Concordance and inter-reader agreement for PIRADS v2.0 in bi-parametric versus multi-parametric prostate MRI approaches

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Abstract

Purpose: Biparametric prostate MRI is a desirable approach for screening purposes. A comparison of the concordance of biparametric prostate MRI compared to standard 3T multiparametric MRI is studied.

Methods and materials: 150 cases were retrospectively selected among multiparametric prostate MRI (mpPMRI), with a stratified randomized scheme based on PIRADS v2.0 categories distribution during 2015-2016. Anonymized cases were presented to three independent readers with 5-8 years of experience in prostate MRI. For bi-parametric evaluations, the same cases were used by extracting T2w y DWI series from the original mpPMRI, and presented in a random case sequence to the same readers after 6 weeks. Reader and inter-technique agreement was analyzed using weighted Kappa. 95%CI were estimated when feasible.

Results: Weighted kappa for the three readers was 0.69. The highest agreement was achieved among the most experienced readers, reaching 0.72. Agreement among the least experienced reader and the most experienced ones ranged from 0.680 and 0.675. Agreement for the reading of bi-parametric versus multi-parametric MRI was 0.79, corresponding to a high concordance.

Conclusion: Bi-parametric approach has a high concordance with multiparametric prostate MRI, with a high reader agreement among trained abdominal radiologists, with a fraction of scanner time. This method could aid in detecting lesions with a high confidence, and providing better selection for those that may require a further complete multiparametric MRI (e.g. prior to fusion biopsy of a suspicious lesion).