RESEARCH PAPER

The Tip Of The Iceberg: Subcentimetric Testicular Choriocarcinoma Presenting With Ten Sites Of Haematogenous Dissemination: A Case Report

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ABSTRACT

Pure testicular choriocarcinoma is an exceptionally rare malignancy, comprising less than 1% of all testicular germ cell tumours, characterised by early and extensive haematogenous dissemination that is frequently disproportionate to the size of the primary tumour. We report a 60-year-old man presenting with right testicular swelling, markedly elevated serum β-hCG, and normal AFP. Right radical inguinal orchidectomy confirmed pure testicular choriocarcinoma arising from a subcentimetric primary measuring 8x7x6 mm. The novelty of this case lies in the extraordinary metastatic burden from a microscopic primary, whole-body FDG PET CT identified synchronous involvement of ten anatomical sites, including the scalp, brain, lungs, liver, pancreas, adrenal gland, bilateral kidneys, bone, and bilateral extremity soft tissues. This case underscores the importance of prompt tumour marker assessment and whole-body PET CT staging in suspected choriocarcinoma, and highlights that metastatic burden can be catastrophic even when the primary tumour is microscopic.

Keywords: Testicular choriocarcinoma, Germ cell tumour, Haematogenous dissemination, PET CT, β-hCG, Metastatic burden.

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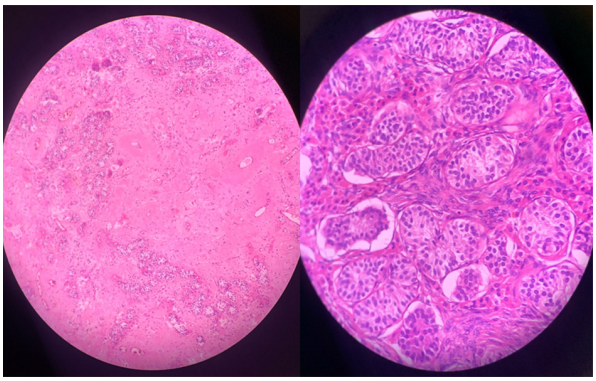
CASE PRESENTATION

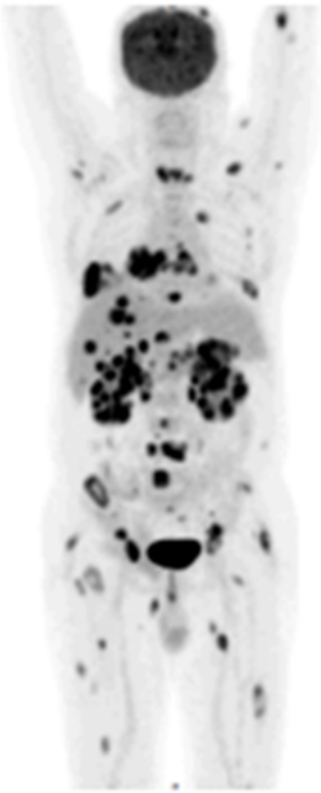
A 60-year-old man presented to the urology outpatient clinic with a 2-month history of progressive right testicular swelling accompanied by a sensation of heaviness.There was no history of trauma, fever, urinary symptoms, or prior cryptorchidism.General physical examination was unremarkable. Local examination revealed a firm,
non-tender right testicular mass without overlying skin changes or palpable inguinallymphadenopathy.

Scrotal ultrasonography confirmed the presence of a 1x1 cm hypoechoic intratesticular lesion in the right testis. Serum tumour markers were assessed; serum β-hCG was 756.4 mIU/mL (reference range < 5 mIU/mL), indicating a marked elevation.^[1] Serum alpha-fetoprotein was 2.7 ng/mL, within normal limits, and Lactate dehydrogenase was 250 U/L, at the upper limit of normal (reference < 250 U/L). The markedly β-hCG in the context of a testicular mass raised strong suspicion of a non-seminomatous germ cell tumour. The patient proceeded to right radical inguinal orchidectomy. Gross pathological examination revealed a small, haemorrhagic tumour measuring 8x7x6 mm confined to the testicular parenchyma. Histopathological analysis demonstrated sheets of mononuclear cytotrophoblasts admixed with multinucleated syncytiotrophoblastic giant cells, with extensive areas of haemorrhage and necrosis – appearances consistent with pure testicular choriocarcinoma.^[2] Pathological staging was pT1pNx. No lymphovascular invasion or involvement of the tunica albuginea, rete testis, or epididymis was identified. Whole-body FDG PET CT was performed for staging. Imaging revealed widespread FDG-avid metastatic deposits at an extraordinary number of anatomical sites – scalp, brain, lung, liver, pancreas, right adrenal, bilateral kidneys, bone, and soft tissues

of both extremities. Based on the International Germ Cell Cancer Collaborative Group (IGCCCG) classification, the patient was categorised as poor-prognosis non-seminomatous germ cell tumour (NSGCT) on account of the non-pulmonary visceral metastases (liver, brain) and elevated β-hCG.^[3]



[Figure 1. A.) Right gonad showing fibrosis, inflammation, congested blood vessels
and loss of tubular structure. B.) Left gonad showing normal tubular structure]



[Figure 2. Whole-body 18F-FDG PET CT demonstrating widespread metastatic
deposits.]

