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BENIGN YET DECEPTIVE: A RARE HISTOPATHOLOGICAL MIMIC IN THE RETE TESTIS

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ABSTRACT

Adenomatous hyperplasia of the rete testis is an unusual benign epithelial proliferation that can closely simulate malignant lesions on histopathological examination. Owing to its intricate glandular architecture, the lesion may be mistaken for adenocarcinoma of the rete testis or metastatic adenocarcinoma. We report a rare incidental case identified in a 52-year-old male who underwent surgery for an irreducible left inguinal hernia. Histopathological examination of the orchiectomy specimen revealed marked testicular atrophy associated with complex proliferation of interconnected tubular and glandular structures within the rete testis lined by bland cuboidal epithelium without cytological atypia or stromal invasion. Based on the characteristic morphological findings, a diagnosis of adenomatous hyperplasia of the rete testis was rendered. Recognition of this uncommon benign entity is essential to avoid overdiagnosis and unnecessary aggressive treatment.

KEYWORDS: Rete testis, Adenomatous hyperplasia, Testis, Benign.

INTRODUCTION

The rete testis is a network of interconnecting channels located within the mediastinum testis that facilitates transport of spermatozoa from seminiferous tubules to the efferent ductules. Lesions arising from this region are rare and encompass a spectrum of benign and malignant conditions.[1,2] Among them, adenomatous hyperplasia of the rete testis is an uncommon

benign proliferative lesion characterized by tubular and glandular epithelial proliferation with complex architectural patterns. Although benign, its histological appearance may closely resemble malignant tumors, making accurate diagnosis important in routine surgical pathology practice.[1-4]

Owing to its rarity and close histological resemblance to malignant lesions, adenomatous hyperplasia of the rete testis continues to pose a diagnostic challenge in surgical pathology practice. Awareness of this benign entity is essential to avoid overdiagnosis and unnecessary aggressive management.[1-4] We present this rare case of adenomatous hyperplasia of the rete testis occurring in an atrophic testis associated with long-standing inguinal hernia, highlighting its characteristic histomorphological features and diagnostic significance.

CASE REPORT

A 52-year-old male presented with pain and swelling in the left inguinoscrotal region for eight days. The patient had a history of reducible swelling in the same region for several years, which had recently become irreducible. Clinical examination suggested an irreducible left inguinal hernia, and surgical intervention was performed. Intraoperatively, the hernial sac was associated with an atrophic left testis, and orchidectomy was subsequently carried out along with hernia repair. The specimen received for histopathological examination consisted of the left testis with attached spermatic cord.

Gross examination revealed a testis measuring approximately 5 × 3 × 2 cm with congestion of the external surface and focal fibrotic areas. Cut section showed distortion of normal testicular architecture. Microscopic examination demonstrated marked atrophy of seminiferous tubules with thickened basement membranes and absence of active spermatogenesis. Focal Leydig cell prominence was noted within the interstitium.

Sections from the rete testis showed a conspicuous proliferation of interconnected tubular and gland-like structures arranged in a complex architectural pattern. The tubules were lined by a single layer of cuboidal to low columnar epithelial cells exhibiting uniform round nuclei, inconspicuous nucleoli, and moderate eosinophilic cytoplasm. Focal papillary infoldings into the lumina were identified. No significant nuclear pleomorphism, mitotic activity, necrosis, or stromal desmoplasia was seen. Importantly, there was no evidence of infiltrative growth into adjacent tissues. Sections from the spermatic cord were unremarkable. The overall histomorphological features were diagnostic of adenomatous hyperplasia of the rete testis in an atrophic testis. (Fig 1-4)

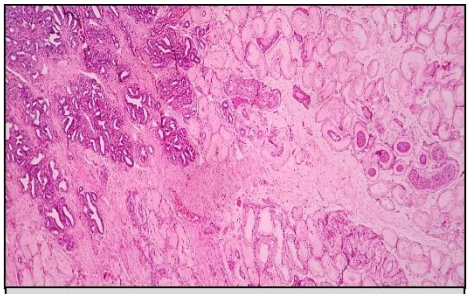

Fig 1-Atrophic seminiferous tubules with basement membrane thickening and absence of spermatogenesis adjacent to proliferative rete testis lesion (H&E)

