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POST-CHEMOTHERAPY RESIDUAL MASS IN NON-SEMINOMATOUS TESTICULAR CANCER. THE ROLE OF RETROPERITONEAL LYMPH NODE DISSECTION

SALWA EL SAYED, JOÃO P. S. GRANDO, SILVIO H. M. DE ALMEIDA, NICOLA MORTATI NETO, HORÁCIO A. MOREIRA

Department of Urology, Cancer Institute of Londrina, Londrina, Parana, Brazil

ABSTRACT

Purpose: to determine the role of RPLND for residual masses following chemotherapy in patients with non-seminomatous germ cell tumors (NSGCT) stage T1N2 and T1N3 (IIB and IIC).

Materials and Methods: We have preformed retrospective analysis of 11 patients who underwent RPLND for residual masses following chemotherapy in an oncologic reference center between January 1997 and December 2002. All patients harbored either pure nonseminomatous or mixed tumors in the testis tissue and had undergone 4 cycles of primary chemotherapy with bleomycin, etoposide and cisplatin. The residual masses were assessed by abdominal computed tomography preoperatively.

Results: There were perioperative complications in 3 cases owing to vascular iatrogenic lesion. One of who died in the early postoperative period due to extensive iliac thrombosis. The other 2 patients had an inferior vena cava injury owing to the difficulty in removing the attached lymph nodes. The injuries were repaired by continuous suture with Prolene 5-0. All patients had tumors in the final pathological report and were referred to other 2 cycles of chemotherapy with the same drugs. Seven patients (63.3%) had complete response and remained free of the disease in a mean follow up of 38.3 months (ranging from 12 to 72). The remaining 3 patients had disease progression, 2 of which died 6 and 12 months after surgery, respectively, and one patient missed the follow-up after salvage chemotherapy.

Conclusion: Retroperitoneal lymph node dissection for residual masses after chemotherapy is a high-morbidity procedure, even by experienced surgeons, although it remains an efficient modality of treatment in advanced germ cell carcinoma. The high frequency of tumor found in the RPLFN following chemotherapy might have been caused by the small number of patients in this study.

Key words: testis; testicular neoplasms; germ cell tumors; chemotherapy; lymphadenectomy
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INTRODUCTION

Testicular tumors are relatively rare, although they represent the most frequent neoplasia in men between 15 and 35 years of age (1). Testicular cancer has become one of the most curable solid neoplasms and serves as a paradigm for the multimodal treatment of malignancies. It is also one of the few neoplasms associated with accurate serum markers, human chorionic gonadotropin (hCG) and alpha-fetoprotein (AFP) (1).

Retroperitoneal lymph node dissection (RPLND) plays an important role in the management of patients with metastatic nonseminomatous germ cell tumors. Currently a bilateral RPLND is recommended for residual disease after chemotherapy, de-

spite being a controversial issue, because it has been shown that at least one third of those patients have necrotic tissue instead of tumor in final pathological analysis (2-6). Yet, the approach is considered a procedure with high morbidity.

Nerve-sparing techniques are commonly used in RPLND with early stage testicular germ cell tumors to preserve postoperative ejaculation and improve fertility. This indication has been extended to patients who have residual retroperitoneal tumor post chemotherapy without increasing the risk of local recurrence (7).

We aimed at assessing the outcome of retroperitoneal lymph node dissection (RPLND) for residual masses following chemotherapy in patients with nonseminomatous germ cell tumors (NSGCT) stage T1N2 and T1N3 (IIB and IIC) treated in a reference oncologic center.

MATERIALS AND METHODS

We performed a retrospective analysis of 11 patients who underwent RPLND for residual masses following chemotherapy in an oncologic reference center between January 1997 and December 2002. The patients' records were reviewed regarding perioperative and postoperative morbidity and overall response to therapy.

All patients harbored either pure nonseminomatous or mixed tumors in the testis tissue and had undergone 4 cycles of primary chemotherapy with bleomycin, etoposide and cisplatin. The residual masses were assessed by abdominal computed tomography preoperatively. A modified retroperitoneal lymph node dissection has been used since 1994 in our center, trying to preserve ejaculation (8). Although numerous staging classifications are currently used, we have been using the-1997 TNM classification (9).

The primary clinical stages in our patients were T1N2M0 in 10 patients and T1N3M0 in another one. Figure-1 illustrates a pre-chemotherapy abdominal computed tomography.

Three patients had tumor shrinkage of at least 90% comparing with the initial CT. In seven patients, the reduction in the masses was around 50% and one patient had only 20% of reduction.

RESULTS

The records from eleven patients were assessed. The mean age was 22 years (ranging from 19 to 29). Ten patients presented stage T1N2M0 and one patient stage T1N3M0. Every patient had primary orchidectomy plus 4 cycles of chemotherapy (cisplatin, bleomycin and etoposide) and was reassessed 3 months later by abdominal computed tomography. They underwent lymph node dissection in the 4th month. The serum markers (hCG and AFP) were normal in all patients by the time of the surgery.

There were perioperative complications in 3 cases due to vascular iatrogenic lesion (one of whom required nephrectomy after an extensive renal vein injury and died in the early postoperative period of extensive iliac thrombosis). The other 2 patients had an inferior vena cava injury owing to the difficulty in removing the attached lymph nodes. The injuries were repaired by continuous suture with Prolene 5-0.

All patients had tumors in the final pathological report, 10 of which were referred to other 2 cycles of chemotherapy with the same drugs (Table-1). Seven patients (63.3%) had a complete response and remained free of the disease in a mean follow up of 38.3% months (12 to 72). Other 3 patients had disease progression, 2 of which died after 6 and 12 months following surgery, respectively and the other one missed the follow-up after salvage chemotherapy (Table-1).

