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Metastatic seminoma from an undescended intra-abdominal testis: Case report and review of management

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A B S T R A C T

Testicular germ cell tumors (TGCTs), particularly seminomas, are the most common malignancies in young males and are strongly linked to cryptorchidism. This case report describes a 44-year-old patient with metastatic seminoma originating from an undescended intra-abdominal testis. The diagnosis was confirmed through imaging, tumor marker analysis, and histopathology. Treatment involved orchidectomy followed by BEP chemotherapy, leading to complete remission with no recurrence at 18-month follow-up. This case highlights the importance of early detection and a multidisciplinary approach for optimal management of testicular seminomas.

1. Introduction

Testicular germ cell tumors (TGCTs) account for 1–2 % of all male malignancies, predominantly affecting young adults. Seminomas, the most common histological subtype, are highly radiosensitive and chemosensitive, with a favorable prognosis. While TGCTs typically arise in gonadal germ cells, they can rarely develop in extragonadal locations, particularly in patients with a history of cryptorchidism. This case underscores the challenges associated with seminomas arising from ectopic testes and emphasizes the need for early diagnosis and targeted treatment.[1]

Cryptorchidism, also known as undescended testis, is a congenital anomaly affecting 2–8 % of full-term male neonates and is an important risk factor for the development of testicular germ cell tumors (TGCTs). The severity of ectopia correlates with the risk of malignancy, especially for intra-abdominal testes, which is also exacerbated by delayed or lack of surgical correction.[2] Despite advances in the management of cryptorchidism, late presentations and associated complications, including malignancy, remain a clinical challenge.[3]

We report the case of a 44-year-old man with metastatic seminoma originating from an undescended intra-abdominal testis. This case emphasizes the diagnostic and therapeutic challenges in seminomas occurring in ectopic testes and reinforces the necessity of timely diagnosis, targeted imaging and interdisciplinary management for successful outcomes.

2. Case presentation

A 44-year-old male patient, with no significant medical history, presented with bilateral lower back pain and a general decline in health. Clinical examination was normal, except for an empty left scrotum. An initial ultrasound revealed a large retroperitoneal mass of lymphadenopathy surrounding the vessels, along with a left-sided pelvic lesion measuring 83 × 54 mm, characterized by hypoechoic tissue structure with central vascularization on Doppler imaging (Fig. 1).

A thoraco-abdomino-pelvic CT scan was subsequently performed, describing the left pelvic mass as a tissue lesion with low contrast enhancement, measuring 63 × 63 mm, with lobulated contours and exerting pressure on the left side of the bladder. Additionally, a heterogeneous conglomerate of retroperitoneal lymphadenopathy was noted, with some necrotic areas, encasing the aorta, renal arteries, superior mesenteric artery, and abutting the right border of the celiac trunk. This mass displaced the vena cava and renal veins anteriorly. The lymphadenopathy extended along the right iliac axis over a height of 180 mm on the right side and 110 mm on the left, measuring 135 × 63 mm transversely. It displaced the kidneys laterally, causing moderate dilation of the left renal cavities (Fig. 2).

A CT-guided biopsy of the lymphadenopathy was performed, and histological analysis revealed cellular elements of indeterminate nature. Immunohistochemical studies were inconclusive due to insufficient material.

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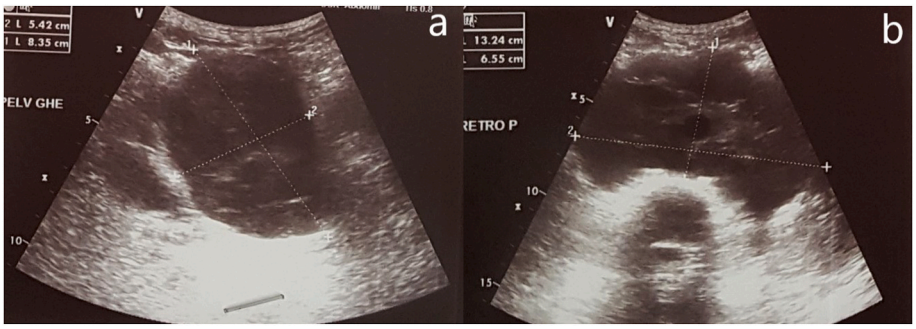

Fig. 1. Ultrasound shows: a) Left-sided pelvic lesion measuring 83 × 54 mm, characterized by hypoechoic tissue structure with central. b) Large retroperitoneal mass of lymphadenopathy surrounding the vessels, measuring 132mm × 65mm.

