Giant Germ Tumor Retroperitoneal Lymphadenopathy Encapsulating the Infrarenal Aorta and Inferior Vena Cava: Case Report

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SOUHRN

Úvod: Nádor z testikulárních germinálních buněk (GCT) je nejčastějším maligním solidním nádorem u mužů s nejvyšší incidencí mezi 15–45 lety. GCT prokázal rostoucí výskyt za posledních 30 let.
Metoda: Operace byla provedena přes střední laparotomii. V břiše byla nalezena masivní retroperitoneální lymfadenopatie (RL). Intrarenální aorta (IA) a dolní dutá žíla (IVC) byly pečlivě vypreparov**ány** a zcela zbaveny RL. Část levé renální žíly (LRV) byla suspektně infiltrovaná RL. Proto jsme provedli částečnou resekci LRV. Zbytková LRV byla krátká a reanastomóza na IVC nebyla možná. LRV byla reanastomozována na splenickou žílu. Vzhledem k velké velikosti resekovaného RL v kombinaci s blízkým kontaktem s IA a IVC byly do dutiny břišní vloženy chirurgické roušky pro vysoké riziko pooperačního krvácení. „Second look" byl proveden 24 hodin po zákroku a střední laparotomie byla uzavřena standardním způsobem.
Výsledky: Pooperační období proběhlo bez komplikací. Pacient byl propuštěn osmý pooperační den s dobrými renálními funkcemi a dobrou perfuzí levé ledviny dle Dopplerovy ultrasonografie.
Závěr: U pacientů s GCT a velkými retroperitoneálními masami je nutný multidisciplinární přístup kombinující chemoterapii a chirurgický zákrok, aby se významně zvýšil léčebný úspěch.

Keywords:
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ABSTRACT

Introduction: Testicular germ cell tumour (GCT) is the most common malignant solid tumour among Caucasian men with the highest incidence between 15–45 years. GCT had shown an increasing incidence in the past 30 years.
Method: The procedure was performed through the midline laparotomy. Massive retroperitoneal lymphadenopathy (RL) was found in the abdomen. The infrarenal aorta (IA) and inferior vena cava (IVC) were carefully dissected and entirely freed from the RL. Part of the left renal vein (LRV) showed suspicious infiltration by the RL. Therefore we performed a partial LRV resection. The residual LRV was short, the reanastomosing to the IVC was not possible. We reanastomosed the residual LRV to the splenic vein. Due to the large size of the resected RL combined with a close encounter with IA and IVC, surgical swabs were placed into the abdomen for high risk of postoperative bleeding. The second look was performed 24 hours after the procedure, and the midline laparotomy was closed in a standard manner.
Results: Postoperative period was uneventful. The patient was discharged on the 8th postoperative day with good renal functions and good left kidney perfusion and drainage on Doppler's ultrasonography.
Conclusion: A multidisciplinary approach combining chemotherapy and surgical intervention is needed in patients with GCT and large retroperitoneal masses in order to significantly increase the curative success.

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Introduction

Testicular germ cell tumour (GCT) is the most common malignant solid tumour among Caucasian men with the highest incidence between 15–45 years. GCT had shown an increasing incidence in the past 30 years.[1] Based on histopathology GCT are divided into two basic categories: seminomas (SGCT) and non-seminomas (NGCT). They both originate from germ cell neoplasia *in situ*.[2] NGCT can be further divided based on their variable histological architecture into embryonal carcinoma, teratoma, choriocarcinoma, tumour, and yolk sac. NGCT account for 23.7% of all GCT.[2] NGCT are showing undaughterly more metastatic behaviour than SGCT with a significantly worse prognosis when comparing both tumours at the same stage.[3]

Case presentation

We are presenting a case of a 28-year-old male patient after orchiectomy in May 2018 for a GCT non-seminoma with a prevalence of embryonal carcinoma (pT2-3, cN3, M1a, S2) followed by four cycles of cisplatin and etoposide chemotherapy with partial regression of lung metastasis. During the preoperative screening, a computed tomography angiography (CTA) of the abdomen was performed. This showed left kidney hydronephrosis with ureter compression caused by massive retroperitoneal lymphadenopathy (RL) encapsulating the infrarenal aorta (IA) and inferior vena cava (IVC) (Fig. 1). No invasion of the RL into the SA and IVC was visible on the CTA. The patient underwent JJ stent insertion into the left ureter in order to preserve physiological kidney function. PET scan of the abdomen showed the metabolic activity of the RL (Fig. 2). The patient was referred to our centre for the resection of the retroperitoneal lymphadenopathy from the larger vessels.

