

Abstract Submitted
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3T Dynamic Contrast Enhanced Magnetic Resonance Imaging in Prostate Cancer – Comparison between Population-Averaged and Patient Specific Arterial Input Function¹ RAN MENG, BURKHARD MAEDLER, SILVIA CHANG, EDWARD JONES, LARRY GOLDENBERG, PIOTR KOZLOWSKI, UBC and VGH —

A population-averaged bi-exponential Arterial Input Function (AIF) has been commonly used to fit Dynamic Contrast Enhanced (DCE) MRI data to pharmacokinetic models. It has also been shown that patient specific AIF improves fit of prostate DCE MRI data to an adiabatic approximation model. In this pilot study, we compared the quality of fit of prostate DCE MRI data (acquired at 3T from two patients) to extended Kety model using the population-averaged AIF and patient specific AIF. Physiological parameters (K^{trans} —volume transfer constant, v_e —extra-cellular extra-vascular space and v_p —blood plasma volume) were calculated from tumor, peripheral zone and central gland of prostate. By comparing χ^2 of the fit with the two AIFs of a high enhancing voxel, we conclude that patient specific AIF provides more accurate pharmacokinetic modeling of prostate DCE MRI data in high enhancing areas than population-averaged AIF, thus patient specific AIF may result in more accurate detection of prostatic carcinoma.

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