Short-term reproducibility of apparent diffusion coefficient estimated from diffusion-weighted MRI of the prostate

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**Purpose:** The purpose of the study is to determine short-term reproducibility of apparent diffusion coefficient (ADC) estimated from diffusion-weighted magnetic resonance (DW-MR) imaging of the prostate. Methods: Fourteen patients with biopsy-proven prostate cancer were studied under an Institutional Review Board-approved protocol. Each patient underwent two, consecutive and identical DW-MR scans on a 3T system. ADC values were calculated from each scan and a deformable registration was performed to align corresponding images. The prostate and cancerous regions of interest (ROIs) were independently analyzed by two radiologists. The prostate volume was analyzed by sextant. Per-voxel absolute and relative percentage variations in ADC were compared between sextants. Per-voxel and per-ROI variations in ADC were calculated for cancerous ROIs.

**Results:** Per-voxel absolute difference in ADC in the prostate ranged from 0 to 1.60 $\times$ 10^{-3} mm^2 /s (per-voxel relative difference 0% to 200%, mean 10.5%). Variation in ADC was largest in the posterior apex (0% to 200%, mean 11.6%). Difference in ADC variation between sextants was not statistically significant. Cancer ROIs' per-voxel variation in ADC ranged from 0.001 $\times$ 10^{-3} to 0.841 $\times$ 10^{-3} mm^2 /s (0% to 67.4%, mean 11.2%) and per-ROI variation ranged from 0 to 0.463 $\times$ 10^{-3} mm^2 /s (mean 0.122 $\times$ 10^{-3} mm^2 /s).

**Biography**

Ibrahim Karademir has completed his M.D. at the age of 25 years from Gulhane Military Medical Faculty and his radiology residency in the same institution 2007 to 2011. He had studied in University of Chicago in 2011-2012 on Prostate Imaging. He is working as a Radiologist in Eskisehir Military Hospital.

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