The procedure was performed through the midline laparotomy. A massive 20 × 17 cm RL was found in the abdomen confirming the CTA images (Fig. 3A). The RL was avascular based on the CTA and was carefully resected in two pieces (Fig. 3B, 3C). The SA and IVC were carefully

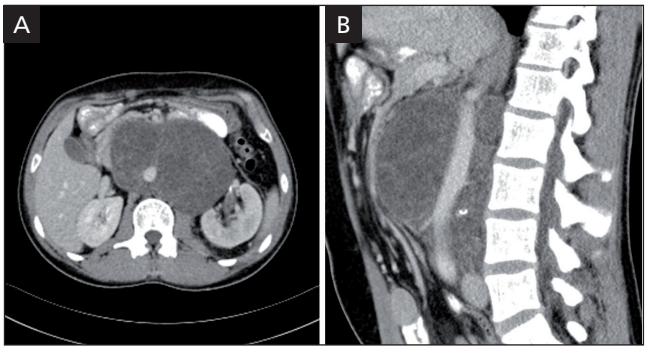

Fig. 1 – Computed tomography angiography of the abdomen revealing retroperitoneal lymphadenopathy encapsulating subrenal aorta and inferior vena cava. (A) Cross-section of the abdomen with massive retroperitoneal lymphadenopathy encapsulating inferior vena cava. (B) Transverse section of the abdomen with massive retroperitoneal lymphadenopathy encapsulating subrenal aorta.

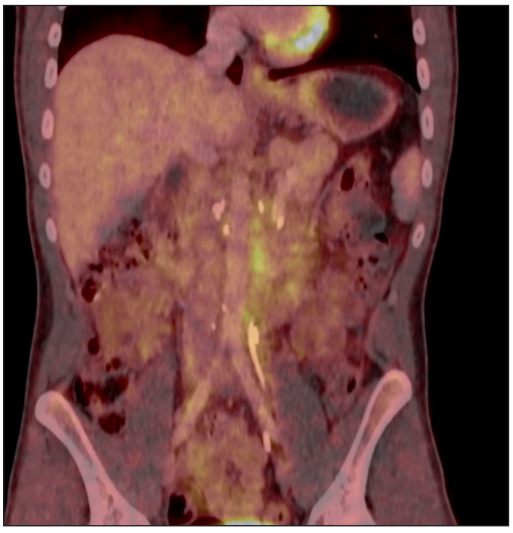

Fig. 2 – PET scan of the abdomen with massive retroperitoneal lymphadenopathy encapsulating l subrenal aorta and inferior vena cava.

dissected and entirely freed from the RL (Fig. 3D). Part of the left renal vein (LRV) showed suspicious infiltration by the RL. Therefore we performed a partial LRV resection. The residual LRV was short, the reanastomosing to the IVC was not possible. Due to the tumorous infiltration of the retroperitoneum, we wanted to avoid a prosthetic graft reconstruction. Therefore, we re-anastomosed the residual LRV to the splenic vein using end-to-side anastomosis

