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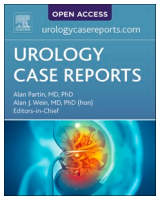

Oncology

Metastatic testicular seminoma presenting as acute lower limb ischaemia

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ABSTRACT

We describe a unique presentation of acute lower limb ischaemia due to metastatic seminoma in a middle-aged man with a large retroperitoneal mass. The patient underwent vascular bypass surgery of the right lower limb, completed chemotherapy, and had a right scrotal orchiectomy. The patient had pre-existing vascular risk factors including peripheral vascular disease and smoking. To our knowledge this is the first published case in the literature that has described a large retroperitoneal seminoma compressing the abdominal aorta resulting in acute lower limb ischaemia.

1. Introduction

Testicular germ cell tumours usually affect men between 15 and 40 years of age.[1] The most common subtype of testicular germ cell tumours are seminomas accounting for approximately 55–60 %.[1] Typically, they present as an incidental painless scrotal lump, but some patients may present with manifestations of metastatic disease.[2] We describe a very rare presentation of acute lower limb ischaemia due to metastatic seminoma in a middle-aged man with a large retroperitoneal mass. To our knowledge this is the first published case in the literature that details this phenomenon.

2. Case presentation

A 56-year-old man was admitted with acute lower limb ischaemia in the setting of a four-day history of acute right thigh pain, lower leg weakness and swelling. This is in the context of night sweats and right testicular enlargement for the preceding twelve months. His past medical history included peripheral vascular disease, chronic back pain requiring a neurostimulator and a 10-pack year smoking history. There was no history of cryptorchidism, infertility, or mumps. There was no personal or family history of testicular cancer. On examination, the patient had a large firm right testicular mass. The right lower limb was swollen with absent right femoral, popliteal and pedal pulses.

Computed tomography (CT) angiogram demonstrated a large right sided retroperitoneal mass measuring 9.2 × 7.1 × 15.5 cm with encasement and incomplete occlusion of the abdominal aorta and inferior vena cava and complete occlusion of the right common and external iliac arteries (Fig. 1). In addition, there were large bilateral pulmonary emboli. Lower limb doppler ultrasound revealed an extensive occlusive right lower limb deep venous thrombosis (DVT) extending from the right common iliac artery origin down to the right ankle. Scrotal ultrasound showed an enlarged right testis measuring 9.4 × 6.5 × 7.2 cm with a heterogenous appearance with hypervascularity and accompanying moderate right hydrocele.

Tumour markers for testicular cancer were elevated (alpha foetal protein 4 ng/mL, beta-HCG 57 mIU/ml, lactate dehydrogenase 554 U/L). Renal function was mildly impaired (eGFR 62 ml/min/1.73m^2).

A CT guided core biopsy of the large retroperitoneal mass demonstrated fibrous tissue infiltrated by a tumour composed of large cells with abundant clear cytoplasm, pleomorphic vesicular nuclei, prominent nucleoli and frequent mitoses (Fig. 2A). There was a background population of benign small lymphocytes. The tumour cells showed positive membranous staining with C-kit, weak positive staining for placental alkaline phosphatase (PLAP) and nuclear staining with Oct-4 on immunohistochemistry (Fig. 2B). CD30, cytokeratin (MNF116),

Abbreviations: CT, computed tomography; VAC, Vacuum assisted closure; DVT, Deep vein thrombosis.

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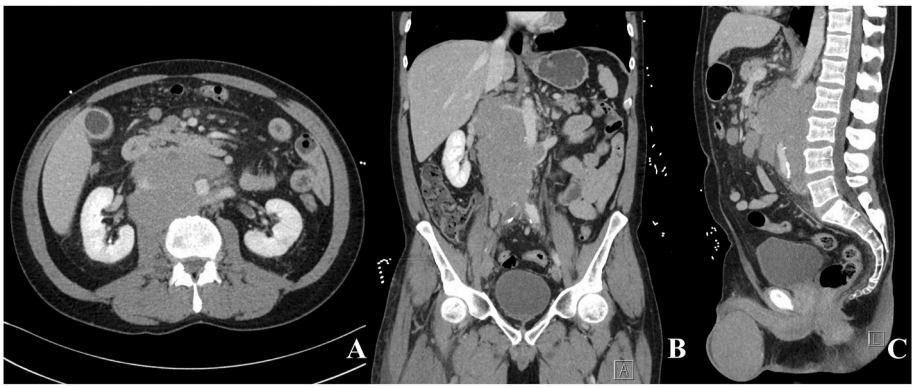

Fig. 1. Contrast enhanced CT of the abdomen and pelvis demonstrating large retroperitoneal mass causing compression of abdominal aorta and inferior vena cava with complete occlusion of the right common and external iliac arteries.

