CASE REPORT

Recurrence of Lymphoma Presenting as Asymmetrically Increased Testicular Activity on FDG-PET/CT

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A 65-year-old man with a history of recurrent lymphoma status-post matched sibling donor transplant presented with swelling of the right testicle. Four years earlier, he had presented with right leg swelling, night sweats, and pelvic pain. Computed tomography (CT) scan showed bulky right-sided pelvic adenopathy. Biopsy showed diffuse high-grade B-cell lymphoma. The remainder of the staging evaluation, including bone marrow biopsy, magnetic resonance imaging (MRI) of the brain, CT scans of the chest, abdomen and pelvis, and gallium scan, showed no evidence of disease outside the pelvis.

Chemotherapy and radiation achieved an initial complete response with resolution of the pelvic adenopathy, but the patient relapsed in the right maxillary region less than a year later. He then underwent intensive chemotherapy with autologous stem cell rescue and remained free of disease for nearly 2 years. However, he developed a mass over his left knee, and biopsy showed recurrent disease. Again, chemotherapy achieved a complete response. He then received a reduced-intensity matched sibling donor transplant from his sister.

Ten months after the transplant, he complained of swelling of the right testicle. Ultrasound showed a solid mass. A positron emission tomography (PET)/CT study showed very intense uptake of FDG in the right testicle and no other sites of abnormal activity (Figs. 1 and 2). He underwent right orchiectomy, and pathology confirmed malignant lymphoma (Burkitt’s-like) with no evidence of spread outside the testicle.

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Figure 1 Maximum intensity projection (MIP) image in the anterior view from a FDG-PET/CT scan showed asymmetrically increased activity in the right testicle and no other sites of abnormal FDG uptake.

Discussion

Most intravenous cytotoxic agents used in chemotherapy do not significantly cross the blood–brain and the blood–testis...
barrier, resulting in possible tumor sanctuary sites in the central nervous system and testis. The barrier has a physical component in the form of tight cellular junctions and a molecular component in the form of an efflux pump known as P-glycoprotein. When there is a clinical suspicion for central nervous system involvement, treatment with intrathecal chemotherapy may be effective in preventing leptomeningeal recurrence, but there is no standard treatment that is known to reduce the possibility of parenchymal brain or testes spread.

Growing evidence supports that successful allogeneic bone marrow transplant uses graft-versus-tumor (lymphoma) effect in which the immune cells from the transplant attack the disease. In the body, however, there are immunologically privileged extramedullary sites at which the immune system is impaired, and these again include the central nervous system and testis.

The physiologic uptake of FDG by the normal testis may complicate detection of disease. Special attention is warranted for asymmetrical and intense activity in the testes, a potential site of disease recurrence after chemotherapy and transplant.

A search of the literature reveals few reports of asymmetric testicular activity on FDG-PET; therefore, many of the entities on this list of differential diagnoses are included on a logical basis rather than reports in the literature.

Differential for asymmetrical or increased testicular activity includes: (1) testicular germ cell tumor (seminoma and nonseminoma); (2) primary testicular lymphoma; (3) metastatic disease; (4) unilateral orchectomy with or without testicular prosthesis; (5) undescended testis; (6) unilateral orchitis; (7) testicular torsion; (8) retractile testis; (9) congenital monorchidism; (10) testicular sarcoid; (11) bladder hernia (mistaken as testicular activity); (12) unilateral hydrocele or varicocele; and (13) inguinoscrotal hernia.

References

Figure 2 CT, PET, and fused PET/CT images (from top to bottom) demonstrated very intense uptake with a maximum standardized uptake value (SUVmax) of 17 in the right testicular mass.

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