Case Report, $^{68}$Ga-PSMA in Prostate Cancer.

$^{68}$Ga-PSMA Uptake in Lymphoma: A Potential Pitfall in Prostate Cancer PET Imaging.


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ABSTRACT:

Receptor targeted imaging using prostate specific membrane antigen (PSMA)-a labeled radioisotope currently plays a key role in prostate cancer imaging. This is due to the overexpression of PSMA, a type II Trans membrane protein, in prostate cancer cells. Gallium-68 and fluorine-18 labeled PSMA are currently available for positron emission tomography/ computed tomography (PET/CT) imaging for the diagnosis, staging, treatment planning and follow-up of prostate cancer.

In this case report we discuss a 70 year old male who presented with progressively rising serum prostate-specific antigen (PSA) levels. Three prostate biopsies performed at different time points were negative and failed to provide a histological diagnosis. $^{68}$Ga-PSMA PET/CT was subsequently requested to guide biopsy and appropriately stage the disease. PSA level at the time of imaging was 39ng/ml. Uptake was demonstrated in the left posterior-lateral aspect of the prostate gland ($SUV_{max}=15.27$), identifying the target biopsy site for histological confirmation of the diagnosis of prostate cancer (Figure 1).

Unusual uptake was also noted in a right axillary lymph node ($SUV_{max}=6.18$). Biopsy of this lymph node confirmed Hodgkin’s Lymphoma (Figure 2&3).
This clinical case demonstrates the non-specific nature of PSMA in prostate cancer, despite its name. We would like to advise caution in the interpretation of distant nodal uptake sites on $^{68}$Ga-PSMA PET/CT imaging for the diagnosis and/or staging of prostate cancer.

**Key Words:** Prostate cancer, $^{68}$Ga-PSMA, Lymphoma, Hodgkin’s lymphoma.

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**Figure (1):** $^{68}$Ga-PSMA activity is noted in the left posterior-lateral aspect of the prostate gland (SUVmax=15.27). This represents the ideal biopsy site to histologically confirm the diagnosis of prostate cancer.

**Figure (2 A):** $^{68}$Ga-PSMA PET/CT shows prostatic uptake below the bladder as well as a focus of uptake in the right axilla. The PSA level at the time of imaging was 39ng/ml.

**Figure (2 B):** a right axillary lymph node (SUVmax=6.18) which represents an unusual site of prostate cancer metastases. Biopsy of this lymph node revealed Hodgkin’s Lymphoma.
Figure (3 A,B): Immunohistological stain of biopsy material from the right axillary nodal lesion at two different laboratories confirmed Hodgkin’s Lymphoma.

REFERENCES:


