African-American Race Is a Predictor of Seminal Vesicle Invasion After Radical Prostatectomy

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Abstract

African-American (AA) men have worse outcomes after definitive treatment for prostate cancer compared to Caucasian (CS) men. Whether this is due to differences in patterns of disease progression within the prostate gland itself it currently unknown. In this report we evaluated 1000+ men treated with radical prostatectomy and compared the pattern of disease progression by race. We showed that AA men had higher risk of seminal vesicle invasion when compared to CS men, even when both race had identical risk factors for disease recurrence. This phenomenon may contributor to worse outcomes in the AA population.

Introduction: The purpose of the study was to determine whether racial differences exist in the pattern of local disease progression among men treated with radical prostatectomy (RP) for localized prostate cancer (PCa), which is currently unknown. In this study we evaluated the pattern of adverse pathologic features in an identical cohort of African-American (AA) and Caucasian (CS) men with PCa. **Patients and Methods:** The overall cohort consisted of 1104 men (224 AA, and 880 CS) who underwent RP between 1990 and 2012. We compared preoperative factors and pathologic outcomes after RP across race groups. Multivariate analysis was used to identify factors predictive of adverse pathologic outcomes. The effect of race on adverse pathologic outcomes and biochemical control rate (BCR) was evaluated using multivariate regression model and Kaplan–Meier analysis. **Results:** The 10-year BCR was 59% versus 82% in AA and CS men, respectively ($P = .003$). There was no significant difference in extraprostatic spread ($P = .14$), positive surgical margin ($P = .81$), lymph node involvement ($P = .71$), or adverse pathologic features ($P = .16$) across race groups. However, among patients with ≥ 1 adverse pathologic features, AA men had higher rate of seminal vesicle invasion (SVI) compared with CS men (51% vs. 30%; $P = .01$). After adjusting for known predictors of adverse pathologic features AA race remained a predictor of SVI. **Conclusion:** AA men have an increased risk of SVI after RP, particularly among men with Gleason ≤ 6 disease. This might represent racial differences in the biology of PCa disease progression, which contribute to poorer outcomes in AA men.

Clinical Genitourinary Cancer, Vol. 13, No. 2, e65-72
Keywords: Adverse pathologic features invasion, African-American, Biochemical failure, Black men, Disparities, Prostate cancer, Seminal vesicle invasion

Introduction

African-American (AA) men are known to experience greater incidence of and mortality from prostate cancer (PCa) than their Caucasian (CS) counterparts.[1] AA men often present with higher Gleason score (GS) and clinical stage of disease at the time of diagnosis.[2-4] A number of studies that evaluated outcomes after radical prostatectomy according to race have consistently reported a greater rate of adverse pathologic features among AA men.[2,3,5] These adverse features include higher pathologic GS, positive surgical margins (SMs), seminal vesicle invasion (SVI), extraprostatic extension (EPE), and lymph node involvement (LNI). Other studies have reported worse biochemical control rate (BCR) in AA

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Submitted: Jun 9, 2014; Revised: Aug 18, 2014; Accepted: Aug 25, 2014; Epub: Oct 25, 2014

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1558-7673/$ - see frontmatter
http://dx.doi.org/10.1016/j.clgc.2014.08.012

men despite favorable pathologic features after radical prostatectomy (RP). A study from the Shared Equal Access Regional Cancer Hospital (SEARCH) database showed that despite early clinical stage presentation and similar pathologic characteristics AA men were at a slightly increased risk of biochemical disease recurrence.[6] A relatively large study on results from the SEARCH and the Duke Prostate Center databases also showed that despite favorable clinical or pathological staging and low-risk disease at the time of

Table 1 Pretreatment Characteristics and Pathologic Outcomes of a Cohort of Prostate Cancer Patients Who Underwent Radical Prostatectomy at the University of Pennsylvania, From 1990 to 2012

Variable	Caucasian Cohort; n = 880	%	African-American Cohort; n = 224	%	*P*
Age, Years					.05
Median	60		59		
Mean	59.3		58.3		
IQR	55-64		53-63		
iPSA, ng/mL					**<.001**
0-4.0	231	27	54	25	
4.1-10	548	63	126	57	
10.1-20	78	9	24	11	
>20	12	1	15	7	
Median	5		5.2		
Mean	5.7		6.67		
IQR	4-6.4		4.1-8.1		
Clinical Stage					.25
T1A-C	653	81	184	84	
T2A	121	15	27	12	
T2B	12	2	6	3	
T2C	18	2	2	1	
Clinical Gleason Score					**<.001**
≤6	683	82	133	61	
7	108	13	70	32	
8-10	39	5	15	7	
Pathologic Gleason Score					**<.001**
≤6	472	54	87	39	
7	366	41	120	54	
8-10	42	5	17	7	
Gleason Score Upgrade	260	31	69	32	.93
Nodal Status					.7
pN0	858	99	212	100	
pN1	6	0.7	1	0.4	
Seminal Vesicle Invasion	41	5	23	10	**.001**
Extracapsular Spread	198	23	61	27	.14
Positive Surgical Margin	148	17	39	18	.81
Year of Prostatectomy					.64
Median	2004		2005		
Mean	2004		2004.2		
IQR	2000-2008		2001-2008		
Radiotherapy	13	1.5	9	4	.016
ADT	44	5	7	3	.22
Body Mass Index					**<.001**
<30	510	65	107	50	
≥30	279	35	107	50	

Bold values represent statistically significant differences between groups.
Abbreviations: ADT = androgen deprivation therapy; iPSA = initial prostate-specific antigen; IQR = interquartile range.