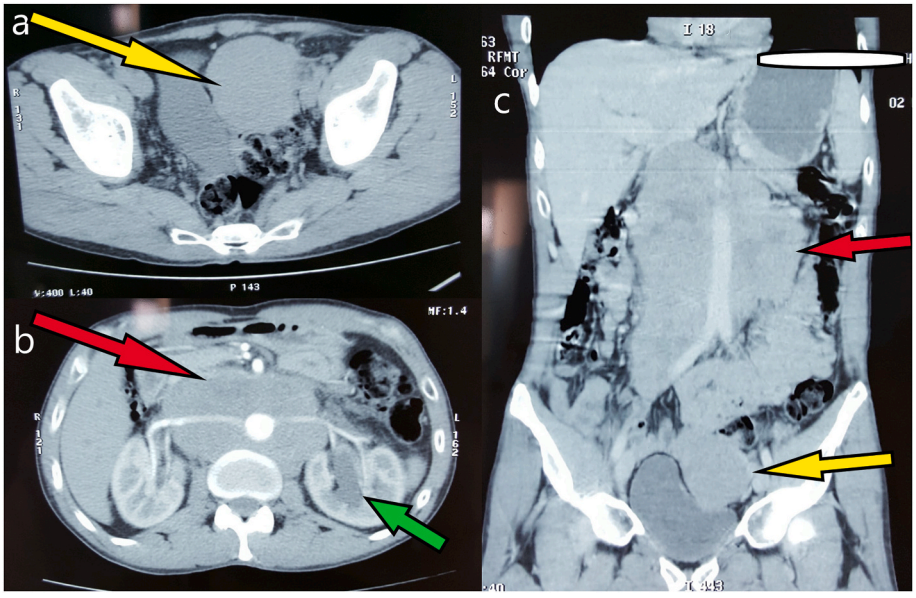

Fig. 2. Axials (a & b) and coronal (c) section of plain CT abdomen showing: the left pelvic mass as a tissue lesion with low contrast enhancement, measuring 63 × 63 mm, with lobulated contours and exerting pressure on the left side of the bladder (Yellow arrow); Heterogeneous conglomerate of retroperitoneal lymphadenopathy was noted, with some necrotic areas, encasing large abdominal vessels, extended along the right iliac axis over a height of 180 mm on the right side and 110 mm on the left, measuring 135 × 63 mm transversely (Orange arrow), It displaced the kidneys laterally, causing moderate dilation of the left renal cavities (green arrow).

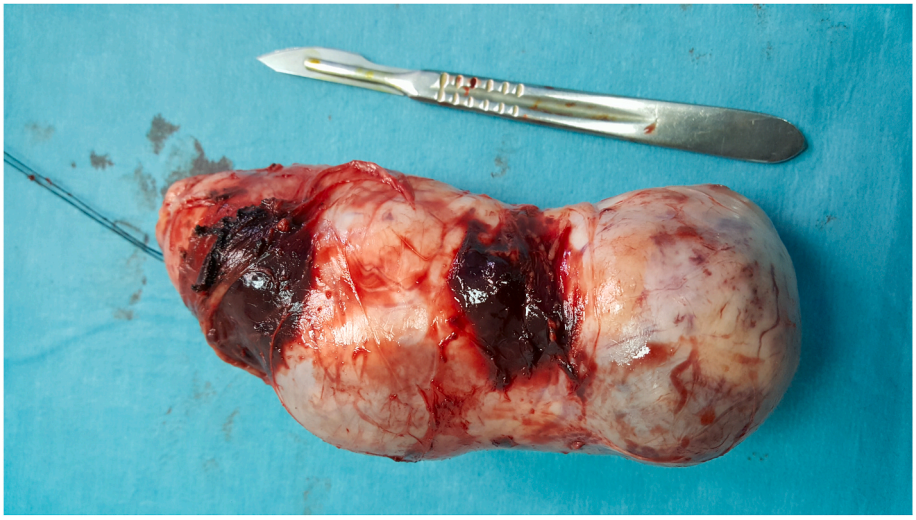

Fig. 3. Macroscopic appearance of the mass after excision.

