NEJM Journal Watch

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Detecting Metastatic Prostate Cancer with Prostate-Specific Membrane Antigen PET-CT

PSMA PET-CT had greater sensitivity and specificity than conventional imaging for detecting pelvic nodal or distant metastases in men with high-risk prostate cancer.

The limitations in sensitivity and specificity of conventional imaging using computed tomography (CT) and bone scans in staging patients with locally advanced prostate cancer are well defined. To determine whether prostate-specific membrane antigen (PSMA) positron emission tomography (PET)-CT imaging is more accurate than conventional imaging in this setting, investigators in Australia conducted a prospective, multicenter, randomized, crossover, phase III trial of 295 assessable men (median age, 69) with high-risk, localized prostate cancer (defined as International Society of Uropathology grade 3–5, prostate-specific antigen [PSA] concentration of ≥20 ng/mL, or clinical stage ≥T3).

Patients were randomized to undergo PSMA PET-CT imaging or conventional imaging. Patients with no more than two unequivocal distant metastases on first-line imaging underwent second-line imaging using the alternative modality. The primary outcome was accuracy of first-line imaging for identifying pelvic nodal or distant-metastatic disease determined using an investigator-assessed composite of imaging, PSA, pathology, and clinical findings.

At 6-month follow-up, 29% of men were found to have pelvic nodal or distant metastases. PSMA PET-CT had 27% absolute greater diagnostic accuracy than conventional imaging (92% vs. 65%; $P<0.0001$), reflecting greater sensitivity (85% vs. 38%) and greater specificity (98% vs. 91%). In those who underwent second-line imaging, PSMA PET-CT led to a change in management (determined prior to randomization) in more patients than did conventional imaging (27% vs. 5%).

COMMENT

This assessment of PSMA PET-CT imaging in men with locally advanced prostate cancer is an important contribution to the field. Although broadly available in many parts of the world, PSMA PET-CT is not yet FDA-approved, and there are many challenges to be addressed as this modality, which is likely to be approved in the U.S. in the near term, becomes integrated into clinical practice. As noted by an editorialist, the authors have planned an economic analysis of replacing conventional staging with PSMA PET-CT, which will be of great importance as we attempt to find the optimal role for this imaging modality in advanced prostate cancer. ***— Robert Dreicer, MD, MS, MACP, FASCO***

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Hofman MS et al. Prostate-specific membrane antigen PET-CT in patients with high-risk prostate cancer before curative-intent surgery or radiotherapy (proPSMA): A prospective, randomised, multi-centre study. **Lancet** *2020 Mar 22; [e-pub]. (https://doi.org/10.1016/S0140-6736(20)30314-7)*

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