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Giant Retroperitoneal Mass Revealing Recurrence of Testicular Seminoma after Orchiectomy: Case Report

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Abstract **Case Report**

Testicular germ cell tumors [GCTs] are the most common malignancies in young adult males. Recurrence after orchiectomy and chemotherapy, particularly in non-seminomatous tumors or mixed GCTs, represents a significant clinical challenge. We report the case of a 72-year-old patient who underwent left orchiectomy in 2024 for a left testicular mass. Initial histopathology confirmed a pure seminoma. The patient received first-line BEP chemotherapy with good response, followed by surveillance. One year later, he presented with retroperitoneal lymph node recurrence, for which second-line TIP chemotherapy was administered, resulting in a significant tumor response and normalization of tumor markers. Persistent retroperitoneal masses were subsequently identified on imaging, suggestive of mature teratoma. A multidisciplinary team recommended surgical excision of residual masses. This case highlights the importance of long-term follow-up, the role of tumor markers and imaging in monitoring recurrence, and the surgical management of residual disease in testicular GCTs.

Keywords: Testicular germ cell tumor, Seminoma, Recurrence, Orchiectomy, Retroperitoneal lymph nodes, Chemotherapy, Mature teratoma.

INTRODUCTION

Testicular germ cell tumors [GCTs] account for 1–2% of all male cancers, with a peak incidence between 25 and 35 years of age [1]. Orchiectomy is the standard primary treatment, often followed by chemotherapy or surveillance depending on tumor type and stage. Seminomas are generally sensitive to chemotherapy, while non-seminomatous GCTs and mixed tumors have a higher risk of recurrence and chemoresistance [2,3]. Residual masses after chemotherapy may represent fibrosis, necrosis, or mature teratoma, which is chemo-resistant and requires surgical management [4,5]. Here, we present a case of recurrent testicular GCT after orchiectomy in 2024, highlighting diagnostic, therapeutic, and follow-up considerations.

CASE REPORT

A 26-year-old male presented in December 2023 with lumbar pain. Imaging studies were performed:

CT TAP [21/12/2023]: Confluent left para-aortic lymph nodes encasing the left ureter with moderate hydronephrosis and inferior vena cava thrombosis, likely metastatic.

PET scan [25/12/2023]:

- Confluent left para-aortic lymph nodes with central necrosis, SUV max 22.1, measuring 65×60×65 mm from the renal hilum to iliac bifurcation.
- Additional lymph nodes inter-aortico-caval SUV max 6.3–6.4, largest 16×13 mm.
- Left testicular mass, heterogeneous, SUV max 14, 76×54 mm with associated hydrocele.

Biopsy of lymph node mass:
Atypical glandular component; immunohistochemistry [IHC] in progress.

Orchiectomy [2024]:

Histopathology revealed a 7.5 cm seminoma, necrotic, infiltrating rete testis and epididymis, without vascular emboli or involvement of tunica albuginea, vaginalis, or spermatic cord. IHC: PLAP ++++, Beta-HCG negative, AFP negative, CD30 negative. Stage IB.

Chemotherapy: BEP ×4 cycles, with good clinical response; patient placed under surveillance.

Recurrence [Dec 2024]: Retroperitoneal lymph node recurrence; TIP ×4 cycles administered, resulting in normalization of tumor markers:

- LDH = 61 U/L
- Beta-HCG < 0.1 IU/L
- AFP = 1.4 U/mL

Follow-up imaging [18FDG-PET, 31/07/2025]: Persistent multicystic retroperitoneal mass, predominantly left-sided, suggestive of residual mature teratoma.

Management:

Multidisciplinary discussion recommended surgical excision of residual retroperitoneal masses; ureteral stents placed for renal protection. Patient continued close monitoring with imaging and tumor markers.

