

Molecular imaging detects recurrent prostate cancer

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SALT LAKE CITY? Findings of a clinical trial reported at SNM's 57th Annual Meeting indicate that a new molecular imaging agent could improve diagnosis of recurrent prostate cancer and determine the best possible course of treatment for patients.

"Despite definitive treatment, about 30 percent of prostate cancers recur," said David Schuster, M.D., director of the division of nuclear medicine and molecular imaging and assistant professor of radiology at Emory University School of Medicine, Atlanta, Ga. "This troubling statistic led our research team to diligently work on developing new techniques to more effectively detect and diagnose recurrent prostate tumors and associated cancers that have spread to nearby tissues and organs."

According to the authors, a radiotracer known as anti-18F-FACBC could be used to effectively and non-invasively detect and differentiate tumors recurring in the prostate and metastatic cancers that develop, most notably in the surrounding lymph nodes. "This may lead to custom-tailored treatments for prostate cancer patients that cater to their specific tumor type and progression of disease," added Schuster.

The new imaging agent, developed by Dr. Mark Goodman at Emory University, consists of a fluorine-based radioisotope paired with a synthetic amino-acid analog similar to the naturally-occurring amino acid L-leucine. Amino acids are essentially the building blocks of protein, and many cells have a system that controls the transport of amino acids into the cell in order to facilitate the production of new proteins. Upon injection, anti-18F-FACBC is absorbed by various cells by this transport system, but the "uptake," or admission of the agent, is much higher in aggressively multiplying cancer cells, which need more of these proteins in order to proliferate.

Researchers scanned 83 patients suspected of having recurrent prostate cancer using a hybrid positron emission tomography and computed tomography (PET/CT) system, a molecular imaging technique that displays both anatomical information and physiological processes in the body. Resulting scans were evaluated to determine the presence of recurrent prostate tumors and outlying tumors that had metastasized, or spread, to other tissues, including those of nearby bones and lymph nodes that tend to be a target for cancer metastases. The agent was able to positively identify recurrent carcinomas in the prostate region with 74-percent accuracy, and metastatic cancers with 96-percent accuracy, catching even small tumors within lymph nodes that other imaging agents could not detect. The ability to differentiate tumors recurring in the prostate from metastatic cancers with high accuracy is the most promising aspect of this PET radiotracer.

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