



FDG PET-CT Detection of Recurrent Testicular Cancer in the Contralateral Testicle: A Case Study

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Clinical Image

A 36-year-old Caucasian man with a history of right testicular mixed germ cell carcinoma, diagnosed 4 years prior, presented to the Department of Oncology to establish follow up care. A right orchiectomy performed at the time of diagnosis had revealed a final pathology of mixed germ cell tumor, predominantly of embryonal carcinoma mixed with components of immature teratoma. The patient then received neoadjuvant chemotherapy consisting of Bleomycin, Etoposide, Cisplatin (BEP) and subsequently, four months after the right orchiectomy, underwent right retroperitoneal lymph node dissection. This revealed five metastatic lymph nodes with 90% embryonal, 5% choriocarcinoma, and 5% teratoma cells. The patient was then treated with 4 additional cycles of Etoposide. Four years after his initial diagnosis, a rise in tumor markers (AFP from 1.8 to 3.9, and an increase in HCG from 5 to 39) prompted further evaluation. A PET-CT was obtained and revealed significant focal hyper-metabolism within the left testicular parenchyma with no other abnormal metabolic activity elsewhere. This finding was felt to be more focal and significantly higher in metabolic activity than what would be expected with physiologic gonadal uptake which prompted an ultrasound of the left testicle. This revealed a well circumscribed, significantly hypoechoic mass with increased vascularity in the upper pole of the left testicle which directly corresponded to the focus of abnormally increased metabolic activity on PET-CT. The ultrasound also revealed diffuse microlithiasis of the left testicular parenchyma. A left orchiectomy was then performed. Final pathology revealed a left testicular mixed germ cell tumor which was confined to the testicle without invasion of the tunica albuginea. The patient was then treated with three cycles of Bleomycin, Etoposide, and Platinol. He remains disease free to date (3 years later). PET-CT has become an increasingly useful imaging tool, to stage and follow many neoplasms including testicular cancer [1]. Since cancer cells typically have abnormally increased glucose metabolism, ¹⁸F- FDG can detect both primary and less well differentiated metastatic lesions that exhibit increased glucose metabolism because of their rapid division [2]. The usefulness of ¹⁸F-FDG PET-CT in detecting residual or recurrent tumor in sub centimeter lymph nodes in patients with seminomas after chemotherapy is well established. Becherer et al [3] confirmed that after chemotherapy, patients diagnosed with seminoma and negative PET could avoid surgery. Cremerius et al. [4] showed that FDG PET is more accurate than CT in detecting residual tumor after chemotherapy for metastatic germ cell tumors. The normal testicle can accumulate ¹⁸F- FDG, yet this accumulation is usually diffuse and results in mild to moderate increase in metabolic activity [5]. Although detection of metastatic disease from other primary tumors by PET-CT has been reported [6], this case is unique in illustrating ¹⁸F -

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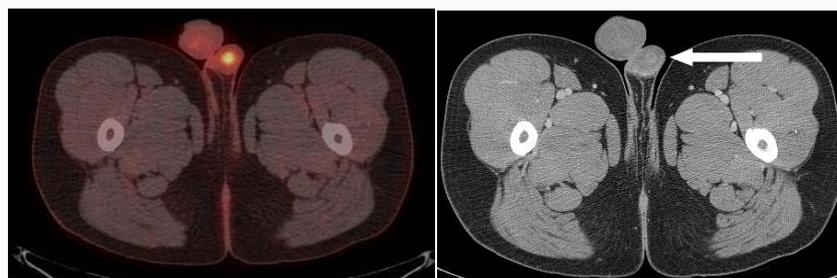


Figure 1: ¹⁸F- FDG PET-CT (left) showing focally increased metabolic activity within the left testicle. There is mild hypermetabolic soft tissue activity on the right at the site of prior orchiectomy. Contrast enhanced CT scan obtained after the PET-CT (right) showing a small enhancing lesion within the left testicle (arrow).

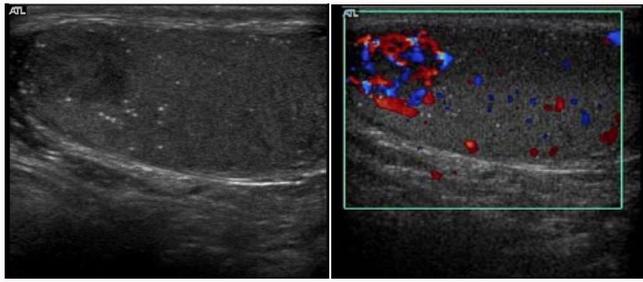


Figure 2: Ultrasound showing the hypoechoic mass (left) with increased vascularity (right) in the upper pole of the left testicle in a setting of microlithiasis.

FDG's ability to accurately detect testicular cancer recurrence within the contralateral testicle at an early stage.

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