CASE REPORT

Large intra-abdominal seminoma in a left undescended testicle complicated by torsion

Elizabeth Rourke, Gilda Digman, Eric Gourley, Dharam Kaushik

Department of Urology,
University of Texas Health
Science Center, San Antonio,
Texas, USA

Correspondence to
Dr Dharam Kaushik,
kaushik@uthscsa.edu

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SUMMARY

A 39-year-old man presented with a 2-day history of worsening constant, dull diffuse lower abdominal pain with associated constipation and known history of left undescended testicle. He was evaluated at an outside hospital where a non-contrasted CT scan revealed a 20 cm well-circumscribed soft tissue mass within the pelvis.

He was referred and further imaging revealed a 12 cm heterogeneous mass with foci of air that appeared to be contiguous with the left spermatic cord. This constellation of findings could represent torsion of undescended left testicle with infarction or underlying malignancy. Tumour markers were only significant for elevated lactate dehydrogenase of 1445. A subsequent ultrasound-guided biopsy of the mass demonstrated seminoma.

Surgical resection revealed a large intra-abdominal mass emanating from the left spermatic cord with 270° of torsion. There appeared to be a left atrophic remnant testicle at the base of the mass with final pathology confirming the diagnosis of classic seminoma.

revealing an intra-abdominal seminoma tumour complicated by torsion.

CASE PRESENTATION

A 39-year-old previously healthy man presented with a 2-day history of worsening constant, dull lower abdominal pain and symptoms consistent with constipation. On further discussion, patient reported chronic constipation for the past year. The patient was initially evaluated at an outside clinic for the same symptoms and a non-contrast CT abdomen/pelvis showed a 20 cm well-circumscribed soft tissue mass within the deep pelvis superior to the bladder initially concerning for impacted stool within diverticulum versus partial bowel duplication versus soft tissue tumour.

INVESTIGATIONS

At our hospital, a CT abdomen/pelvis with intravenous/oral/rectal contrast demonstrated a 9.2×12.1×12.4 cm heterogeneous intra-abdominal mass demonstrating multiple foci of internal air contiguous with left spermatic cord and suspicious for a torsed retractile/undescended testicle with infarction versus testicular malignancy (figure 1A-C).

The urology department was then consulted. On further questioning, the patient reported a history of a known undescended left testicle and chronic constipation for the past year. Physical exam demonstrated a non-tender, palpable left abdominal mass, descended right testicle and non-palpable left testicle. Laboratory tests showed alpha-fetoprotein: 3.8 ng/mL (reference range: <15.1 ng/mL), beta human chorionic gonadotropin (B-HCG): <2 mIU/mL (reference range: <5 mIU/mL) and lactate dehydrogenase: 1445 U/L (reference range 92–240 U/L).

To further delineate the mass, an MRI of abdomen/pelvis with and without contrast was obtained and demonstrated a 13.1×10.1 cm abdominal mass concerning for torsion of the undescended left testicle with haemorrhagic infarct and necrosis (figure 2). Furthermore, a CT scan of the chest was obtained and revealed indeterminate, bilateral pulmonary nodules measuring up to 3 mm and felt to be low likelihood for metastatic disease (figure 3). A CT-guided core needle biopsy was obtained which resulted in cells positive for CD117 and placental alkaline phosphatase (PLAP), negative for CD56 and CD45 highlighted reactive lymphocytes supporting a diagnosis of malignant cells consistent with seminoma.

BACKGROUND

Cryptorchidism increases a man's risk for developing a testicular germ cell tumour by 3.5–5 times, with seminoma being the most common. Concomitant torsion can elicit symptoms of an acute abdomen prompting a patient to present to the emergency department for further evaluation. A differential diagnosis of both torsion and malignancy should be considered in a patient with a known cryptorchid testicle.

This patient had a history of chronic constipation with acute worsening abdominal pain, which may have been a result of the torsion demonstrated intraoperatively. Torsion of a large intra-abdominal testicular tumour is a very rare and difficult preoperative diagnosis and only few cases have described such situations.¹

In this patient's case, the mass was initially presumed to be bowel, however, with thorough history and physical exam along with the proper imaging, a high suspicion of the correct diagnosis was established early on, allowing for quick and efficient intervention. This diagnosis should not be overlooked in any patient with cryptorchidism presenting with abdominal pain and symptoms.

This case report describes a patient with a cryptorchid left testicle presenting with abdominal pain secondary to mass compression and evaluation

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Figure 1 Axial view of mass on CT (A). Coronal view of mass on CT (B). Sagittal view of mass on CT (C).

