

and provide soft tissue and bone detail in a single scan. Post-processing techniques, such as 3D volume rendered imaging, provide detail regarding the extent of the fracture and aid the surgeons. Sagittal and coronal post processing of the axial imaging provides data in different planes<sup>[6-8]</sup>.

The use of biphasic scanning makes distinguishing between arterial and venous haemorrhaging possible; embolization of affected vessels should then be performed. This therapeutic method provides

occlusion of the blood vessel to stop active haemorrhaging<sup>[5]</sup>.

Extravasated contrast media can be distinguished from clotted blood by measuring the CT attenuation. Clotted blood has a CT attenuation range between 40 and 70 HU with an average of 51 HU<sup>[9]</sup>. Active haemorrhaging on MSCT has a higher attenuation. With the use of MSCT the location of the contrast material extravasations should closely correspond with the site of bleeding making interventional radiogra-

phy more successful<sup>[10]</sup>.

## Conclusion

MSCT is a useful tool to diagnose pelvic trauma with the use of contrast media. The 3D multiplanar reconstructions provide vascular and bony detail<sup>[3]</sup>. MSCT has made diagnosis and further management of patients more successful. Embolisation of the affected vessels must be treated as a priority to surgical repair the fracture site<sup>[9]</sup>.

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## peer reviewed CASE REPORT

### Case report: Testicular germ cell tumour in a young male

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#### Abstract

This case report covers a patient with a metastatic non-seminomatous testicular germ cell tumour which manifested after trauma to the testicle. Radiology findings, epidemiology of the disease and patient management are discussed.

#### Keywords

Orchidectomy, retroperitoneal lymph node dissection, tumour markers, nodal mass.

#### Case report

A young male patient in his early twenties presented with a swollen left testicle at an academic state hospital. He reported that he had knocked his testicles a few months earlier and that his left testicle started swelling and became painful. He was subsequently diagnosed with non-seminomatous testicular germ cell tumour. A computed tomography (CT) scan one month

later revealed an abdominal mass which was an indication of metastases. He was placed on four cycles of bleomycin, etoposide and cisplatin (BEP) chemotherapy following an orchidectomy. He was booked for retroperitoneal lymph node dissection (RPLND) two weeks later. After completion of the chemotherapy treatment he was referred for a follow up CT scan. This demonstrated a massive retro-

peritoneal nodal mass with rim enhancement and a central low density (Figure 1). The mass elevated the aorta anteriorly. The inferior vena cava (IVC) was markedly compressed and displaced anteriorly. The mass extended from the level of the right external iliac vessels superiorly and laterally to the porta-hepatis. There was a large right sided component compressing and displacing the right kidney laterally (Fig-

ure 2). The kidney was small in size and the left kidney was mildly hydronephrotic (Figure 3). Other parts of the mass are shown in Figure 4. No ascites and focal liver lesion were seen. The spleen and gall bladder were normal. When compared to the previous scan no marked changes in the size of the retroperitoneal nodal mass were noted.

### Discussion

Testicular germ cell tumours (TGCT) are the most common malignancies in men aged between 15-35 years<sup>[1]</sup>. Germ cell tumours account for 1% of all male cancers. They arise from malignant transformation of primordial germ cells. Infrequently these tumours arise from an extragonadal site such as the mediastinum, retroperito-

neal, and pineal gland<sup>[2]</sup>. The worldwide incidence of testicular germ cell tumours has been steadily rising throughout the twentieth century, with an increase of 15-20% being seen in successive five year periods<sup>[3]</sup>. The aetiology of TGCTs is not known but risk factors include cryptorchidism and Klinefelter's disease. Trauma to the testicle is not considered a causative factor<sup>[4]</sup>.

Germ cell tumours are classified into two main categories: seminoma and non-seminoma germ cell tumours. Seminomas occur most frequently in the fourth decade of life and account for almost one-half of all testicular germ cell tumours. Non-seminomas tend to peak in the third decade of life. There are four subtypes: choriocarcinoma, yolk sac, embryonal

and teratoma<sup>[2]</sup>. Germ cell tumours are highly malignant with rapid growth and high metastatic potential. They are also generally very sensitive to chemotherapy and radiotherapy. The clinical distinction between a seminoma and a tumour with non-seminomatous elements determines management<sup>[5]</sup>. Seminomatous tumours tend to spread to lymph nodes in the iliac and para-aortic groups, with bloodstream spread being a late feature. Non-seminomatous germ cell tumours (NSGCT) tend to spread via the bloodstream and there may be widespread metastases before the patient becomes aware of any particular testicular enlargement<sup>[6]</sup>.

Patients with testicular germ cell tumours must be closely monitored due to the metastatic effect of the disease.