TREATMENT:

Following the institutional multidisciplinary tumour board discussion, pulmonary function assessment with diffusing capacity of the lungs for carbon monoxide (DLCO) testing was performed to evaluate fitness for chemotherapy. Following satisfactory pulmonary status, patient was commenced on systemic chemotherapy with the BEP regimen (bleomycin 30 units on Days 1,8, and 15; etoposide 100mg/m2 on days 1-5; and cisplatin 20 mg/m2 on days 1-5; repeated every 21 days for four cycles), in accordance with current European Association of Urology for poor prognosis NSGCT. ^ [4] Supportive care including antiemetics, prophylactic antibiotic coverage, and growth factor support were administered when clinically indicated. As on date, the patient has completed two cycles of the BEP regimen. Serum β-hCG monitoring during treatment has shown a decreasing trend, though complete normalization has not yet been achieved. The patient is tolerating treatment well.

DISCUSSION:

Pure testicular choriocarcinoma represents the most malignant variant of all TGCTs, characterised by its fulminating clinical course and propensity for widespread haematogenous dissemination. ^[2] The case presented here is noteworthy for several reasons: The advanced age of the patient (60 years), the extraordinarily small primary tumours (8x7x6 mm) and the simultaneous involvement of ten distinct metastatic sites encompassing neurological, thoracic, abdominal, skeletal, and soft tissue compartments.

Choriocarcinoma is a trophoblastic neoplasm composed of cytotrophoblasts and syncytiotrophoblasts, and produces large quantities of β-hCG, which serves both as a diagnostic and monitoring tool. ^[1,5] A markedly elevated β-hCG, as seen in our patient (756.4 mIU/mL), in the context of a testicular mass is strongly suggestive of choriocarcinomatous differentiation. A normal AFP, as observed here, further supports a non-yolk-sac primary histology. ^[1] It is characteristic of choriocarcinoma that the extent of metastatic disease may be vastly disproportionate to the size of the primary tumour, a phenomenon attributed to the tumour's dominant haematogenous route of spread. ^[2,5]

Metastasis to unusual sites, including the scalp, pancreas, bilateral kidneys, and soft tissues of bilateral upper and lower extremities, as identified in our patient, is rarely described in literature.^ [6] Cerebral

metastases occur in approximately 10 – 20 % of patients with choriocarcinoma ^[7]; their presence significantly worsens the prognosis and may necessitate concurrent whole brain radiotherapy. The identification of subcutaneous and skeletal muscle deposits in the extremities via PET CT represents an exceptionally rare finding in the setting of testicular choriocarcinoma, with only isolated case reports describing similar distribution. ^ [6]

Whole-body FDG PET CT offers a distinct advantage in the staging of NSGCT, particularly for delineating unusual metastatic sites beyond conventional cross-sectional imaging. ^ [8] In our case PET CT proved indispensable in revealing the true extent of metastatic burden, which was critical for risk stratification and treatment planning.

Despite an aggressive clinical presentation, cisplatin-based chemotherapy, particularly the BEP regimen, remains the cornerstone of treatment for metastatic choriocarcinoma. ^[4]. Long term complete remission is achievable in a proportion of patients, though the poor-prognosis subgroup carried a 5 year survival of approximately 48% in the original IGCCCG cohort (1975-1990); more contemporary data suggest improved outcomes of approximately 67-71%.^[3] In patients with intracranial metastases, the integration of stereotactic radiosurgery or whole-brain radiotherapy alongside systemic chemotherapy may confer additional survival benefit. ^[7] Close tumour marker surveillance and interval imaging are essential for monitoring treatment response and detecting early relapse. ^[4]

In the event that this patient does not achieve biochemical and radiological complete response with BEP chemotherapy, salvage chemotherapy with the VIP regimen (etoposide, ifosfamide, and cisplatin) will be considered as second-line treatment. Additionally, emerging data on the role of immunotherapy in metastatic germ cell tumours is noteworthy. Given the patient's advanced age (60 years), he may not be a suitable candidate for high-dose chemotherapy with peripheral blood stem cell transplantation (PSCT), and immunotherapy may represent a potential alternative therapeutic strategy in this population.

CONCLUSION

This case of testicular choriocarcinoma in a 60-year-old man exemplifies the remarkable disconnect between primary tumour size and the magnitude of metastatic disease that defines this histological subtype. This identification of metastatic deposits across ten anatomical sites underscores the aggressive natural history of this malignancy. A high index of clinical suspicion, prompt serum tumour marker assessment and early and complete metastatic work up with whole-body PET CT are integral for accurate staging. Timely initiation of BEP chemotherapy offers the best chance of disease control in extensively disseminated cases. This report contributes to the growing literature on the extraordinary metastatic behaviour of testicular choriocarcinoma and highlights the value of advanced functional imaging in staging.

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