

Association between a 17-gene genomic prostate score and multiparametric prostate MRI in men with low- and intermediate-risk prostate cancer (PCa).

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Background: A biopsy-based RT-PCR assay (Oncotype DXProstate Assay) providing a Genomic Prostate Score (GPS) as a measure of tumor aggressiveness and multi-parametric prostate MRI (mpMRI) are clinically utilized predictors of adverse pathology at prostatectomy. These tests have not been directly compared and it remains to be determined whether they provide independent information. Methods: We evaluated the association between GPS results (scale 0-100) and baseline endorectal mpMRI in men with clinically localized PCa. MR studies were reviewed to a five-tier scale of increasing suspicion of malignancy. Mean apparent diffusion coefficient (ADC) was calculated from a single dominant lesion. Mean rank of the GPS (0-100) and GPS-predicted likelihood of favorable pathology among MRI strata were compared with the Kruskal-Wallis test. Regression analysis was performed between mean ADC and scaled GPS within CAPRA risk groups. Results: Of 332 patients who received GPS testing at a single institution, 94 were identified with low (n=59) and intermediate (n=35) CAPRA risk prostate cancer who received mpMRI within a two-year interval of prostate biopsy. A broad distribution of GPS was observed across categories defined by mpMRI criteria. Among intermediate risk patients both GPS and the GPS-predicted likelihood of favorable pathology were associated with MR score ($p=0.01$ and $p<0.01$, respectively). For low risk patients, neither GPS nor likelihood of favorable pathology were significantly different across MR findings ($p=0.12$ and $p=0.21$, respectively). Mean ADC was not significantly associated with GPS or likelihood of favorable pathology for either low ($p=0.24$) or intermediate ($p=0.91$) risk categories. Conclusions: While a broad distribution of GPS was observed across mpMRI criteria, increasing GPS was associated with highly suspicious MRI findings in men with intermediate risk PCa. No significant associations were observed between MRI categories and either GPS or likelihood of adverse pathology in low risk patients.