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Testicular Metastasis as the Initial Presentation of Colorectal Adenocarcinoma: A Case Report

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Abstract **Case Report**

Non-lymphomatous cancers metastasizing to the testis are rare and typically occur in the context of widespread advanced disease. This report highlights a unique case where a testicular mass was the sole presenting feature of an undiagnosed colorectal adenocarcinoma. A 64-year-old man presented with right scrotal swelling, and histopathological analysis revealed metastatic adenocarcinoma of colorectal origin. Subsequent imaging confirmed a sigmoid tumor with liver and peritoneal metastases. This case underscores the importance of considering metastatic colorectal cancer in the differential diagnosis of testicular masses, even in the absence of gastrointestinal symptoms. Comprehensive histopathological and imaging evaluations are critical for accurate diagnosis and effective management.

Keywords: Testicular Metastases, Colorectal Cancer, Immunohistochemistry, Case Report.

INTRODUCTION

Colorectal cancer (CRC) accounts for 10.2% of all cancers worldwide, the third highest incidence but the second highest mortality rate [6]. It has an established metastatic pattern involving the liver, lungs, and peritoneum. However, testicular metastases from CRC are exceedingly rare, representing only 0.04%–0.08% of secondary testicular tumors [9]. Most cases involve advanced disease, frequently accompanied by metastases to other sites, such as the liver or peritoneum [10].

This report discusses a rare case of testicular metastasis as the initial and sole manifestation of CRC. Several mechanisms have been proposed to explain testicular involvement, including hematogenous spread, retrograde lymphatic dissemination, and direct extension via the vas deferens [3, 4]. Despite its rarity, recognizing such atypical metastatic presentations is crucial for timely diagnosis and optimal management.

CASE REPORT

A 64-year-old man presented with a three-month history of right scrotal swelling. Clinical examination revealed a chronic, non-tender enlargement of the right scrotum. The patient denied any gastrointestinal symptoms or a prior history of malignancy.

Scrotal ultrasound revealed heterogeneous, nodular hypertrophy of the right epididymis and a moderate hydrocele containing thick echogenic material. The patient underwent surgical excision of three epididymal nodules, and pathological evaluation identified adenocarcinoma with necrosis and a mucinous component.

Immunohistochemical analysis confirmed a colorectal origin (CK20+, CDX2+, CK7−) [1, 7]. Subsequent computed tomography (CT) of the thorax, abdomen, and pelvis revealed a sigmoid tumor with T3N2M1 staging, along with liver and intra-abdominal metastases. Bone metastases were suspected based on imaging of the D12 vertebral body.

Colonoscopy identified a friable, budding lesion located 25 cm from the anal margin, which bled easily upon contact with biopsy forceps. Multiple biopsies were taken, and pathological findings confirmed a moderately differentiated, infiltrative adenocarcinoma.

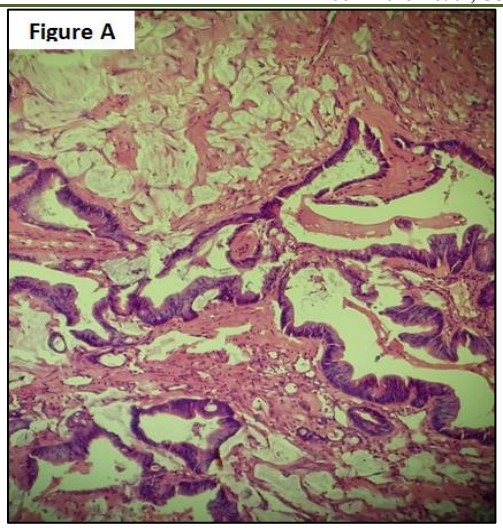

Figure A: Histopathological section of the testicular tumor showing moderately differentiated adenocarcinoma with mucinous differentiation. The tumor proliferation is arranged in irregular and angulated glandular structures embedded in a desmoplastic stroma. (H&E stain, original magnification ×200)

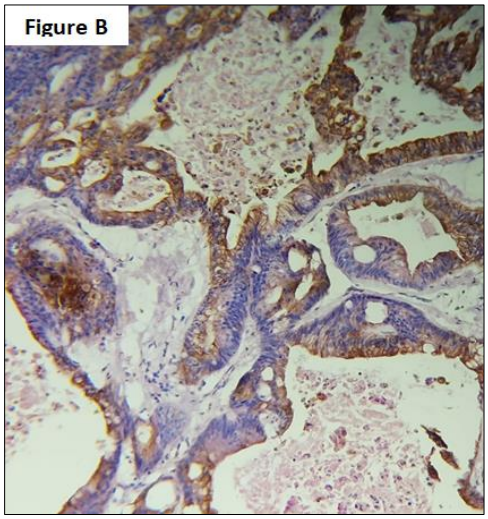

Figure B: Immunohistochemical staining showing strong cytoplasmic positivity for CK20. (Immunostain, original magnification ×200)

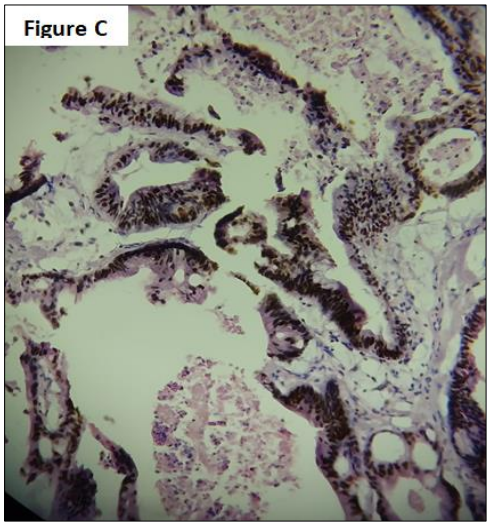

Figure C: Immunohistochemical staining demonstrating nuclear positivity for CDX2. (Immunostain, original magnification ×200)