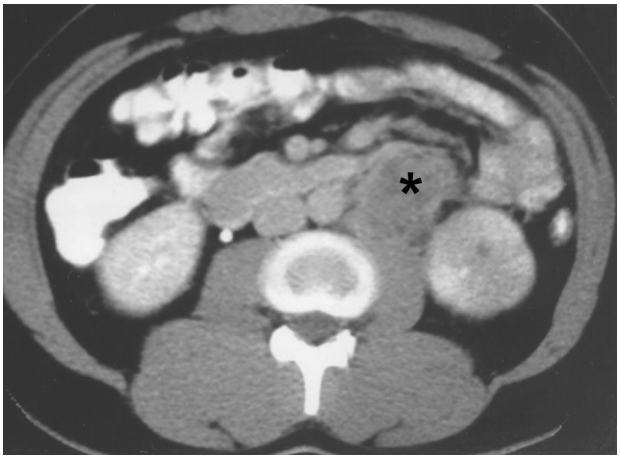

***Figure 1** – Abdominal computed tomography illustrating retroperitoneal mass pre chemotherapy (asterisk). Initial stage T1N3M0.*

Table 1 – *Patients' features with nonseminomatous germ cell cancer undergoing salvage surgery after chemotherapy for residual masses.*

Age	Histology from Testicular Tissue	Histology from Residual Mass	Pre-operative Complications	Follow-up
19	Teratoma	Teratoma	None	Disease progression*
29	Seminoma + Teratoma + EC + yolk sac tumor	Teratoma	Vascular injury (requiring nephrectomy)	Death in the early post-operative period
23	Seminoma + EC	Seminoma	None	Without disease
22	Teratoma + EC (pulmonary metastasis)	Teratoma	None	Without disease
22	Immature Teratoma + EC	Teratoma	None	Without disease
26	Teratocarcinoma + EC	Teratoma	Inferior vena cava injury	Without disease
19	Teratoma + EC	Teratocarcinoma	None	Relapse at 6 months. Death 1 year later
22	Seminoma+ yolk sac tumor	Seminoma + Yolk sac tumor	Inferior vena cava injury	Without disease
19	Teratocarcinoma	Teratocarcinoma	None	Without disease
23	Seminoma + EC	Mature teratoma	None	Death 6 months later.
19	Seminoma + EC + Yolk sac tumor	Seminoma + EC + yolk sac tumor	None	Without disease

*EC = embryonal carcinoma, * Patient clinical stage T1N3M0. All the other patients were T1N2M0*

COMMENTS

Residual masses following chemotherapy are a controversial issue in testicular cancer. The literature shows that as much as 40% of those masses represent necrotic tissue and so would not need any adjuvant therapy (2,3-6). However, it is not possible to predict accurately the pathologic features by the currently used imaging modalities (3,5,6,10,11).

Teratoma was initially thought to represent a benign course when present in the retroperitoneal area but this would seem to be real just for children. Although the early recognition and resection of teratoma have been accompanied by an excellent prognosis, the untreated disease may have a lethal potential by continued local growth or from putative subsequent malignant transformation of pathological benign components (12,13).

It has been shown by some studies that the degree of shrinkage can predict fairly well the outcomes after chemotherapy. Some suggest that if the tumor shrinks at least 90% of its initial size and the testicular pathology does not demonstrate teratoma, patients can be safely put under a surveillance program with periodic imaging scan (1). However, this is not a unanimous approach (5).

When compared to the current literature, the patients assessed by our group showed a different result regarding the pathological features after RPLND. All of them harbored cancer in retroperitoneal lymph nodes (including mature teratoma). The result might have been caused by the small number of patients in this study but again this raises doubts about the safety of referring the patients to a surveillance program. Furthermore, all patients had bulky retroperitoneal metastases (greater than 2 cm) as a residual mass.

Another important issue, which should be discussed, is the morbidity of the lymph node dissection. This approach is considered a high morbidity procedure and should be referred to experienced surgeons. We had vascular injury in 3 patients, one of whom underwent nephrectomy and died in the early postoperative period due to extensive iliac thrombosis. The other 2 have an inferior vena cava injury, promptly repaired.

Mosharafa et al. (14) recently showed that 37 of 97 patients (38%) whose resection following chemotherapy harbored seminomatous elements presented complications compared to 340 of 1269 (26.8%) patients without seminoma. We had 3 patients with seminomatous elements, one in the complication group and 2 without any complication (Table-1).

Palese et al. (15) reported on the outcome of laparoscopic RPLND in 7 patients. The overall complication rate was 57.1% (4 of 7, with a major complication incidence of 42.8%, 3 of 7) (15).

Despite the morbidity in our study, 7 patients (63.3%) were alive and without any evidence of the disease in a mean follow-up of 38.3 months (12 to 72), which is similar to the outcomes found in other series (6,10,11,16,17).

CONCLUSION

Retroperitoneal lymph node dissection for residual masses after chemotherapy is a procedure with high morbidity, even by experienced surgeons, although it remains an efficient modality of treatment in advanced germ cell carcinoma. The high frequency of tumor found in the retroperitoneal lymph nodes following chemotherapy might have been caused by the small number of patients in this study.

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Correspondence address:
Dr. Joao Paulo Souto Grando
Rua Mato Grosso 887 / 803
Londrina, PR, 86010-180, Brazil
Telephone: + 55 43 33238386
E-mail: jp131333@hotmail.com