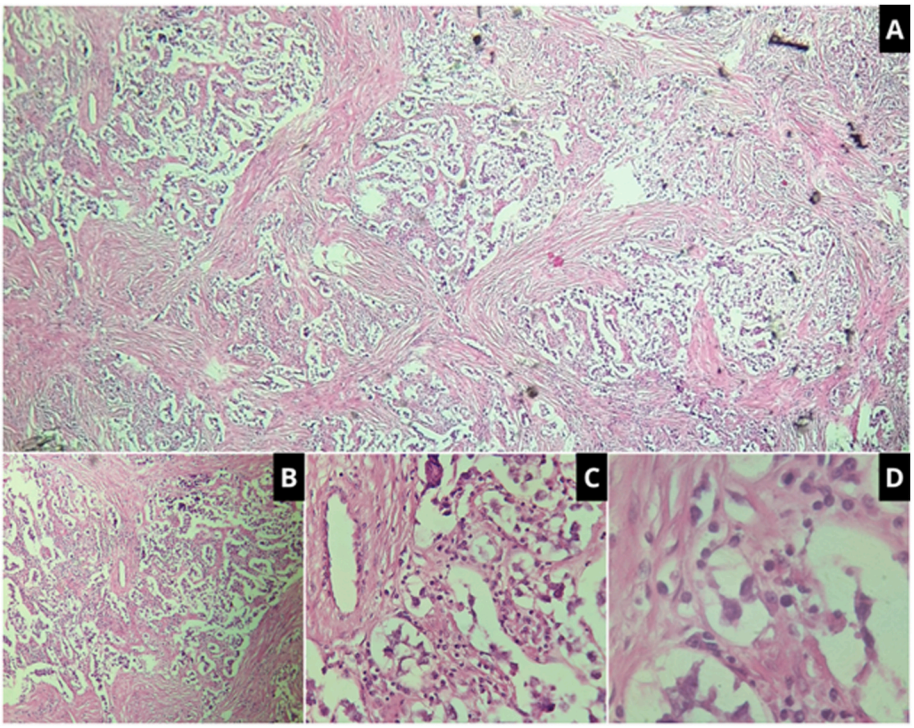

Fig. 4. Microscopic findings (HE Staining): tumor consisting of Sheet-like pattern of large cells with clear cytoplasm, distinct borders, squared off nuclei and prominent nucleoli with fibrous septa and inflammatory cells. Admixed lymphocytes are observed. A = low power x 100. B = medium power x 200. C = high power x 400. D = High power x450.

Tumor marker tests revealed elevated HCG levels at 635 IU/L, elevated LDH at 839.40 IU/L, and normal AFP at 3.91 IU/mL.

Following a multidisciplinary oncologic-urologic meeting, a testicular tumor in an ectopic testis was suspected, and an orchidectomy was decided and performed via a left iliac incision. The specimen was completely removed (Fig. 3). Postoperative recovery was uneventful, and the patient was discharged the day after surgery.

Histological analysis confirmed the diagnosis of a seminoma limited to the testis, classified as pT2 (Fig. 4). Tumor marker tests conducted one month postoperatively showed persistently elevated LDH at 795 IU/L (3 times the normal level) and HCG at 592 IU/L. The patient was staged as T2N3M0, S2, Stage IIIB according to the AJCC 2009 classification and assigned a good prognosis based on the IGCCCG classification for metastatic forms.

After a second multidisciplinary oncologic-urologic meeting, the patient underwent three cycles of BEP chemotherapy: **Bleomycin** 30 mg on days 1, 8, and 15; **Etoposide** 100 mg/m^2 on days 1–5; **Cisplatin** 20 mg/m^2 on days 1–5.

During systemic treatment, tumor markers showed a decreasing trend and normalized after the second cycle of chemotherapy. One month later, tumor marker levels remained negative, and a follow-up thoraco-abdomino-pelvic CT scan showed no residual mass. Complete remission was declared after chemotherapy.

The patient was placed under a follow-up schedule involving clinical examination, tumor marker testing, and thoraco-abdomino-pelvic CT scans every three months for the first two years, then every six months, and finally annually. The most recent follow-up, 18 months post-treatment, showed no signs of recurrence or adverse effects.

3. Discussion

Testicular germ cell tumors (TGCTs) are the most common malignancies in young adult men, representing a spectrum of neoplasms derived from germ cells. These tumors can arise in the gonads or, in rare cases, extragonadal sites such as the retroperitoneum, mediastinum, or pineal gland. Seminomas, the most common histological subtype, are highly sensitive to radiotherapy and chemotherapy, offering a generally favorable prognosis.[1]

he development of TGCTs is closely linked to aberrations during germ cell migration and differentiation in embryogenesis. Germ cell neoplasia in situ (GCNIS) is considered the precursor lesion of most seminomas. It likely originates from halted germ cell development during migration. This process may explain the presence of seminomas in ectopic or undescended testes, as seen in this case.[2] Cryptorchidism, present in approximately 6 % of full-term male newborns and persisting in 0.8 % of infants after one year, is a well-established risk factor for TGCTs.[2] Intra-abdominal testes carry a significantly higher malignant potential compared to inguinal or scrotal testes, with a relative risk increased up to 48 times.[2] Other risk factors include familial predisposition, testicular dysgenesis syndrome, oligospermia, and antenatal exposure to exogenous estrogen.[4,5]