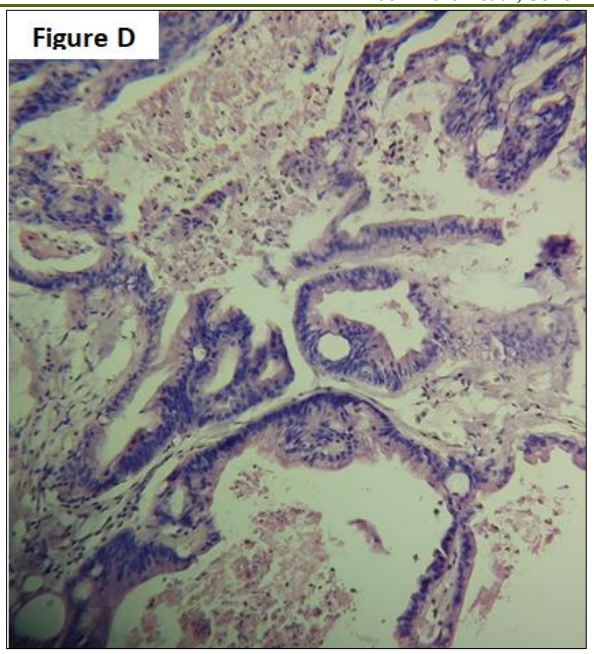

Figure D: Immunohistochemical staining showing negative CK7, supporting colorectal origin. (Immunostain, original magnification ×200)

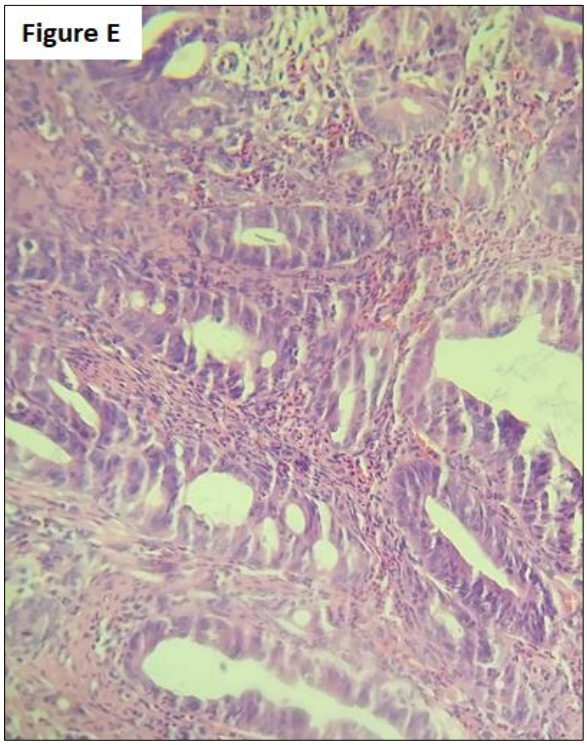

Figure E: Histopathology of sigmoid biopsy showing similar adenocarcinomatous glandular and cribriform architecture. (H&E stain, original magnification ×200)

DISCUSSION

Epidemiology and Clinical Presentation

Metastatic involvement of the testis from CRC is exceptionally rare, with fewer than 50 cases reported in the literature [5]. Such metastases typically occur in the setting of widespread disease, as seen in this case. Notably, testicular metastases are often diagnosed post-orchiectomy or during autopsy [8].

Mechanisms of Testicular Metastasis

The exact mechanisms of testicular metastasis remain unclear, but several pathways have been proposed:

- **Hematogenous spread:** This is considered the most plausible mechanism in cases of advanced CRC with systemic dissemination [3].
- **Retrograde lymphatic dissemination:** This pathway is particularly relevant in patients with extensive peritoneal involvement [4].

- **Extension along the vas deferens:** Direct involvement of the vas deferens is another potential route, especially in cases with pelvic metastases [9].

Histopathological and Immunohistochemical Insights

Histopathological evaluation remains the cornerstone of diagnosing testicular metastases. Specific immunohistochemical markers, such as CK20 and CDX2, are highly indicative of colorectal origin [1-7]. Our findings align with previous studies emphasizing the diagnostic utility of these markers in metastatic CRC.

Prognostic Considerations

The prognosis for testicular metastases from CRC is poor, with median survival ranging from 6 to 12 months despite palliative chemotherapy [10, 2]. Testicular involvement is often a marker of widespread disease, significantly limiting treatment options.

Comparison with Literature

This case is consistent with previously reported cases highlighting the rarity of testicular metastases as an initial presentation of CRC [5-8]. However, the absence of gastrointestinal symptoms in our patient adds to the diagnostic challenge, underscoring the importance of thorough evaluation in cases of atypical testicular masses.

CONCLUSION

This case emphasizes the importance of including metastatic colorectal adenocarcinoma in the differential diagnosis of testicular masses, even in patients without gastrointestinal symptoms. Comprehensive histopathological and imaging evaluations are essential for accurate staging and management. Further research into the mechanisms and management of rare metastatic sites, such as the testis, is warranted to improve patient care and clinical management.

Conflict of Interest: The authors declare that there is no conflict of interest regarding the publication of this case report.

Patient Consent

Consent was obtained from the patient for the publication of this case report and any accompanying images. Every effort has been made to preserve the patient's anonymity.

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