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Mal for abstracts

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Tittel:

Multiparametric MRI for optimal prostate cancer detection in TRAMP mice

Formål:

Multiparametric MRI is commonly used for prostate cancer diagnosis and characterization. T2w and diffusion weighted imaging (DW-MRI) are most useful, while dynamic contrast-enhanced (DCE)-MRI typically plays a supporting role. Here, we investigated whether steady-state susceptibility contrast (SSC)-MRI using ultrasmall superparamagnetic iron oxide particles can be used for detection of primary prostate cancer and potentially replace DCE-MRI in multiparametric protocols.

Metode:

Transgenic adenocarcinoma of the mouse prostate (TRAMP) mice (n=5) were imaged with a 7T preclinical MR scanner between the age of 22 to 34 weeks. We performed T2w, DW- and DCE-MRI (Dotarem 0.1mmol/kg i.v.) on day 1 and T2w, DW- and SSC-MRI (GEH121333 5mg/kg iron oxide (GE Global Research, Niskayuna, NY, USA) i.v.) on day 3. Tumor regions were manually drawn based on T2w images and

low diffusion in DW-images. Vascular parameters were calculated from DCE- and SSC-MRI.

Resultat:

Histology confirmed the presence of well-differentiated prostate cancer in locations corresponding to the ROIs drawn in the MR images. For DCE-MRI the parameters RSI_{1min} , AUC_{1min} , TTP and v_e showed lower values for cancerous compared to normal tissue. None of the SSC-MRI parameters showed differences between tumor and normal TRAMP prostate. Overall, the prostates were very heterogeneous with respect to all parameters.

Konklusjon:

The results of this study confirm the potential value of DCE-MRI in early-stage detection and monitoring of prostate cancer. Preliminary results do not suggest that SSC-MRI can be used instead of DCE-MRI for the detection of prostate lesions.