



Undescended Testis Cancer Detected on FDG PET-CT Imaging in a Pediatric Patient

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Case Report

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Abstract

Cryptorchidism is one of the major risk factors for increased risk of testicle cancer. The differential diagnosis at the inguinal region is very important for hypermetabolic foci because of the possibility of metastasis at this level in cancer patients ongoing PET imaging for detection of metastases. In this case report, the findings of a pediatric patient with inguinal testis cancer identified as primary malignancy region on FDG-PET/CT imaging, is presented.

Keywords: Cryptorchidism; Tomography; PET Imaging

Abbreviations: PET-CT: Positron Emission Tomography-Computed Tomography; MIP: Maximum Intensity Projection.

Introduction

Positron emission tomography-Computed Tomography (PET-CT) with fluorine-18 fluorodeoxyglucose (F18-FDG) has evolved as a useful imaging modality in the assessment of a variety of cancers, especially for tumor screening, staging, restaging and post treatment monitoring. In this case report, the findings of a pediatric patient with inguinal testis cancer identified as primary malignancy region on FDG-PET/CT imaging, is presented. CT imaging provided by PET/CT has been useful in showing increased FDG uptake seen on PET imaging in inguinal region belonging to testis.

Case Report

A 16-year-old male pediatric patient with inguinal mass was referred for FDG-PET/CT examination for metabolic characterization and searching for primary malignancy region. Total body PET/CT images from the top

of the skull to the thighs were acquired 60 min. after the intravenous injection of 8.2 mCi (303 MBq) of FDG per standard protocol. On FDG-PET/CT imaging, increased FDG uptake was detected at left cervical, supraclavicular, (SUVmax: 18.89), anterior mediastinal, prevascular, left paratracheal, right paraesophageal, paracardiac (SUVmax: 19.74), retroperitoneal, hilus of spleen, bilateral paraaortic, aortacaval, parailiac, mesenteric, left pelvic and left inguinal (SUVmax: 22-27) conglomerate lymphadenopathies. Metastatic nodules and masses fewer than 10 with increased FDG uptake at left and right liver paranchime (SUVmax: 23) and metastatic subplevral and paranchimal nodules more than 20 with increased FDG uptake (SUVmax: 24.88) were seen (Figure 1).

Additionally, left inguinal 5 X 5.5 cm mass with central necrosis and calcification belonging to undescended testis (SUVmax: 19.47) that appears separated from the inguinal lymphadenopathies was detected (Figure 2). PET/CT fusion image has confirmed that this activity was belonging to an undescended testicle activity. Biopsy confirmed germ cell embryonal carcinoma (Figures 3-5).

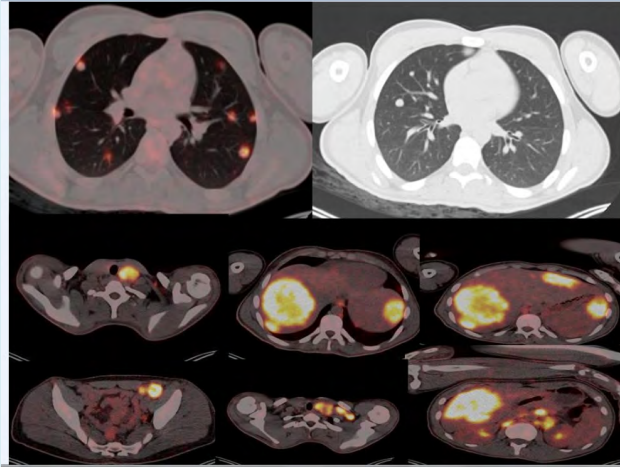


Figure 1: Axial PET-CT fusion and CT lung window images demonstrate lung metastases in top row. Metastatic lymphadenopathies and liver metastases can be seen in the bottom figures.

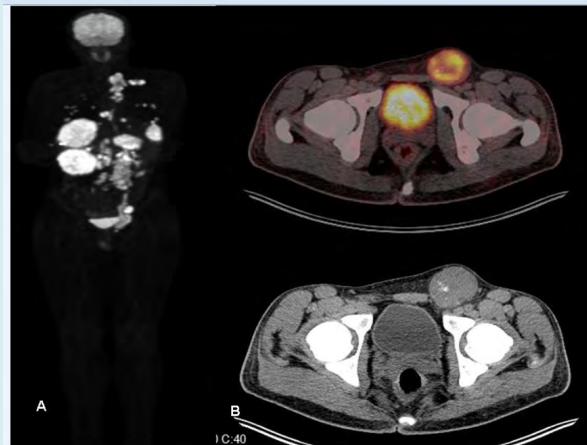


Figure 2: Maximum intensity projection (MIP) image (A) demonstrates all hypermetabolic focuses collectively. Axial PET-CT fusion and CT images shows primary left inguinal testis cancer mass (B).