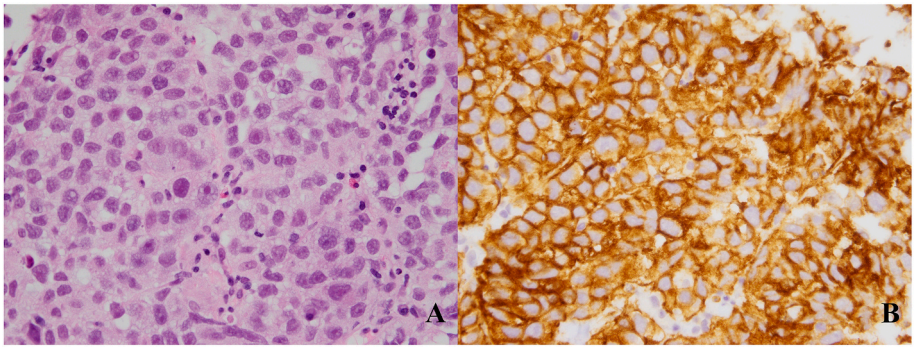

Fig. 2. CT guided biopsy of the retroperitoneal mass demonstrating fibrous tissue infiltrated by a tumour composed of large cells with abundant clear cytoplasm, pleomorphic vesicular nuclei, prominent nucleoli and frequent mitoses (Left). The tumour cells showed positive membranous staining with C-kit (right) and immunohistochemical features consistent with metastatic seminoma with no other germ-cell tumour elements.

Fig. 3. Contrast enhanced CT abdomen and pelvis demonstrating excellent treatment response post chemotherapy, B: Reconstructed vascular graft anatomy.

melanoma markers (S0x1-10/Melan-A) and lymphoid markers (CD20/CD3) were all negative. These features were consistent with metastatic seminoma without any other germ cell tumour component.

Initially, on day 1 the patient was commenced on a continuous heparin infusion with a target APTT between 50 and 100. Biopsy of the retroperitoneal mass was performed on day 2. On day 3, the patient underwent a right leg fasciotomy and a left to right femoro-femoral cross over bypass using an 8 mm ring reinforced Polytetraflouroethylene (PTFE) graft. On-table angiogram demonstrated good revascularisation. The fasciotomy wound was managed with a VAC dressing post-operatively.

The patient made an uncomplicated recovery and went on to start chemotherapy with etoposide and cisplatin. Bleomycin was not used due to the high risk of lung related bleomycin toxicity given the presence of pulmonary embolism. He was transitioned from intravenous heparin to oral apixaban and discharged on day 25 of their admission. Post discharge he completed the planned 4 cycles of etoposide and cisplastin chemotherapy treatment without complications. Six months later, the patient underwent a right orchiectomy by scrotal approach to avoid endangering the vascular graft. Histology demonstrated extensive fibrosis and atrophy with no residual malignancy identified. Re-staging CT abdomen pelvis scan performed 9 months post completion of chemotherapy demonstrated excellent response with significant decrease in size of the retroperitoneal mass (Fig. 3A).

3. Discussion

Testicular germ cell tumours usually affect men between 15 and 40 years of age.[1] Typically, they present as an incidental painless scrotal lump.[2] Patients with metastatic disease can present with a wide range of symptoms, including abdominal pain, shortness of breath, extremity pain, bone pain or neck swelling.[2]

Testicular seminomas can present as a large retroperitoneal mass on CT,[2,3] resulting in compression of large vascular structures including the abdominal aorta and inferior vena cava leading to vascular pathology. Jovanovic and colleagues described a case in a 56-year-old male with a large retroperitoneal seminoma mass that presented with lower limb deep vein thrombosis.[3] Wahab et al. reported a case in which a 30-year--old male who also had a large retroperitoneal seminoma and developed thrombosis of the inferior vena cava.[2]

In addition to developing a lower limb DVT, our patient initially

presented to hospital with acute right lower limb ischaemia due to occlusion of their right common iliac and external iliac arteries from arterial thrombus. This may have arisen particularly because our patient also had risk factors for arterial insufficiency, including a history of pre-existing peripheral vascular disease and smoking. Occlusive arterial disease can be encountered in the context of cisplastin chemotherapy for testicular cancers,[4] but to our knowledge, this the first reported case in which acute limb ischaemia was the initial clinical presentation that led to the diagnosis of metastatic seminoma.

Moreover, the traditional operative approach for orchiectomy in testicular cancer is with an inguinal approach.[1] However, given that our patient had a vascular graft in the inguinal area (Fig. 3B), a scrotal approach was required.

4. Learning points

1. A large retroperitoneal seminoma mass that compresses the abdominal aorta can present as acute lower limb ischaemia
2. Patients that are at highest risk may be those with pre-existing risk factors including peripheral vascular disease and smoking
3. Bypass surgery to relieve obstruction needs to be done urgently to ensure revascularisation of the limb
4. Oncological management of the germ cell tumour by means of appropriate chemotherapy should follow expediently thereafter
5. Surgical approach to the orchidectomy may need to be modified in the presence of a vascular graft in the inguinal area

Consent

Patient consent was obtained in writing.

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CRediT authorship contribution statement

William Chui: Writing – review & editing, Writing – original draft. **Snigdha Gurrala:** Writing – review & editing. **Patrick Hosking:** Writing – review & editing. **Peter Wong:** Writing – review & editing. **Phillip Parente:** Writing – review & editing. **Shomik Sengupta:** Writing – review & editing, Supervision.

Declaration of competing interest

None.

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