



Letter to the Editor: ^{68}Ga -PSMA-11 for renal cortical PET imaging

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Dear Editor,

I read with interest the systematic review by Amoabeng et al. that was published in recent issue of *Clinical and Translational Imaging* [1]. This article reviewed the utilization of positron emission tomography (PET) studies in the evaluation of renal health and diseases. However, the review did not include the use of ^{68}Ga —prostate specific membrane antigen (PSMA)-11 PET for renal cortical imaging. ^{68}Ga -PSMA-11 demonstrates high physiological uptake in the renal parenchyma [2]. PSMA, also known as glutamate carboxypeptidase II or folate hydrolase, is a Type II transmembrane protein which is mainly found in prostate tissue and overexpressed in prostate cancer, various other malignancies and also in extraprostatic normal tissues such as kidneys [3]. In immunohistochemical analysis, detectable PSMA levels were identified in the brush borders and apical cytoplasm of a subset of proximal renal tubules where it is responsible for the reuptake of folates via epithelial brush cells [3, 4]. In a prospective study, we compared ^{68}Ga -PSMA-11 PET to $^{99\text{m}}\text{Tc}$ -dimercaptosuccinic acid (DMSA) scan in adult patients with pyelonephritis. Our study was interrupted by Covid-19 pandemic but we were able to obtain renal PSMA PET and DMSA images in 2 adult patients with pyelonephritis [5, 6]. In our cases, renal PSMA PET provided superior image resolution over DMSA scan and demonstrated the scar formation from pyelonephritis. We used low doses of ^{68}Ga -PSMA-11 which was 48–74 MBq (1.3–2 mCi) and longer acquisition time (6–10 min/bed). Non-attenuation corrected PSMA PET also provided high resolution images of the kidneys. Estimated effective doses of 111 MBq (3 mCi) of $^{99\text{m}}\text{Tc}$ -DMSA and 37 MBq (1 mCi) of ^{68}Ga -PSMA-11 seems comparable [5, 6]. We also assessed the correlation between ^{68}Ga -PSMA-11 renal PET parameters and renal

function tests in patients with prostate cancers [7]. Based on our results renal ^{68}Ga -PSMA-11 uptake appeared to be correlating with renal function tests.

^{68}Ga -PSMA-11 seems to be a potential alternative to $^{99\text{m}}\text{Tc}$ -DMSA but further work, such as learning the mechanism of uptake, physiologic meaning of uptake, bio-distribution in children, determining the optimal injected activity and imaging time, and investigating the dosimetry, is required before its use as a renal cortical tracer can be supported.

Declarations

Conflict of interest No potential conflict of interest relevant to this article was reported.

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