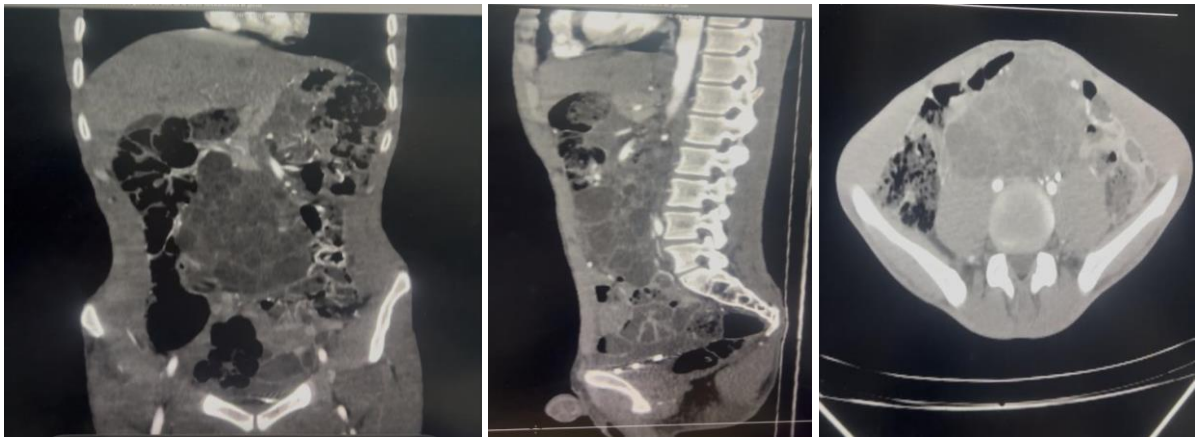

Figure 1: Thoracoabdominal-pelvic scan showing a multilocular tumor with multiple cystic compartments in the retroperitoneal space

DISCUSSION

Management of testicular germ cell tumors [TGCTs] relies on a multimodal strategy combining orchiectomy, chemotherapy, and surveillance. TGCTs account for approximately 1–2% of male cancers, with a peak incidence in men aged 25–35 years [1]. Pure seminomas represent about 50% of TGCTs and are highly sensitive to cisplatin-based chemotherapy, with 5-year survival rates exceeding 90% for localized stages [2,3].

Recurrences after orchiectomy and chemotherapy

After orchiectomy and first-line chemotherapy, the risk of recurrence depends on the initial stage, the presence of residual masses, and tumor histology. In stage I seminomas, the recurrence rate can reach 15–20% without adjuvant treatment [4]. In non-seminomatous tumors, the risk is higher, with relapses observed in 25–35% of patients [5]. Following BEP [bleomycin, etoposide, cisplatin] chemotherapy, complete responses with normalization of tumor markers generally exceed 70%, but residual masses persist in approximately 30–40% of patients [6,7].

Morphology and content of residual masses

Residual masses after chemotherapy can correspond to three main entities:

- Necrosis/fibrosis [approximately 40–50%] [8]
- Mature teratoma [approximately 30–40%] [9]
- Viable disease [approximately 10–20%] [10]

The presence of a mature teratoma is particularly important, as it is resistant to chemotherapy and may progress to secondary malignant transformation [11]. The persistence of masses despite normalized tumor markers should therefore always prompt surgical evaluation.

Imaging and surveillance

Imaging plays a central role in TGCT follow-up:

- Contrast-enhanced thoraco-abdomino-pelvic CT [TAP CT] is recommended every 3–6 months during the first two years and annually up to five years [3].
- FDG-PET scan is useful for residual masses after chemotherapy, particularly in seminomas, since high uptake [SUV > 2.5] strongly correlates with active disease [12]. However, the absence of FDG uptake does not completely rule out a teratoma, which may be PET-negative yet present histologically [13].

Therapeutic approach

For residual masses > 3 cm after chemotherapy, surgical resection is recommended even if tumor markers are normal [14]. Retroperitoneal lymph node dissection [RPLND] allows for excision of mature teratomas and reduces the risk of malignant transformation or localized recurrence. Studies indicate that RPLND can improve both recurrence-free survival and overall survival when performed in a specialized multidisciplinary setting [15].

Associated complications

Chemotherapy carries risks, including:

- Thrombophlebitis and coagulation disorders in 5–10% of patients [16].
- Renal and pulmonary toxicities related to cisplatin and bleomycin [6].

In our patient, the occurrence of left lower limb thrombophlebitis during chemotherapy highlights the need for close clinical monitoring and prompt management of systemic complications.

Particularities of our case

In the present case, despite an initial favorable clinical and biochemical response to BEP and TIP protocols, a large retroperitoneal mass developed. Although minimally FDG-avid on PET scan, the mass displayed a multilocular structure with a solid component suggestive of residual mature teratoma with a minor immature component. The absence of FDG uptake does not completely exclude viable cells, especially in immature teratomas [13]. This scenario justifies the decision to proceed with surgical resection of the residual masses, in accordance with international recommendations.

CONCLUSION

Recurrent testicular germ cell tumors after orchiectomy and chemotherapy, even in pure seminomas, require vigilant surveillance with tumor markers and imaging. Persistent retroperitoneal masses, especially with multicystic features, may represent mature teratoma and should be surgically resected. Multidisciplinary management is essential to optimize outcomes and prevent malignant transformation.

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