A better way to image metastatic prostate cancer

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Conventional imaging methods have limited sensitivity for detecting metastatic prostate cancer. With appropriate, timely treatment vital to survival and quality of life, better imaging has been an ongoing goal.

A recent study, reported in the January issue of *The Journal of Nuclear Medicine*, has now shown in a prospective, systematic manner that a PET/CT scan, using the radiotracer F-18-DCFBC to target prostate-specific membrane antigen (PSMA), is significantly more effective than other detection methods currently in use.

Prostate cancer is one of the most common forms of cancer in men. One in seven American men will have prostate cancer during his lifetime. The American Cancer Society estimates that there will be 180,890 new cases diagnosed in 2016. Approximately 2.8 million American men are living with the disease, and more than 26,000 deaths from it are predicted this year.

PSMA is expressed in the majority of prostate cancers, and high PSMA expression is associated with metastatic spread. In this study, the research team from Johns Hopkins Medical Institutions compared the results of PET/CT scans using F-18-DCFBC with conventional imaging modalities (expanded Tc-99m-methylene diphosphonate (MDP) bone scan and contrast-enhanced CT of the chest, abdomen, and pelvis).

In this study of lesion-by-lesion analysis of 17 patients, DCFBC PET was able to detect a larger number of lesions—592 positive versus 520

with the conventional methods. In lymph nodes, bone, and visceral tissue, DCFBC PET proved to have a much greater sensitivity for detecting prostate cancer lesions (0.92) compared with current methods (0.71).

Steve Y. Cho, MD, corresponding author for the study and now an associate professor of nuclear medicine at the University of Wisconsin School of Medicine and Public Health, said, "The results of this work, in combination with a number of other studies that have been published on PSMA PET, have highlighted the improved ability of PSMA-targeted PET imaging to detect metastatic prostate cancer. Improved detection of prostate cancer using F-18-DCFBC, as well as further advances in detection with newer and improved second generation F-18-DCFPyL and Ga-68-based low molecular weight PSMA PET radiotracers, will potentially allow for earlier detection and detection of more metastatic lesions."

Looking ahead, Cho noted, "PSMA-based PET imaging is a striking example of molecular imaging's ability to target and detect prostate tumor tissue, thereby markedly improving the imaging of a disease process."

More information: "Comparison of PSMA-based 18F-DCFBC PET/CT to Conventional Imaging Modalities for Detection of Hormone-Naïve and Castration-Resistant Metastatic Prostrate Cancer" *The Journal of Nuclear Medicine*, 2016.

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