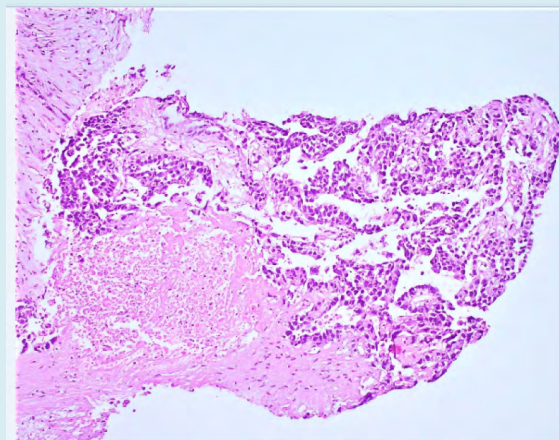


Figure 3: Tumoral cells with pleomorphic nuclei seen in glandular and solid patterns with necrosis. (H&E X 100).

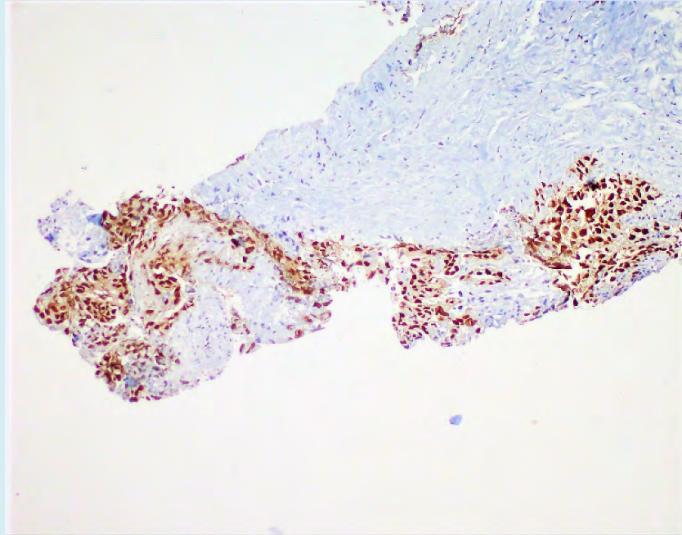


Figure 4: Strong nuclear staining with OCT3/4 (X 100).

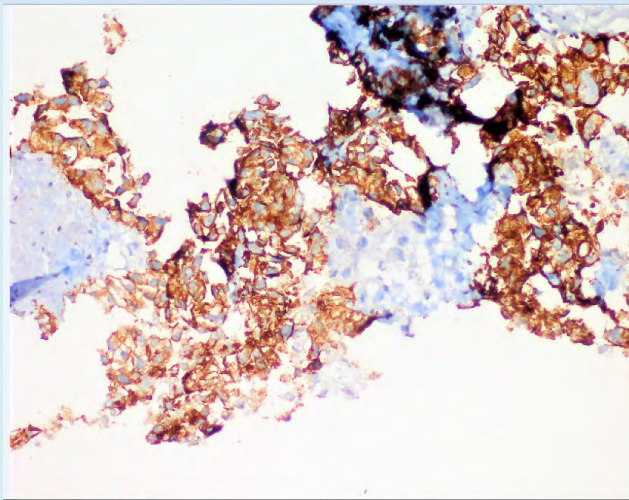


Figure 5: Tumoral cells with cytoplasmic and membranous staining with CD30 (X200).

Discussion

Testicular cancer is a disease which mainly affects men between 15 and 35 years [1]. It has a share of 1% of all solid tumors in the western world with an increasing incidence of 3–10/100,000 [2]. Cryptorchidism or the failure of testicular descent is the most common defect in newborn boys. Cryptorchidism is an established risk factor for both infertility and testicular germ cell tumors. Cryptorchidism is one of the major risk factors for increased risk of testicle cancer. The differential diagnosis at the inguinal region is very important for hypermetabolic foci because of the possibility of metastasis at this level in cancer patients ongoing PET imaging for detection of metastases. It is

important to differentiate the activity in the groin from lymph node activity, testicular cancer, metastatic disease activity, inflammation and urine skin contamination artefact [3]. Also, on pelvic imaging urinary bladder activity can easily be confused with the activities of scrotum, intestine and rectum.

F-FDG PET/CT showed statistically significant measurements for differentiation between malignant and benign lesions with a sensitivity of 90.6% and a specificity of 80.9% [4]. In this case, CT component of the PET/CT provided an advantage in the differential diagnosis of the inguinal region. CT imaging findings has been useful in showing increased FDG uptake seen on PET imaging at left inguinal region belonging to an undescended testis activity.

Disclosures

All authors assert that there are no conflicts of interest (both personnel and institutional) regarding specific financial interests that are relevant to the work conducted or reported in this manuscript.

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