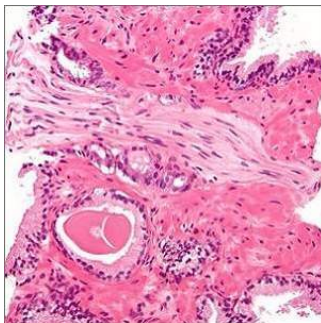# PET Imaging Detects Fast-growing Prostate Cancer

A Johns Hopkins-led study shows that PET imaging with a specific biomarker could detect fast-growing primary prostate cancer and distinguish it from benign prostate lesions. The finding, reported in *The Journal of Nuclear Medicine*, is important for patients with suspected prostate cancer that has not been confirmed by standard biopsy.

The study looked at 13 patients with primary prostate cancer who were imaged with F-18 DCFBC PET prior to scheduled prostatectomy. A dozen of the patients also underwent pelvic prostate MR imaging. Prostate ^{18}F-DCFBC PET was correlated with MR imaging and histologic and immunohistochemical analysis on a prostate-segment (12 regions) and dominant-lesion basis. There were no incidental extraprostatic findings on PET suggestive of metastatic disease.

Researchers found MR imaging to be more sensitive than ^{18}F-DCFBC PET for detecting primary prostate cancer in a per-segment (sensitivities of 0.17 and 0.39 for PET and MR, respectively) and per-dominant (sensitivities of 0.46 and 0.92 for PET and MR, respectively) lesion analysis. However, they also found that ^{18}F-DCFBC PET was more specific than MR imaging by per-segment analysis (specificity of 0.96 and 0.89 for PET and MR for non-stringent analysis and 1.00 versus 0.91 for stringent analysis, respectively) and highly specific for detection of high-grade lesions greater than or equal to 1.1mL in size (Gleason 8 and 9).

"We were able to demonstrate in our research that PSMA PET imaging was more specific than MR imaging for detection of clinically significant high-grade prostate cancer lesions, and importantly was able to distinguish benign prostate lesions from primary prostate cancer, currently a difficult diagnostic imaging task," says Steven P. Rowe, MD, PhD, resident at Johns Hopkins Medical Institutions in Baltimore, Md. "Additionally, this work demonstrated a direct correlation between PSMA PET radiotracer activity in prostate cancer and prostate adenocarcinoma aggressiveness (Gleason score)."

Currently, clinicians diagnose prostate cancer by conducting a biopsy, usually when something is detected during a physical exam or after a prostate-specific antigen (PSA) blood test comes back positive.

Aside from skin cancer, prostate cancer is the most prevalent form of cancer among men in the United States, according to 2014 data from the American Cancer Society. Approximately 233,000 new cases of prostate cancer are expected to be diagnosed and about 29,480 prostate-cancer related deaths are estimated this year.

Source: Society of Nuclear Medicine and Molecular Imaging
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