Short Communication

iMedPub Journals
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Journal of Genomics & Gene Study

2021
Vol. 4 ISS. 2

Emerging genomic biomarkers for improving kidney, prostate, and bladder cancer health disparities outcomes

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Background

Recent advances in genomic and genetic technologies have facilitated better health outcomes for urologic cancer patients. Genomic and genetic heterogeneity may contribute to differences in tumor biology and urologic cancer burden across various populations.

Keywords

GenomicsKidneyProstateBladderUrologic cancer health disparities

Objective

To examine how emerging genomic and genetic biomarkers, self-reported race, and ancestry-informative markers are associated with kidney, prostate, and bladder cancer outcomes.

Results

Genomic and genetic alterations found in African American kidney cancer patients included distinct somatic mutations, somatic copy number alterations, chromosomal instability, germ-line risk alleles, and germ-line genetic variants. These changes correlated with improved risk prediction, prognosis, and survival; and a predicted decrease in response to targeted therapies. SNP risk alleles and ancestry-informative markers were associated with improved risk prediction in prostate cancer patients of both African and European descent. AKT activation suggest differential response to AKT-targeted therapies in African American, Asian American, and Tunisian bladder cancer patients. Both self-reported race and genetic ancestry predicted urologic cancer risk prediction.

Conclusion

Precision medicine approaches that integrate population-specific genomic and genetic information with other known urologic cancer-specific characteristics can improve outcomes and be leveraged to reduce cancer health disparities. Further investigations are necessary to identify novel genomic biomarkers with clinical utility.