Seminomas typically present as painless testicular masses. However, symptoms vary, particularly in cases of undescended or extragonadal testicles. In this case, a 44-year-old male presented with bilateral lower back pain and systemic symptoms. On examination, his left scrotum was empty, raising suspicion of an undescended testis. Ultrasonography and contrast-enhanced CT scans confirmed a retroperitoneal mass with features consistent with lymphadenopathy, along with a pelvic lesion corresponding to an ectopic testis. These findings underscore the importance of thorough imaging and clinical correlation in diagnosing seminomas associated with cryptorchidism.[3,6]

CT remains the gold standard imaging technique for staging TGCTs, especially in assessing retroperitoneal lymph node involvement, a frequent occurrence due to testicular lymphatic drainage patterns.[7] In this case, the retroperitoneal lymphadenopathy exhibited necrotic areas and encased major vascular structures, findings typical of metastatic seminoma. Tumor marker analysis revealed elevated β-hCG and LDH levels, both of which are indicative of active disease and assist in staging and prognosis determination.

Management of seminomas depends on staging and prognostic

factors. This patient was classified as Stage IIIB (pT2N3M0, S2) according to the AJCC 2009 classification, with a good prognosis under the IGCCCG criteria. Treatment included an orchidectomy for the ectopic testis, followed by three cycles of BEP chemotherapy (bleomycin, etoposide, and cisplatin). This multimodal approach aligns with current guidelines for metastatic seminomas, emphasizing the high chemosensitivity of these tumors.[8]

The normalization of tumor markers after the second chemotherapy cycle and the absence of residual mass on follow-up imaging highlight the effectiveness of the chosen treatment protocol. Surveillance involving clinical evaluation, tumor marker testing, and imaging is critical to detect recurrences early and to monitor long-term outcomes.

The prognosis for seminomas is generally excellent, with cure rates exceeding 90 % for early-stage disease and favorable metastatic profiles.[9] Our patient achieved complete remission and remains disease-free 18 months post-treatment. Long-term follow-up is essential to monitor for recurrence and manage late effects of treatment, such as nephrotoxicity or pulmonary fibrosis from chemotherapy.

This case illustrates the challenges in diagnosing and managing seminomas arising from an undescended intra-abdominal testis. The retroperitoneal mass initially presented with nonspecific symptoms and could have been mistaken for other retroperitoneal neoplasms, such as sarcoma or lymphoma. Furthermore, the advanced stage at presentation underscores the importance of awareness and early intervention in cryptorchidism cases, even in adulthood. The role of multidisciplinary collaboration in this case was pivotal, ensuring accurate diagnosis, staging, and appropriate treatment.

Seminomas originating from undescended testes, particularly intra-abdominal ones, pose diagnostic and therapeutic challenges.[10] This case underscores the need for a high index of suspicion and the utility of advanced imaging and tumor marker evaluation in achieving a timely diagnosis. Multimodal treatment, including orchidectomy and chemotherapy, offers excellent outcomes, as evidenced by the complete remission observed in this patient. Long-term follow-up remains crucial for sustaining these outcomes and managing potential late effects of therapy.

4. Conclusion

Seminomas arising from undescended testicles present unique diagnostic and therapeutic challenges. This case underscores the importance of early detection, comprehensive imaging, and a multidisciplinary treatment approach. Given their high radiosensitivity and chemosensitivity, timely intervention leads to excellent outcomes. Long-term surveillance remains essential to monitor recurrence and treatment-related complications. Future research should focus on optimizing management strategies for testicular malignancies in ectopic locations.

Ethical approval

Ethical approval is not required by our institution.

Our case report is exempt from ethical approval as it involves a retrospective and observational analysis, maintains strict patient anonymity and confidentiality, adheres to ethical guidelines, aligns with our institution's policy, and has been conducted with the full and informed consent of the patient involved, which does not mandate approval for such studies.

Registration of research studies

Not applicable.

CRediT authorship contribution statement

Reda Tariqi: Writing – original draft, Methodology, Investigation, Formal analysis, Data curation. **Ahmed Ibrahimi:** Writing – review & editing, Resources, Project administration, Investigation, Data curation, Conceptualization. **Hamza El Abidi:** Methodology, Investigation. **Youssef Abaair:** Data curation, Conceptualization. **Mostafa Bouaoudate:** Methodology, Formal analysis. **Sabrine Darquaoui:** Resources. **Imad Boualaoui:** Visualization, Investigation. **Hachem El Sayegh:** Writing – review & editing, Validation. **Yassine Nouini:** Writing – review & editing, Visualization, Project administration.

Informed consent

The patients consent was required, voluntary and informed.

Informed consent

Written informed consent was obtained from the patient for publication and any accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal on request.

Declaration of competing interest

The authors declare no competing interests.

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