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Data to Dialogue: Communicating Radiotherapy's Value to Advance Care

Understanding Demographic and Geographic Trends in DECIPHER Genomic Scores

Mathew D. Lin[1], Nirav S. Kapadia, MD, MS[2,3], James B. Yu, MD, MHS[2,3]

[1]Dartmouth Medical School, Hanover, NH; [2]Geisel School of Medicine at Dartmouth, Hanover, NH; [3]Department of Radiation Oncology and Applied Sciences, Dartmouth Cancer Center, Lebanon, NH

INTRODUCTION

The **Decipher Genomic Classifier (GC) score** is a 22-gene expression test that correlates with aggressive prostate cancer[1].

Given the quantitative and objective nature of the GC score, it is a useful tool for measuring potential differences in disease presentation and aggressiveness by patient age, race, practice setting (academic vs. community) and practice rurality. **Our study aims to clarify the trends in GC scores across these 4 variables.**

METHOD

Our cohort was defined by the following criteria:

- Within NIH SEER Decipher Prostate Genomic Classifier Database
- Have a numerically reported GC score (n=8,796)

If patients had more than 1 GC score, **then the first GC score was used for analysis as the presenting score.**

After defining our cohort, patients were further stratified by age (<50, 50-59, 60-69, 70-79, 80+), race (White, Black, Other), setting, and rurality.

Kruskal-Wallis was used to compare GC scores for age and race. Patients were excluded from analysis of racial identification if it was Unknown (n=295). Wilcoxon rank-sum was used to compare GC scores for practice setting and rurality.

For multivariate analysis, we estimated marginal means using the emmeans R package to compare race, practice setting and rurality, adjusting for age category.

RESULTS

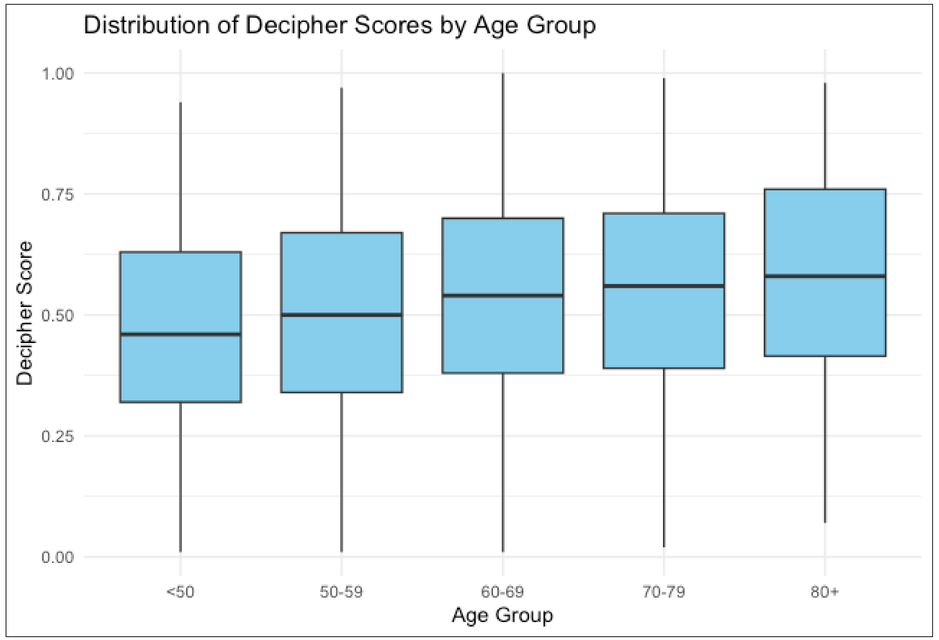


Figure 1

On univariate analysis, **median GC scores significantly increased with age** (<50: 0.46, 50-59: 0.50, 60-69: 0.54, 70-79: 0.56, 80+: 0.58, p<0.01, Figure 1).

There were **significant differences in median GC by practice** (Academic: 0.55, Community: 0.47, p<0.01) and rurality (Rural: 0.56, Urban: 0.54, p<0.01) setting, **but not by race** (White: 0.54, Black: 0.54, Other: 0.54, p>0.05, Table 1).

Differences in age-adjusted estimated marginal means by practice and geographic setting remained significant on multivariate analysis (Rural: 0.56, Urban: 0.53, p<0.01; Academic: 0.54, Community: 0.47, p<0.01, Table 1), and **differences in age-adjusted estimated marginal means by race remained insignificant** (White: 0.53, Black: 0.54, Other: 0.53, p>0.05, Table 1).

TABLE 1

Variable	Group	Univariate Median (IQR)	Univariate p-value	Age-Adjusted EMM (SE)	Multivariate p-value
Practice Setting	Academic	0.55 (0.330)	**<0.0001***	0.540 (0.0047)	**<0.0001***
	Community	0.47 (0.3075)		0.474 (0.0078)	
Geographic Setting	Rural	0.56 (0.33)	**<0.001***	0.558 (0.0089)	**<0.001***
	Urban	0.54 (0.32)		0.530 (0.0047)	
Race	White	0.54 (0.33)	0.88	0.534 (0.0048)	ns†
	Black	0.54 (0.29)		0.540 (0.0083)	
	Other	0.54 (0.31)		0.526 (0.0121)	

***Statistically significant at p < 0.05**

†All pairwise race comparisons were non-significant (p = 1.00 for all three contrasts).

Abbreviations: EMM, estimated marginal mean; SE, standard error; IQR, interquartile range.

Univariate comparisons used the Wilcoxon rank-sum test (two-group variables) or Kruskal-Wallis test with Dunn's post hoc pairwise comparisons (race, three groups). Multivariate estimates were derived from linear regression models adjusting for age group, with pairwise contrasts Bonferroni-corrected.

CONCLUSIONS

Our findings demonstrate a significant difference in GC score between age groups, practice and geographic settings, but not by race.

Our findings imply that older prostate cancer patients at academic and rurally located centers seem to present with more aggressive disease.

REFERENCES

1. Dalela D, Löppenberg B, Sood A, Sammon J, Abdollah F. Contemporary Role of the Decipher® Test in Prostate Cancer Management: Current Practice and Future Perspectives. Rev Urol. 2016;18(1):1-9.