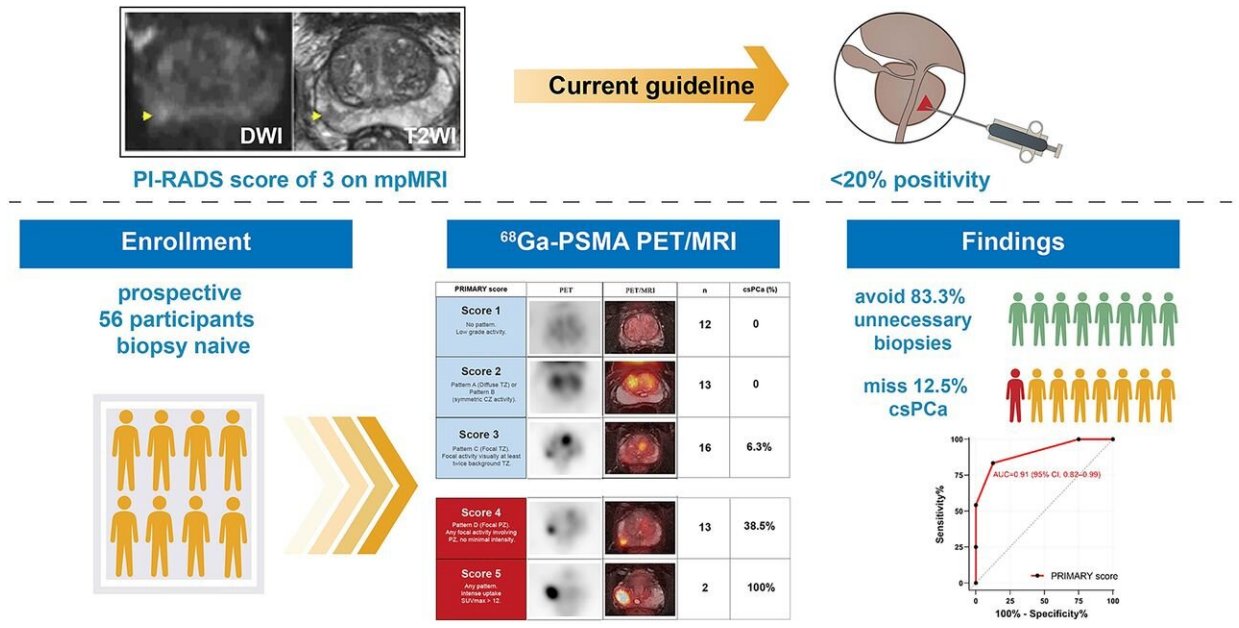
PET/MRI found to accurately classify prostate cancer patients, offer potential to avoid unnecessary biopsies

April 11 2024



Credit: *Journal of Nuclear Medicine* (2024). DOI: 10.2967/jnumed.123.266742

PET/MRI can improve diagnostic accuracy for prostate cancer patients and help avoid unnecessary biopsies, according to new research published in the *Journal of Nuclear Medicine*. By applying the

PRIMARY scoring system to PET/MRI results, researchers found that more than 80% of unnecessary biopsies could be avoided at the expense of missing one in eight clinically significant prostate cancer cases.

The Prostate Imaging Reporting and Data System (PI-RADS) is a five-point scale used to evaluate suspected prostate cancer on MR images. PI-RADS category 3, which presents an unclear suggestion of clinically significant prostate cancer, remains a diagnostic challenge. Although biopsy is recommended under the current guidelines, less than 20% of PI-RADS 3 lesions contain clinically significant prostate cancer.

"PI-RADS 3 lesions present a dilemma to both urologists and patients because immediate biopsy could be unnecessary; however, a monitoring strategy could lead to some missed diagnoses of clinically significant prostate cancer," stated Hongqian Guo, MD, a urologist at Nanjing Drum Tower Hospital at the Affiliated Hospital of Nanjing University Medical School in Nanjing, China. "Hence, specifically ruling out clinically significant prostate cancer among PI-RADS 3 lesions has significant clinical implications."

In this study, 56 men with PI-RADS 3 lesions underwent 68Ga-PSMA PET/MRI. The five-level PRIMARY system, which is based on a combination of ^{68}Ga-PSMA pattern, localization, and intensity information, was used to report prostate ^{68}Ga-PSMA PET/MRI findings. After imaging, all patients underwent prostate systematic biopsy in combination with targeted biopsy to determine clinically significant prostate cancer.

Among the 56 patients, clinically significant prostate cancer was detected in eight patients (14.3%) by biopsy. When a PRIMARY score of at least four was used to make a biopsy decision in men with PI-

RADS 3 lesions, 40 of 48 (83.3%) participants could have avoided unnecessary biopsies, at the expense of missing 1 in 8 (12.5%) of clinically significant prostate cancer cases.

"By demonstrating the additive value of ^{68}Ga-PSMA PET/MRI in classifying PI-RADS 3 lesions, this study provides new insight into the clinical indication for ^{68}Ga-PSMA PET/MRI," noted Guo. "In the future, PI-RADS 3 patients could be referred for ^{68}Ga-PSMA PET/MRI before prostate biopsy."

More information: Jingyan Shi et al, The Value of ^{68}Ga-PSMA PET/MRI for Classifying Patients with PI-RADS 3 Lesions on Multiparametric MRI: A Prospective Single-Center Study, *Journal of Nuclear Medicine* (2024). DOI: 10.2967/jnumed.123.266742

Provided by Society of Nuclear Medicine