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Case Report

Cervical metastasis of testicular cancer: Case Report and Review of Literature

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Abstract

Testicular cancer is an uncommon malignancy of the male reproductive organ, accounting for 1% of all cancers in men. Distant cervical metastasis from testicular cancer has been reported in 5% of patients. We present 2 cases of non–seminomatous testicular cancers that were diagnosed retrospectively in patients who presented with pure cervical lymph nodes. A comprehensive approach bearing in mind the possible differentials, pathogenesis and treatment options are discussed.

Keywords: testicular cancer, cervical metastasis, chemotherapy, neck dissection, radiotherapy

Introduction

Testicular cancer is a rare tumour of the male reproductive system. It accounts for 1% of all tumours in males, and 1% of cancer deaths. (1) However it is the most common solid tumour in young adult males. It has a tri–modal distribution; teratomas and yolk sac tumours being prevalent in infants and children, post pubertal seminomas and non–seminomas being common in the 2nd to 4th decade of life, and spermatocytic seminomas in the 6th decade of life onwards. (2) The primary source of a metastatic cervical node on the other hand is usually from an upper aerodigestive tract tumour, rarely from a testicular malignancy. We present the case series of two patients who presented with purely cervical lymph nodes without any symptoms of primary testicular cancer. The diagnosis of metastatic germ cell testicular cancer was made retrospectively after histopathological examination of these nodes.

Case Report

Case 1

A 25–year–old Indian male, with underlying left testicular Non–Seminomatous Germ Cell tumour (T2N3M1b), presented one year after left high orchidectomy and 4 cycles of BEP (Bleomycin, Etoposide, Cisplatin) with a gradually increasing right supraclavicular mass. The mass was homogenous, measuring 3cm x 3cm and was not tender. FNAC (Fine Needle Aspiration Cytology) was inconclusive. Excisional biopsy of the mass was done and the specimen showed metastatic germ cell tumour composed of mature teratomatous component and presence of seminomatous component (Figure 1–4). He received 30Gy10# of radiotherapy over the cervical region. A follow–up of 3 years showed no recurrence and the patient is healthy.
Case 2

A 34-year-old Indian male with underlying diabetes mellitus, hypertension, bronchial asthma and ischaemic heart disease, presented to us with a gradually enlarging left supraclavicular mass of 6–months duration. The bulk of solid to firm matted lymph nodes measured 10cm x 8cm, non–tender and not infiltrating the skin. Clinical and nasendoscopic examination revealed an airway that was deviated to the contralateral side. Clinical examination of the genitourinary system was unremarkable. FNAC demonstrated evidence of malignancy, with cells focally positive for alpha–fetoprotein (AFP) and PLAP and negative to TTF-1, MNF116, HMB45 and CD30, indicating the possibility of metastatic malignant germ cell tumour (Figure 5–8). Computed Tomography (CT) scan revealed a large heterogenous soft tissue mass in the left supraclavicular fossa region compressing the thyroid gland and the carotid sheath contents. A significant rise was noted in AFP >1000 IU/ml (normal: 0–5.8 IU/ml) and Lactate Dehydrogenase (LDH) 412 U/L (normal: 135–225 U/L). Positron Emission Tomography (PET) scan demonstrated significant uptake in the left testis, with a standard uptake value (SUV) of 14.1 and the corresponding left neck mass with SUV of 25.4. He was sent to an oncological centre where he was planned to receive IV Carboplatin AUC4 x 4 cycles. He responded well to his
due to pulmonary metastasis and supraclavicular lymphadenopathy. Cervical metastasis may present in 5% of testicular cancer patients. (5) Seminomas may present with gynaecomastia due to secretion of beta–human chorionic gonadotrophin (HCG) in 5% of patients. (6)

Seminomas are slow growing, spread via the lymphatic system and have an indolent course, rarely metastasizing beyond the testis. Lymphatic network from the testis follows the spermatic cord to the retroperitoneal lymph nodes. Occasionally, communication might be present between the testicular lymphatic system and the thoracic duct, leading to direct cervical nodal metastasis by-passing the retroperitoneal nodes (7). Non–seminomatous germ cell tumours such as choriocarcinoma on the other hand have an aggressive nature and spread readily via the haematogenous and lymphatic systems. Although uncommon, direct spread of testicular cancer to the epididymis and spermatic cords has been observed.

The common tumour markers elevated in germ cell tumours are Beta–hCG, AFP and LDH. AFP is usually elevated in embryonal carcinoma, teratocarcinoma, yolk sac carcinoma and mixed tumour. Presence of choriocarcinoma and seminomas are usually associated with elevated beta–hCG. LDH may be the only marker elevated in about 10% of non–seminomatous cancer. Placenta alkaline phosphatase (ALP) may be raised in 40% of advanced disease. Gamma–glutamyl transferase (Gamma–GT) is raised in 30% of seminomas. 50–70% of non–seminomatous tumours have raised AFP and 40–60% have raised beta–hCG. (8)

Causes of neck mass can be classified into various types summarized by the mnemonic “KITTENS” (K, Congenital anomaly; I, Inflammatory; Traumatic; Toxic; Endocrine; Neoplastic; Systemic diseases) (9). Common inflammatory swellings are reactive lymphadenitis, sialadenitis and abscesses. Most frequently encountered congenital masses are thyroglossal duct cyst and branchial cleft anomalies. Neoplastic masses may be of benign and malignant types and the latter can be primary or metastatic. 90% of metastatic neck malignancies are squamous cell carcinomas, others being adenocarcinomas or melanomas.

