididymal adenomatoid tumor in a 53-year-old man, highlighting its clinical presentation, histopathological characteristics, and the importance of accurate diagnosis to avoid unnecessary radical surgery.

Case Presentation

A 53-year-old man presented to the Urology Department of Sohag University Hospital with a 5-month

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history of mild chronic right testicular pain. He had no history of scrotal trauma, surgery, or infection. Physical examination revealed a firm, mobile, well-circumscribed right intrascrotal mass measuring approximately 2 cm in diameter, while the left testis was unremarkable. No inguinal lymphadenopathy was detected.

Scrotal ultrasonography demonstrated a well-defined 20-mm mass arising from the tail of the epididymis. Computed tomography of the chest, abdomen, and pelvis showed no evidence of metastatic disease or other abnormalities. Serum tumor markers, including alpha-fetoprotein (AFP), beta-human chorionic gonadotropin (β-hCG), carcinoembryonic antigen (CEA), and lactate dehydrogenase (LDH), were within normal limits.

The patient underwent surgical exploration, which revealed a well-circumscribed nodule attached to the epididymal tail without invasion of the adjacent testicular parenchyma. Local excision of the lesion was performed.

Gross examination demonstrated a firm, encapsulated mass measuring 2 × 2 × 1.5 cm with a solid cut surface showing alternating yellowish and blackish areas.

Histopathological examination revealed a well-circumscribed neoplasm composed of cuboidal cells arranged in nests and trabeculae separated by delicate fibrous septa and thin-walled dilated vascular channels (Figure 1). The tumor cells exhibited abundant eosinophilic cytoplasm containing numerous intracytoplasmic vacuoles with delicate cytoplasmic bridging strands (Figure 2). Foci of hemorrhage and hemosiderin-laden macrophages were also identified. The nuclei were round, uniform, and contained inconspicuous basophilic nucleoli. No nuclear atypia, mitotic activity, or tumor necrosis was observed.

Based on the clinical findings, imaging studies, normal serum tumor markers, and characteristic histopathological features, a diagnosis of epididymal adenomatoid tumor was established.

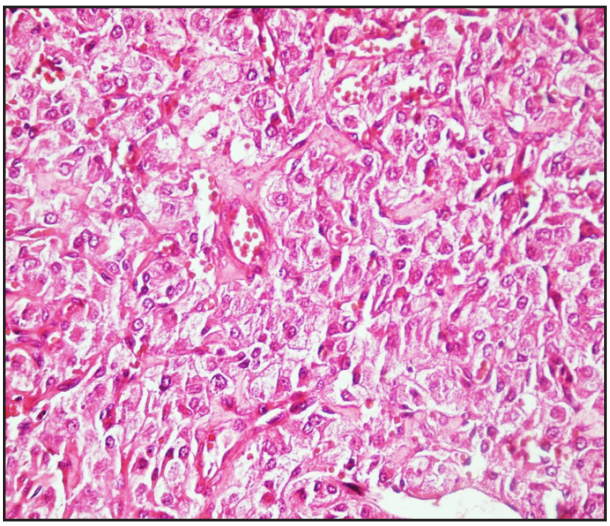

Figure 1. Tumor Cells Arranged in Closely Packed Nests and Trabeculae within an Intervening Fibrous Stroma, Featuring Bland Nuclei and Inconspicuous Basophilic Nucleoli (H&E, ×200).

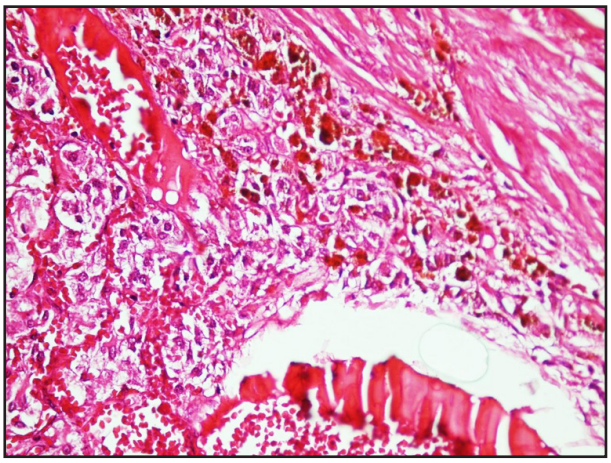

Figure 2. Vacuolated Tumor Cells with Thin Eosinophilic Cytoplasmic Bridging Strands, Accompanied by Dilated Vascular Spaces and Hemosiderin-laden Histeocytes (H&E, ×200).

Discussion

Adenomatoid tumor is an uncommon benign mesothelial neoplasm that most frequently arises in the genital tract. Although originally described as a benign mesothelioma, the term adenomatoid tumor, introduced by Golden and Ash in 1945, is now universally accepted [1, 6]. Regardless of its anatomical location, the tumor typically develops adjacent to mesothelial surfaces and demonstrates immunoreactivity for mesothelial markers, including CK5/6, calretinin, WT-1, D2-40, caldesmon, and HBME-1, supporting its mesothelial origin [1]. Recent molecular studies have further demonstrated recurrent TRAF7 mutations, providing additional evidence regarding its pathogenesis [5].

We report an epididymal adenomatoid tumor in a 53-year-old man who presented with chronic right testicular pain. This age falls within the typical reported range of 20–66 years, although rare cases have been described in infants and young children [2, 7]

Clinically, adenomatoid tumors usually present as small, slow-growing intrascrotal masses with or without pain. A clinicopathological study of 44 genital adenomatoid tumors reported that male patients most commonly presented with either a palpable scrotal mass or localized pain, whereas tumors in women were generally detected incidentally during surgery for unrelated gynecological conditions [1].

Approximately 30% of adenomatoid tumors in the male genital tract arise in the rete testis. However, the epididymal tail is the most common site of involvement, followed by the epididymal head, spermatic cord, ejaculatory ducts, and prostate. Intratesticular adenomatoid tumors are exceptionally rare [5].

In the present case, the excised tumor measured 2 cm in greatest dimension. Most adenomatoid tumors of the male genital tract are relatively small because their superficial intrascrotal location facilitates early clinical detection. Nevertheless, giant lesions measuring up to 12 cm have occasionally been reported [3].

Histopathological examination demonstrated a

well-circumscribed lesion composed of cuboidal to polygonal cells arranged in nests and trabeculae separated by delicate fibrous stroma. The tumor cells contained abundant eosinophilic cytoplasm with numerous intracytoplasmic vacuoles and characteristic thin cytoplasmic bridging strands. The nuclei were uniform and lacked atypia, mitotic activity, or necrosis. These findings are consistent with previous reports describing the broad morphological spectrum of adenomatoid tumors, which may exhibit adenoid, angiomatoid, tubular, cystic, acinar, or solid architectural patterns while consistently maintaining bland cytological features [2].

Because of this histological diversity, adenomatoid tumors may be misdiagnosed as malignant or other benign lesions. The principal differential diagnoses include metastatic carcinoma, yolk sac tumor, and spermatocele [2]. In the present case, metastatic carcinoma was excluded because the lesion showed bland cytological features without necrosis, significant atypia, or mitotic figures, and the patient's imaging studies and serum tumor markers were unremarkable. A yolk sac tumor was considered unlikely given the patient's age, normal serum tumor marker levels, and benign histopathological appearance. Likewise, spermatocele was excluded because careful microscopic examination revealed no cystic dilatation lined by flattened or cuboidal epithelium, which is characteristic of that lesion [8].

In conclusion, adenomatoid tumor is a rare benign neoplasm of mesothelial origin that most commonly involves the genital tract. Because its clinical, radiological, and histopathological features may overlap with those of malignant tumors, accurate diagnosis requires careful clinicopathological correlation and meticulous histopathological evaluation. Recognition of this entity is essential to avoid misdiagnosis and unnecessary radical surgical treatment.

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Not applicable.

Authors' Contributions

•Conceptualization: Maisa Hashem Mohammed

•Data acquisition, analysis, and interpretation: Maisa Hashem Mohammed

•Manuscript drafting: Maisa Hashem Mohammed

•Final approval of the manuscript: Maisa Hashem Mohammed

Conflict of Interest

The author declares no conflict of interest.

Data Availability

The data supporting the findings of this study are included within the manuscript.

Ethical Considerations

This study was based entirely on retrospective clinical and pathological data. The requirement for written informed consent was waived by the institutional review board. Patient confidentiality was maintained by anonymizing all identifiable information before analysis.

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Study Registration

Not applicable.

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