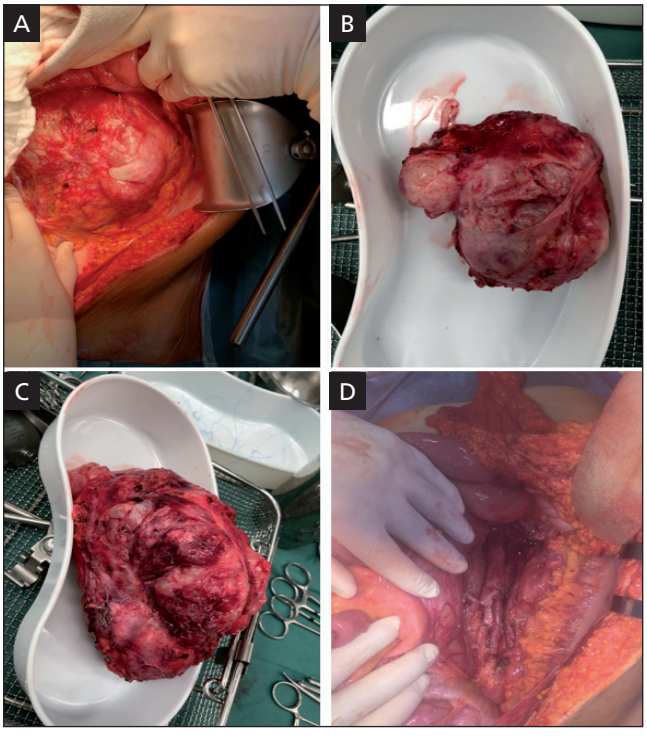

Fig. 3. – Perioperative finding. (A) Massive retroperitoneal lymphadenopathy encapsulating large vessels. (B) Resected right part of the retroperitoneal lymphadenopathy encapsulating the subrenal aorta. (C) Resected left part of the retroperitoneal lymphadenopathy encapsulating the inferior vena cava. (D) Dissected subrenal aorta and inferior vena cava, complete removal of retroperitoneal lymphadenopathy encapsulating the large vessels.

with Prolene 6/0. Due to the large size of the resected RL combined with a close encounter with SA and IVC, surgical swabs were placed into the abdomen for high risk of postoperative bleeding. The second look was performed 24 hours after the procedure, and the midline laparotomy was closed in a standard manner.

Postoperative period was uneventful, and the patient was discharged on the 8th postoperative day with good renal functions and good left kidney perfusion and drainage on Doppler's ultrasonography. The patient was discharged on a prophylactic dose of LMWH for one month. RL histology revealed retroperitoneal teratoma, most probably a metastasis of a germ tumour.

Currently, we have 4-month follow-up on the patient with no RL reoccurrence in the retroperitoneum.

Discussion

CGT is unique in their clinical presentation and response to chemotherapy. This is due to their origin in primordial germ cells.[4] The cure rate of GCT in the modern era of medicine can reach up to 80%.[5] However, patients with relapse of GCT with ineffective chemotherapy have significantly shortened their life span by up to 35 years. This occurs in 40–80% of patients with CGT relapse.[3]

NCGT are predominantly mixed tumours with frequently found teratoma at their metastatic sites.[2,6] Papers by BS Carver et al. and M. Catherine et al. showed that the incidence of teratoma in the residual metastatic RL ranges between 15–23%.[7,8] Patients presented with metastatic disease require combined treatment of chemotherapy and surgery. The decision whether to perform RL resection is planned purely based on diagnostic modalities. RL resection is an essential part of the management of patients with NGCT especially when it possesses a high risk of large vessels compression or infiltration, organ compression. Also, it allows us to examine the remaining histological elements in the metastatic mass after chemotherapy.[6]

Furthermore, the presence of teratoma in the residual RL after chemotherapy is hazardous as its behaviour is very unpredictable. It may remain dormant or grow slowly. In some cases, it can show a rapid growth leading to local invasion. Furthermore, approximately <10% of teratomas in residual RL may undergo malignant somatic transformation to a malignancy such as adenocarcinoma or primitive neuroectodermal tumour which are associated with a very poor prognosis.[9]

Conclusion

NCGT require a multidisciplinary approach, the combination of chemotherapy and surgical intervention especially in patients with large retroperitoneal masses. If no NCGT relapse occurs after the chemotherapy, the patient's survival rate is very good.

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Conflict of interest
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Informed consent
Written informed consent was obtained from the patient for publication of this case report and accompanying images. A copy of the written consent is available for review by the Editor-in-Chief of this journal.

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