Supplementary material for Borren A. et al. Accurate prostate tumour detection with multiparametric magnetic resonance imaging: Dependence on histological properties, Acta Oncologica, 2013;53:88–95.

Supplementary Appendix 1

T2w images were acquired with a fast spin-echo sequence, TR/TE = 8396/120 ms, echo train length 13, acquisition matrix 256 × 256, field of view (FOV) = 20 cm, slice thickness 3 mm, intersection gap 1 mm, number of slices 25.

Balanced TFE: TR/TE = 2.85/1.43 ms, acquisition matrix 192 × 249, FOV = 25 cm, slice thickness = 2 mm, number of slices 90. A six-element phased array coil (sense cardiac) was used as receive coil during the scans.

DWI scans were performed using a multislice single shot SE-EPI sequence (FOV = 38 cm, slice thickness = 3 mm, intersection gap = 1 mm, TR/TE = 5000/54 ms, acquisition matrix = 152 × 107, EPI-factor = 47, 9 averages, phase encoding direction = PA, SENSE factor = 2, b values 0, 300, 500, 1000 s/mm^2). ADC values were calculated after exclusion of the perfusion sensitive b = 0 data.

The DCE-MRI protocol consisted of a 3D spoiled gradient echo sequence (20 transverse slices, 2.5 mm slice thickness, TR/TE = 4/1 ms, flip angle 8°, FOV = 40 cm, acquisition matrix = 160 × 160). Scans were repeated 120 times at 2.4 s interval. A concentration of 0.1 ml/kg of Gadubutrol (1.0M) (Gadovist, Schering AG, Berlin, Germany) contrast was injected with 2 ml/s, followed by a saline flush. The tracer kinetics data were analysed with the Tofts model, as described in [13] and yielded 3D K^{trans} parameter maps. The absolute values of K^{trans} depend largely on the arterial input function (AIF). Several factors make accurate measurement of the AIF challenging: the non-linear relationship between signal and contrast agent concentration, T2*-effects at higher concentrations, B1-field inhomogeneities and inflow-artifacts [22–25]. Due to the extent of the measurement errors on the patient specific input functions, a generic AIF was used, derived from a separate group of patients for which a phase-based AIF was obtained [20]. However, as a result, absolute K^{trans} values may not be comparable between patients. To overcome this, all K^{trans} maps were scaled to the median K^{trans} value in the PZ. This results in dimensionless values of K^{trans} [min^{-1}/min^{-1}].