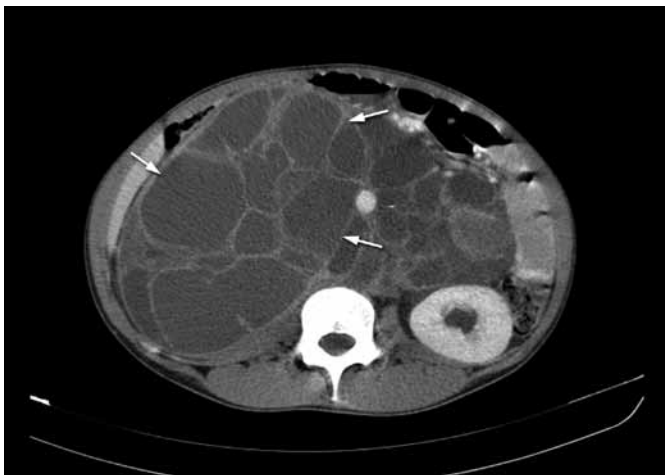


Figure 1: Axial CT of the abdomen showing a massive retroperitoneal nodal mass with rim enhancement as shown by the arrows.

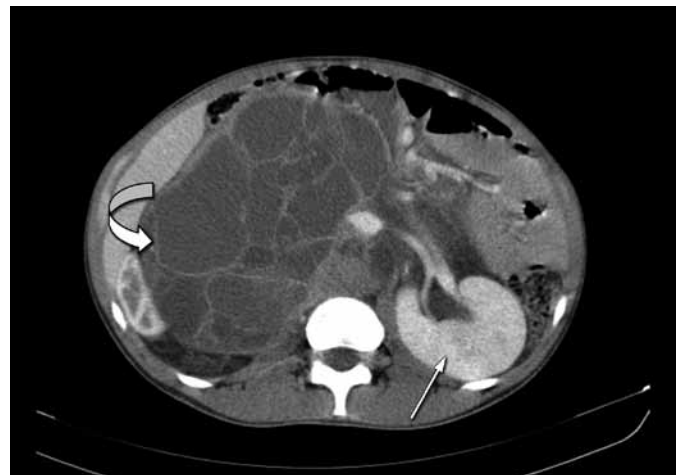


Figure 3: Axial CT abdomen demonstrate septations within metastases (curved arrow). Note the hydronephrotic left kidney (straight arrow).



Figure 2: Coronal CT of the abdomen showing a right sided component of the metastases compressing the right kidney as shown by the arrow.



Figure 4: Coronal CT of the abdomen showing the full extent of the mass. Its superior part is shown by the black arrow; inferior part shown by the white arrow.

Serum tumour markers can be used to assess prognosis, as these proteins are produced by many testicular germ cell tumours<sup>[6]</sup>. The most useful markers are alpha-fetoprotein (AFP), produced by elements of the yolk cell tumour, and the beta-human chorionic gonadotrophin (βhCG) produced by trophoblastic components<sup>[3]</sup>. If the tumour is confined to the testis (stage1) the levels of marker will drop after orchidectomy. An indication of metastatic disease is when levels do not fall. Increasing levels of a marker protein after treatment are an indication of tumour recurrence, often before the tumour can be detected by imaging<sup>[6]</sup>.

Prognosis in germ cell tumours is related to histological type as well as the tumour stage<sup>[6]</sup>. Elevated AFP and βhCG are associated with poor prognosis<sup>[5]</sup>. Routine surveillance CT scan of the chest, abdomen and pelvis or chest x-rays must be done to check for metastases<sup>[7]</sup>.

The majority of patients present with a painless, swollen testicle. Other presentations include gynaecomastia which is related to elevated levels of human chorionic gonadotrophin (HCG) produced by the tumour, back pain due to the development of retroperitoneal metastases, haemoptysis from lung metastases, or symptoms from superior vena cava compression, dysphagia, or cough. Sometimes germ cell tumours are diagnosed during a workup for infertility<sup>[8]</sup>. When a patient is suspected of having a testicular cancer, initial investigation should consist of testicular ultrasound and a check of serum

tumour markers. These should be measured preoperatively in all patients. Most patients undergo a high inguinal orchidectomy if a tumour is confirmed. A trans-scrotal orchidectomy may result in disruption of the normal lymphatic drainage and predispose the patient to involvement of the iliac or inguinal nodes<sup>[8]</sup>. Histopathology of the surgical specimen is done to determine the presence of malignant components and the type<sup>[7]</sup>.

However, in patients with very high tumour marker levels, or in those with symptoms suggestive of metastatic disease, the orchidectomy may be deferred until after chemotherapy treatment. Radiotherapy is also another treatment option for testicular germ cell tumours depending on the tumour type and extent of spread<sup>[8]</sup>.

### Conclusion

This case highlights the possibility of asymptomatic testicular tumours manifesting after trauma to the affected testicle. This patient did not have symptoms nor pain in his testicle before trauma to it. The disease was already advancing and the patient was not aware of it because non-seminomatous germ cell tumours (NS-GCT) tend to spread via the bloodstream. There may be widespread metastases before the patient becomes aware of any particular testicular enlargement<sup>[6]</sup>. This patient underwent retroperitoneal lymph node dissection and was still hospitalised recovering from the surgery at the time that this case report was written up.

Follow up is very important in patients

with testicular germ cell tumour to detect a relapse at a stage where treatment has the best chance of being effective. The serum tumour markers are constantly checked because an elevation in the tumour markers may indicate recurrence or metastases. Routine surveillance CT scan of the chest, abdomen and pelvis or chest x-rays are also done to check for metastases<sup>[7]</sup>.

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