



Editorial

The Increasing Role of Prostate Membrane Specific Antigen in Prostate Cancer

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Gallium-68 (⁶⁸Ga), Prostate Membrane Specific Antigen Positron Emission Tomography is having increased importance in prostate cancer management [1]. Its diagnostic accuracy on primary staging before radical prostatectomy in intermediate and high-risk prostate carcinoma was studied. It showed that its diagnostic accuracy on primary lymph node staging before radical prostatectomy in intermediate and high-risk cases is promising. Other study revealed that the specificity and negative predictive values of Ga68 PSMA-PET on clinical lymph node staging before radical prostatectomy is higher in intermediate and high risk prostate cancer. However, efforts should be taken to improve sensitivity and positive predictive value [2]. The accuracy of prostate-specific membrane antigen positron emission tomography (PSMA-PET) before salvage lymph node dissection was analyzed. Although the accuracy is reasonable, resection should not exclusively focus on PSMA-PET-positive fields [3]. It was found that 68Ga-PSMA I&T PET/CT prior to radical prostatectomy could contribute to presurgical local staging of prostate cancer. 68Ga-PSMA PET/CT showed promising results for prediction of lobe infiltration, extra capsular extension, and seminal vesicle invasion [4].

Prostate-Specific Membrane Antigen (PSMA) is highly expressed on most prostate cancer (PCa) cells. It has received U.S. Food and Drug Administration approval. The use of PSMA PET is now suggested by international guidelines for investigating prostate cancer. It has been shown to be superior to cross-sectional imaging for the detection of pelvic lymph nodes and distant metastases. Higher detection rates have been observed than for any other imaging techniques, especially at low prostate-specific antigen values. PSMA PET led to a shift in clinical management, increasing the proportion of radiotherapy, surgery, or other focal therapies at the expense of systemic options or no treatment. In oligometastatic disease after radical surgery, PSMA PET may be relevant in guiding a metastasis-directed therapy approach. PSMA PET represents a reliable whole body imaging procedure

in combination with second-line therapy of castration-resistant cancer [5]. Furthermore, it was found that by using 68Ga-PSMA PET/CT as reference can predict regional and non-regional lymph node metastasis. The added information may provide better decision-making in more than two-thirds of patients for reducing unnecessary pelvic lymph node dissection [6]. On the other hand, 68Ga-PSMA PET/CT is a capable test for preoperative lymph node staging and patients without lymph node metastatic status and can rarely be misdiagnosed. However, its sensitivity must be improved [7].

Further studies showed that Ga-68 PSMA PET/CT provides accurate localization of index lesions in patients with intermediate and high-risk prostate cancer. It has an important role to play in staging of prostate cancer patients and planning for radiation therapy or radical prostatectomy [8]. PSMA imaging has a high clinical effect in patients with biochemical recurrence, requiring modifications to the original treatment plan that is met in about half the patients. Detecting recurrence in biochemical recurrence and can prevent unnecessary toxicity and lead to individualized therapy [9]. Compared with conventional CT, 68Ga-PSMA, PET/CT has a significant impact on radiotherapeutic approach, especially in postoperative patients. 68Ga-PSMA PET/CT has recently been endorsed by few cancer guidelines as an imaging modality in patients with PSA persistence or recurrence. [10]. Additionally, 18F-PSMA-1007 PET/CT offers high detection rates for biochemical recurrence after radical prostatectomy that are comparable to or better than those published for 68Ga-labeled PSMA [11]. Preoperative 1-stop-shop 68Ga-PSMA-11 PET/MRI presents uniformly for stage prediction compared with nomograms in high-risk prostate cancer patients. Despite an improved prediction of the full final stage and the yield of additional anatomic information, the use of 68Ga-PSMA-11 PET/MRI deserves further prospective evaluation [12]. Other study showed that 68Ga-PSMA-11 PET/CT has a major impact

on intended definitive radiotherapy planning for prostate cancer (16.5%) of the patients whose radiotherapy fields covered the prostate, seminal vesicles, and pelvic lymph nodes and in (37%) of the patients whose radiotherapy fields covered the prostate and seminal vesicles but not the pelvic lymph nodes [13]. Data are refining the utility of PSMA-targeted PET imaging to improve the management of prostate cancer patients [14]. 68Ga-PSMA-11 PET/CT results effect management changes in more than 50% of prostate cancer patients with biochemical recurrence. However, intended management changes early after 68Ga-PSMA-11 PET/CT frequently differ from applied management changes [15].

Finally, while 68Ga-PSMA PET-CT imaging is more used in recurrent prostate cancer to assess the disease site and volume, it was shown that PSMA PET-CT is a very promising tracer for staging in the initial evaluation of prostate cancer. It has the potential to have an overall impact in the patient's initial management by either up staging or down staging the disease [16].

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