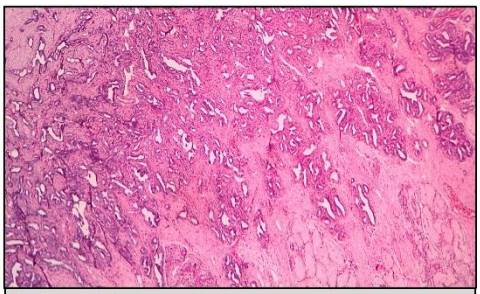

Fig 2-Rete testis showing complex interconnecting proliferative tubuloglandular structures within fibrous stroma (H&E)

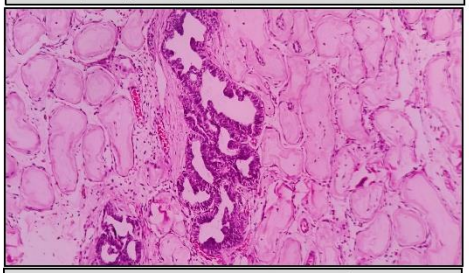

Fig 3-Tubuloglandular structures with dilated lumina and focal papillary epithelial infoldings in the rete testis lesion (H&E).

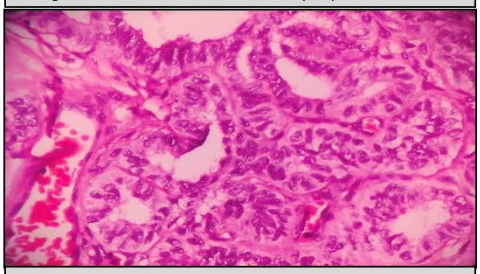

Fig 4-Tubuloglandular structures lined by cuboidal to low columnar epithelium displaying bland nuclear morphology (H&E).

DISCUSSION

Adenomatous hyperplasia of the rete testis is an uncommon benign epithelial proliferation believed to occur secondary to chronic obstruction or altered intratesticular dynamics. The lesion is frequently associated with conditions such as cryptorchidism, hydrocele, chronic inflammatory processes and testicular atrophy. Long-standing inguinal hernia, as observed in the present case, may contribute to vascular compromise and altered drainage, resulting in reactive epithelial proliferation within the rete testis.[1,2]

Historically, proliferative lesions of the rete testis were often misinterpreted as malignant because of their glandular complexity. In 1978, Nistal and Paniagua recognized adenomatous hyperplasia of the rete testis as a distinct benign pathological entity and emphasized its separation from adenocarcinoma and other malignant tumors. Their observations played an important role in establishing the lesion as a reactive epithelial proliferation rather than a true neoplasm and significantly improved diagnostic understanding of non-neoplastic lesions arising in the rete testis.[2,3]

Microscopically, adenomatous hyperplasia demonstrates proliferation of tubules and gland-like spaces that may show papillary infoldings and architectural complexity. Despite this appearance, the lining epithelium remains cytologically bland, lacking marked pleomorphism or significant mitotic activity. Absence of stromal invasion is one of the most important distinguishing features separating this lesion from malignancy. In the present case, the lesion showed classical morphological findings with no evidence of destructive infiltration, necrosis, or severe cytological atypia.[5,6]

The most important differential diagnosis is adenocarcinoma of the rete testis, an exceptionally rare but highly aggressive malignancy. Adenocarcinoma usually demonstrates marked nuclear atypia, increased mitotic activity, necrosis, and infiltrative stromal invasion.[7,8] Metastatic adenocarcinoma involving the testis may also mimic this lesion because of its glandular architecture; however, metastatic lesions generally exhibit greater atypia and are associated with evidence of a primary malignancy elsewhere. In selected cases, malignant mesothelioma and yolk sac tumor may also enter the differential diagnosis. Careful histopathological assessment remains the cornerstone for accurate diagnosis, while immunohistochemistry may be reserved for problematic cases.[9,10]

Recognition of adenomatous hyperplasia of the rete testis is clinically important because misdiagnosis can result in unnecessary radical treatment and psychological stress to the patient. Awareness of this uncommon benign entity and familiarity with its characteristic morphology help prevent diagnostic pitfalls in surgical pathology practice.[5-10]

CONCLUSION

Adenomatous hyperplasia of the rete testis is a rare benign lesion that can closely mimic malignancy because of its complex glandular architecture. The present case highlights the importance of meticulous histopathological evaluation in differentiating this entity from invasive neoplasms of the rete testis. Recognition of its characteristic features is essential to avoid overdiagnosis and unnecessary aggressive therapeutic intervention.

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