

Session/Poster#

Presenter

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Evaluation of Artificial Intelligence Algorithm For Automated Prostate Lesion Detection and Classification on Biparametric-MRI Using African American Patient Cohort

Objective: To evaluate the accuracy and efficacy of an automated artificial intelligence algorithm in detecting prostate cancer in African American men and compare its performance to a trained radiologist.

Methods and Materials: Sixty-eight AA men who underwent prostate biopsy within nine months of MRI were retrospectively included in our study from a community hospital in Brooklyn, NY from March 2017-April 2021. The sample was split into two test cohorts. Patient age, prostate specific antigen levels, MRI, and biopsy were analyzed using the automated algorithm. The results were compared to a trained radiologist's impression. The algorithm and the radiologist performance in correctly detecting prostate cancer was determined using biopsy data as the "gold standard" classifier. Accuracy was statistically evaluated using Area Under Curve. Secondary endpoints included sensitivity, specificity, positive predictive value, negative predictive value for radiologist and algorithm performance across both testing cohorts.

Results: In test cohort 1, the algorithm and radiologist Area Under Curve was 0.591 vs. 0.648, respectively ($p=0.716$). In test cohort 2, the algorithm and radiologist Area Under Curve was 0.586 vs. 0.548, respectively ($p=0.624$). Limitations included small sample size and no lesion location analysis.

Conclusions: There was no statistical difference in the Area Under Curve between the algorithm and radiologist in either cohort, however, the overall performance for both the radiologist and the algorithm was markedly lower in African American men compared to published literature on non-African American men.