Novel MRI Method Distinguishes Healthy Prostate Tissue from Cancer

Radiologists from UT Southwestern Medical Center have used a novel MRI technique that detects low levels of zinc ion and can help distinguish healthy prostate tissue from cancer. The findings are published in the *Proceedings of the National Academy of Sciences* .

MRIs in general are unable to distinguish between zinc levels in healthy, malignant, and benign hyperplastic prostate tissue. That is why this discovery could prove to be useful as a biomarker to track the progression of prostate cancer.

The researchers are confident that this method could be useful for diagnostic purposes and could help monitor therapies that are used for the treatment of prostate cancer. By using a novel Zn(II) ion sensing molecule and MRI, it would be possible to differentiate between healthy prostate and prostate cancer.

In most cases, prostate cancer is classified as adenocarcinoma and originates in epithelial cells. In this technique, the researchers determine that glucose stimulates the release of zinc ions from inside epithelial cells, which they could then track on MRIs. They found that prostate cancer tissue secreted lower levels of zinc ions thus making it easy to distinguish between malignant and healthy tissue.

The technique was tested on mouse models and was able to successfully detect malignant lesions as early as 11 weeks. This non-invasive imaging procedure can thus be useful in detecting both disease and its progression.

"Prostate cancer often has no early symptoms, so identifying potential new diagnostic methods that might catch the cancer at an earlier stage or allow us to track how it is progressing is an important opportunity," said co-author Dr. Neil Rofsky, Chairman of Radiology, Director of Translational Research for the Advanced Imaging Research Center, and holder of the Effie and Wofford Cain Distinguished Chair in Diagnostic Imaging.

Source: PNAS
Image Credit: UT Southwestern Medical Center

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