The association of a 17-gene genomic prostate score with adverse surgical pathology and recurrence following surgery for localized prostate cancer (PCa): A comparison of African American and Caucasian patients.

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Background: Molecular assays can improve risk assessment for newly diagnosed PCa, but it is imperative to characterize assay performance in different racial groups, since tumor biology and clinical outcomes may vary. A racially diverse cohort of men (20% AA) with PCa in the Center for Prostate Disease Research multi-center national database was used to determine the association of GPS with outcomes in men treated with radical prostatectomy (RP) for localized PCa. Methods: Biopsy specimens from 431 men treated with RP for NCCN very low, low or intermediate risk PCa at 2 U.S. military medical centers were tested with a 17-gene RT-PCR assay to validate the association between GPS (scale 0-100) and 1) biochemical recurrence (BCR) following RP, and 2) adverse pathology (AP) at RP. BCR was defined as 2 successive PSA levels > 0.2 ng/mL. AP was defined as high-grade (primary Gleason pattern 4 or any pattern 5) and/or pT3 disease. Cox proportional hazards and logistic regression models were used. Results: GPS was obtained in 402 cases (93%), including 82 AA men. A broad range of GPS results was observed in both AA and CA men; GPS distributions were similar between AA (median GPS = 30.3; inter-quartile range (IQR): 23-38) and CA (median GPS = 30.3; IQR: 23-40); no correlation was observed between GPS and race (r = -0.04, p = 0.45). No differences in expression of individual genes or gene groups in the assay were observed between the two groups. In univariable analysis, PSA, biopsy GS and NCCN risk group were associated with BCR and AP, but race was not. The associations between GPS and clinical outcomes were similarly strong and statistically significant in both AA and CA men - BCR HR/20 GPS units = 3.0 (95% CI: 2.0-4.3) for CA vs. 3.5 (95% CI: 1.0-11.7) for AA; AP OR/20 units = 4.0 (95% CI: 2.6-6.6) for CA vs. 2.9 (95% CI: 1.2-7.6) for AA (p < 0.05 for all). Conclusions: In this cohort of patients treated in a health care system with equal access, clinical outcomes and the tumor biology measured by GPS were similar between AA and CA patients. GPS is a significant predictor of BCR and AP in men treated with RP for localized PCa in both AA and CA men.