Preface

Precision Imaging of Prostate Cancer

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Editors

Nuclear medicine and radiomolecular theranostics has diversified into a broader field of precision oncology. PSMA PET imaging brings new insights into personalized clinical decision making and treatment of prostate cancer. Simultaneously, the role of state-of-the-art morphological imaging (computed tomography, MR imaging, and ultrasound) in the diagnosis and management of prostate cancer also continues to expand. Significant breakthroughs in prostate cancer theranostics were the FDA approval of PSMA-targeted PET imaging agents Ga-68 PSMA-11 and Pylarify, and very recently, of the radioligand therapy using Pluvicto. With the establishment of appropriate use criteria and consensus, these theranostic modalities can be further reasonably integrated into clinical trials.

PET tracers with different molecular targets and mechanisms improve the clinical management of prostate cancer. F-18 Fluciclovine, an amino acid analogue, provides a higher target-to-background signal as well as a higher specificity as compared with choline. The overexpression of gastrin-releasing peptide receptors (GRPR) in prostate cancer opens yet another radiomolecular theranostic capability, for example, in PSMA-negative metastases, using the GRPR antagonist RM-2. Ga-68 RM-2 PET imaging might further complement PSMA PET in understanding tumor biology. F-18 NaF PET represents a high-resolution imaging modality for prostate cancer, which is rather underused in the post–PSMA-PET imaging era. Indeed, further deep diving into various quantitative aspects could prove a useful supplementation to this new gold standard. F-18 FDG-PET imaging plays a decisive role in prognostication and effective personalized therapy planning, especially of a PSMA–targeted radioligand therapy.

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