After extensive discussion at the interdisciplinary genitourinary tumour board and with the patient, it was decided that surgical excision would provide the best curative treatment approach.

DIFFERENTIAL DIAGNOSIS

Based on the imaging as described above, the differential diagnoses include the following: abscess (given presence of air in mass), impacted stool, torsion of undescended testicle or underlying testicular malignancy. The patient was never febrile and only with mild leucocytosis, which would make abscess less likely on the differential. Oral contrast, while demonstrating constipation, did not show continuity with mass and gastrointestinal tract. The patient's history of cryptorchidism placed him at higher risk for underlying testicular malignancy. The diagnosis of underlying torsion could not be ruled out without surgical exploration.

TREATMENT

Pathology of the mass confirmed the diagnosis of classic seminoma.

Figure 2 MRI of mass.

Figure 3 CT chest. Arrow shows small 3 mm pulmonary nodule.

The patient underwent resection of intra-abdominal mass and lysis of adhesions 2.5 weeks after initial consultation. This was performed through a midline incision from xiphoid to pubic bone. The colon and small bowel was noted to be densely adherent to the mass but was then released using sharp dissection followed by circumferential mobilisation of the entire mass and spermatic cord into the inguinal canal. In the inguinal canal region is where the remnant testis was visualised.

The mass, spermatic cord and remnant testis were successfully removed, haemostasis was achieved, intestines were inspected for evidence of injury and closure was performed. The duration of the procedure was 205 min with an estimated blood loss of 300 cc.

No intraoperative or postoperative complications were encountered.

OUTCOME AND FOLLOW-UP

Gross examination of the specimen showed a roughly ovoid, tan-red soft tissue that weighed

870 g and measured 13.0×11.0×8.5 cm with an attached elongated tissue, 11.1 cm in length and up to 1.5 cm in diameter consistent with spermatic cord and in continuity with a nodular rubbery tan tissue, 3.5×1.5×1.5 cm, likely the testis (figure 4).

Sectioning through the specimen revealed a circumscribed mass, 11.5×10.0×7.0 cm, with red brown haemorrhagic and necrotic cut surface delimited by a fibrous capsule up to 1.0 cm in thickness (figure 5). The necrotic tumour cells were also reactive for PLAP by immunohistochemistry (figure 6). These findings were consistent with pure seminoma, and while there was distortion of anatomy due to necrosis/inflammation, the spermatic cord and epididymis were negative for tumour. Therefore, final pathology was pure seminoma pT1N0M0S0 and American Joint Committee on Cancer Stage IA.

The patient was discharged to home on the fourth postoperative day without any complications during hospitalisation.

After return of his pathology, his case was reviewed with medical oncology and recommendations for his stage IA pure seminoma included surveillance versus single agent chemotherapy with carboplatin. This patient's pathology showed good prognosis given stage and normal beta-HCG levels, and therefore surveillance was determined to be an acceptable form of management at this time. However, given the unique patient

Figure 4 Gross pathology of retroperitoneal mass.

presentation of underlying torsion and overall size of the mass (11 cm), the review committee debated the option of a single cycle of carboplatin. The census of the tumour board and outside consultation with colleagues in Indiana, given favourable pathological stage and lack of vascular invasion, was to ultimately pursue surveillance based on National Comprehensive Cancer Network guidelines for stage IA pure seminoma.

DISCUSSION

Classic seminomas are the most common type of germ cell tumour peaking in the third or fourth decade of life with secondary peaks noted in infancy (0–10 years) and in late adulthood (>60 years).² In particular, seminoma is the most frequent germ cell tumour in an undescended testis and the risk of developing such

Figure 5 Sections of the tumour show ghost outlines of necrotic tumour cells.

Figure 6 Necrotic tumour cells that are reactive for placental alkaline phosphatase by immunohistochemistry.

neoplasm is 40 times higher than in normal testis. Furthermore, an abdominal testis is four times more likely to develop tumour compared with an inguinal testis.^[5] Undescended testis may be located anywhere along the pathway of testicular descent but 66% are located distally to the external inguinal ring, 16% are in the inguinal canal and 10% remain in the abdominal region.³ Our patient's undescended testicle was visualised within the inguinal canal although his tumour burden was intra-abdominal.

