Pearls and pitfalls in clinical interpretation of prostate-specific membrane antigen (PSMA)-targeted PET imaging.


Abstract

BACKGROUND: The rapidly expanding clinical adaptation of prostate-specific membrane antigen (PSMA)-targeted PET imaging in the evaluation of patients with prostate cancer has placed an increasing onus on understanding both the potential pearls of interpretation as well as limitations of this new technique. As with any new molecular imaging modality, accurate characterization of abnormalities on PSMA-targeted PET imaging can be accomplished only if one is aware of the normal distribution pattern, physiological variants of radiotracer uptake, and potential sources of false-positive and false-negative imaging findings. In recent years, a growing number of reports have come to light describing incidental non-prostatic benign or malignant pathologies with high uptake on PSMA-targeted PET imaging. In this review, we have summarized the published literature regarding the potential pearls and technical and interpretive pitfalls of this imaging modality. Knowledge of these limitations can increase the confidence of interpreting physicians and thus improve patient care.

CONCLUSIONS: As PSMA-targeted PET is expected to be evaluated in larger prospective trials, the dissemination of potential diagnostic pitfalls and the biologic underpinning of those findings will be of increased importance.

KEYWORDS: PET/CT; PSMA; Pearls and pitfalls; Prostate cancer; Prostate-specific membrane antigen

PMID: 28765998 DOI: 10.1007/s00259-017-3780-7