Treatment of testicular cancer following orchidectomy may be classified according to their histological group. For stage 1 seminomas, surveillance with regular CT scan is the mainstay of treatment, reserving radiotherapy and Carboplatin based chemotherapy for retroperitoneal and metastatic disease. For stage 2 seminoma, both chemotherapy and radiotherapy has shown 5–year relapse rate at 6–13.5% and 9% respectively. Unlike their non–seminomatous counterparts, post chemoradiated chemotherapy initially but succumbed to neutropenic sepsis following his 3rd cycle of chemotherapy.

**Discussion**

Ninety–six percent of primary testicular neoplasms are malignant, 5–10% of which are non–germ cell tumors such as Sertoli cell tumours, Leydig cell tumours and lymphoma. The remainder majority of malignant neoplasms are germ cell tumours. Germ cell tumours are histopathologically divided into seminomas which accounts for 56% of germ cell tumours, and non–seminomas; such as embryonal carcinoma (20%), teratoma (5–10%), teratocarcinoma (10–20%), choriocarcinoma (1%), yolk sac tumour (1%) and mixed tumours. (3)

The common presenting symptoms are testicular mass or nodule, usually painless with a sensation of scrotal heaviness and dull abdominal pain. Metastatic symptoms may occur in 5–10% of patients with or without testicular swelling. (4) Metastatic disease is characterized by lumbar pain due to retroperitoneal spread, respiratory problems

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**Figure 7. Peroxidase anti Peroxidase method (PAP): Numerous apoptotic bodies**

**Figure 8. Mitotic figures in a cell block**
residual mass for seminomas usually consist of fibrosis or necrosis, and true residual disease. These residual masses can be reliably observed with regular PET-CT scan.

The treatment options for non–seminomatous stage 1 disease include surveillance, retroperitoneal lymph node dissection (RPLND) and adjuvant chemotherapy. The choice of treatment modality depends on the presence of lymphovascular invasion. In patients without lymphovascular invasion, surveillance is advised. The cumulative risk of relapse rate in these patients is 30% and the risks and benefits of salvage treatment are usually discussed with the patients. One cycle of adjuvant chemotherapy consisting of bleomycin, etoposide and cisplatin (BEP) is usually administered in patients with lymphovascular invasion. RPLND serves as both a diagnostic and therapeutic procedure and has always been the mainstay of treatment in patients with lymphovascular invasion. However, the favourable results of chemotherapy is making it the treatment of choice compared to invasive surgery which carries risks and morbidities along with it.

For stage 2 or 3 non–seminomatous cancer, 3–4 extra cycles of BEP are given and RPLND is performed as per the guidelines of The International Germ Cell Cancer Collaborative Group (IGCCCG). Metastatic nodes are excised as they may harbour viable cancer cells.

Management of cervical metastasis of testicular cancer is an extension of the existing guidelines tackling retroperitoneal and thoracic masses. In patients following primary chemotherapy with normal level of tumor markers, excision of the neck mass is recommended. Whereas in patients with persistently elevated tumor markers following chemotherapy, second line salvage chemotherapy is recommended.

Table 1. Comparison on diagnosis, treatment modalities and outcomes

<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>No. of patients</th>
<th>Median age</th>
<th>Diagnosis</th>
<th>Neck nodes</th>
<th>Tumor marker</th>
<th>Surgery</th>
<th>Chemotherapy</th>
<th>Radiotherapy</th>
<th>Outcome</th>
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<td>Lee</td>
<td>1998</td>
<td>6</td>
<td>23.3</td>
<td>NSGCT 6/6</td>
<td>6/6</td>
<td>HCG 2/6</td>
<td>Orchidectomy 3/6</td>
<td>Chemotherapy 2/6</td>
<td>Radiotherapy 2/6</td>
<td>Died &lt; 1 year 2/6</td>
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<tr>
<td>See</td>
<td>1996</td>
<td>7</td>
<td>32.4</td>
<td>NSGCT 5/7</td>
<td>7/7</td>
<td>HCG &amp; AFP 2/5</td>
<td>Orchidectomy + RPLND + Neck dissection 3/5</td>
<td>Chemotherapy + Salvage chemotherapy 3/5</td>
<td>No radiotherapy 5/5</td>
<td>Died &lt; 1 year 1/5</td>
</tr>
<tr>
<td>Zepf</td>
<td>1985</td>
<td>5</td>
<td>19.6</td>
<td>NGGCT 5/5</td>
<td>5/5</td>
<td>HCG 1/5</td>
<td>Orchidectomy + RPLND + Neck dissection 5/5</td>
<td>Chemotherapy + Salvage chemotherapy 3/5</td>
<td>No radiotherapy 5/5</td>
<td>Died during treatment 1/5</td>
</tr>
</tbody>
</table>

Conclusion

Testicular cancer metastasizing to the neck is indeed rare, but possible. High index of suspicion, early diagnosis and rapid commencement of treatment is vital to ensure good prognosis and survival rate.
Acknowledgment

We would like to thank Dr Azmin Azila and Dr Nurul Bahiyah Baharudin pathologists from Hospital Raja Permaisuri Bainun, Ipoh for providing the histological images.

Acronyms: NSGCT—Non Seminomatous Germ cell tumour; AFP — Alpha Feto protein, HCG — Human Chorionic Gonadotrophin

References