Diagnosis is typically made histologically with appearance of uniform tumour cells with abundant clear cytoplasm, distinct cell borders and large central nuclei with prominent nucleoli separated into nests by fibrous septa. This fibrous septa may reveal lymphocytic and plasmacytic infiltrates, and in patients with elevated HCG, multinucleated giant cells may be seen. Staining typically reveals positivity in PLAP, Oct 3/4 and CD117.⁴

Our patient's biopsy of the mass revealed cells positive for CD117 and PLAP, negative for CD56 and CD30. CD45 also highlighted the background reactive lymphocytes supporting a diagnosis of malignant cells consistent with seminoma.

In an undescended testicular seminoma, clinical presentation may vary widely from asymptomatic mass to symptoms simulating appendicitis, mass effect symptoms or acute abdominal pain secondary to torsion or haemorrhage.³ One case reported a rapidly enlarging mass in the left lower abdomen, immediately above the left groin, initially thought to be a soft tissue sarcoma.⁵ This report magnifies the importance of remaining highly suspicious of a testicular neoplasm in a rapidly enlarging abdominal wall mass in the presence of cryptorchidism.

Another paper describes a patient with a 560 g torsed mass who presented with an acute abdomen accompanied with recurrent vomiting, fever and leucocytosis.^[5] Although our patient did have mild leucocytosis, he did not have unstable vitals nor symptoms concerning for an acute abdomen. The patient's presentation with gastrointestinal (GI) compressive symptoms and the initial radiological studies resulted in a broad differential diagnosis initially consisting of mass of GI origin.

In our patient's case, the turning point for a quick diagnosis that led to prompt intervention was a detailed history revealing his unmanaged cryptorchidism, the thorough analysis of radiology and the ultimate confirmation of seminoma via core biopsy.

Our case describes a rare presentation of an intra-abdominal torsed seminoma of an undescended testicle consisting of

compressive symptoms secondary to the mass: constipation, dull abdominal pain and overflow diarrhoea.

A distinguishing factor in our case was the decision to pursue surgical resection over neoadjuvant chemotherapy. One case reports the success of complete remission of a large seminoma that had metastasised after 6 months of the chemotherapy; vinblastine, ifosfamide, cisplatin regimen (four cycles of cisplatin, etoposide and ifosfamide).² At our interdisciplinary tumour board, the patient was extensively discussed and it was unanimously concluded that his obstructive GI symptoms needed to be relieved quickly through resection with the possibility of post-operative chemotherapy/radiotherapy if indicated. Clinically, this is important because during discussion of options with the patient, major consideration of symptoms should be highlighted so that quick and effective relief can be accomplished with the ultimate goal of cancer cure.

Further treatment may consist of surveillance, retroperitoneal radiation therapy, systemic chemotherapy or a multimodal therapy approach.⁶ A typical follow-up regimen for a patient with stage I seminoma following radical orchiectomy without postoperative therapy can include a thorough history and physical examination, biochemical markers and CT abdomen/pelvis every 3 to 4 months for the first 3 years, every 6 months from 4 to 7 years and then annually.⁷ Also with stage I seminoma, one to two cycles of carboplatin chemotherapy is an

appropriate treatment along with observation. In our patient, it was discussed at our tumour board and a single cycle of carboplatin was recommended.

Three, 5 and 10-year survival rate of patients with testicular seminoma following orchiectomy is closely associated with the clinical stage, pathological type and postoperative adjuvant therapy.⁸ Long-term prognosis is excellent with a cure rate of >95% for stages I and II.⁴

Ultimately, this case details a rare presentation of a very common testicular neoplasm and provides a detailed synopsis for thorough management.

Contributors ER was responsible for conception of the idea, acquisition of surgical/operative documentation, planning for case report and contributed to the production of the manuscript. DK assisted with the planning and conception of the project as the lead surgeon completing this case and contributed to the interpretation of the information presented. He also gave final approval for the version published. GD performed literature reviews and assisted in the organisation and procurement of data for the case including figures presented. EG was responsible for assisting with the conception and design, acquisition of data or analysis and interpretation of data as well as drafting the article and revising it critically for important intellectual content.

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Learning points

- ▶ Although rare, an intra-abdominal mass in the presence of a cryptorchid testis should lead to a high suspicion for a testicular tumour and its complications.
- ▶ Torsion should not be excluded from the differential diagnosis even when the patient does not present with an acute abdomen.
- ▶ The patient's presenting symptoms should be considered when deciding on the best approach to cure.
- ▶ With the communication and teamwork of multiple disciplines, the patient's tumour was quickly excised leading to a cure of compressive symptoms and potential overall cure of testicular cancer.
- ▶ Long-term prognosis is excellent even in large tumours after surgical removal.

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