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Original article

Clinicopathological characteristics and outcomes of surgically excised renal masses in African Americans

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Abstract

Objectives: In the present study, we report on the clinical and pathological characteristics of African American (AA) patients with surgically excised renal masses and assess the associations between race and oncological outcomes.

Methods and materials: We conducted a retrospective review of patients who underwent partial or radical nephrectomy for renal masses at our institution between 2000 and 2010. Patients were divided into 2 groups based on self-reported race: AA and non-AA. Patient demographics and disease characteristics, and overall, cancer-specific, recurrence-free, distant, and local recurrence-free survival for localized renal cell carcinoma (RCC) were compared between AA and non-AA patients. Multivariable proportional hazard analyses were used to assess the associations of race with oncological outcomes.

Results: A total of 1,467 patients, of whom 359 (24.5%) were AA, were included. Rates of benign disease were comparable between AA patients and non-AA (18.2% vs. 17.6%, $P = 0.556$). AA patients presented with higher rates of localized disease (83% vs. 71%, $P < 0.001$). Papillary subtype accounted for 40.8% of RCCs in AA patients compared with 11.6% in non-AA patients ($P < 0.001$). The high proportion of papillary RCC in AA patients was maintained across disease stages. On univariable analyses, AA patients had better recurrence-free and cancer-specific survival. On multivariable analyses, AA race was not a significant predictor of oncological outcomes after adjusting for patient and disease characteristics.

Conclusion: In this study, AA patients presented with more localized disease than non-AA patients, whereas rates of benign disease were comparable between the groups. Furthermore, AA patients had roughly 3 times higher rates of papillary RCC across disease stages. On univariable analyses, AA patients appeared to have more favorable oncological outcomes. However, this association is likely explained by tumor stage, grade, and histology as outcomes were similar across races when the analyses were adjusted for these and other characteristics. Published by Elsevier Inc.

Keywords: African American; Race; Renal mass; Survival; Renal cell carcinoma; Oncological outcomes

1. Introduction

The incidence of kidney cancer has steadily increased in recent years with an estimated 65,000 new cases to be diagnosed in 2013 [1]. This increased rate has been characterized by an overall higher incidence of localized renal cell carcinoma (RCC). In particular, incidence rates of kidney cancer in African Americans (AAs) have surpassed those of other ethnical backgrounds in the United States in recent decades [1,2].

Although the rising incidence of RCC is higher in AA patients, available reports on oncological outcomes have yielded conflicting results [3–7]. Furthermore, there is a paucity of data on the clinicopathological features of renal masses in AA patients [3–6,8–10]. Moreover, many of these prior reports lacked detail regarding patient demographic and disease characteristics, limiting the depth of analyses.

In the present study, we report the clinical and pathological characteristics of AA patients with renal masses and analyze the associations between race and oncological outcomes, namely recurrence-free, cancer-specific, and overall survival in a contemporary and diverse cohort of patients.

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2. Methods and materials

After approval from the institutional review board, we conducted a retrospective review of records of patients undergoing surgical treatment for renal masses at our institution between 2000 and 2010. Only patients who underwent partial or radical nephrectomy for renal masses were included in the present study. Patients treated with ablative therapies were excluded.

The following variables were retrieved: demographics (age and gender), pathological (tumor stage, node stage, pathological tumor size, lymph node involvement, final pathological diagnosis, histology, and Fuhrman grade), and follow-up (duration, recurrence, and cause of death). Patients with multiple, synchronous tumors were analyzed according to their index tumor, defined as the tumor with the most aggressive pathological features. Although metachronous tumors were treated as local recurrence, these were usually de novo tumors and not related to the original excised cancer. The cohort was stratified into 2 groups based on self-reported racial background: AA and non-AA. The AJCC 7th edition was used for staging [11]. Disease stages were categorized into localized (organ-confined and T1a–T2b), locally advanced (T3a–T4 or N+ or both), and metastatic (T_{any}, N_{any}, and M+). RCC histotypes were classified as clear cell, papillary, or other. Benign histologies were recorded as oncocytoma, angiomyolipoma, or other. They were categorized as Fuhrman grade low (grades 1–2), 3, and 4.

Table 1
Demographic and disease characteristics between African American and non-African American patients

Variable	Entire cohort	African American	Non-African American	*P*-value
Number	1,467	359	1,108	
Age, y	61 (52–68)	60 (51–67)	61 (52–69)	0.019
Gender				0.003
Male	882 (60%)	191 (53%)	691 (62%)	
Female	585 (40%)	168 (47%)	417 (38%)	
Procedure type				0.291
Partial nephrectomy	579 (39.5%)	133 (37%)	446 (40.3%)	
Radical nephrectomy	888 (60.5%)	226 (63%)	662 (59.7%)	
Hematuria/flank pain	276 (19%)	70 (19.5%)	206 (18.6%)	1.000
Disease stage				<0.001
Localized disease	897 (74%)	242 (83%)	655 (71%)	
Locally advanced disease	180 (15%)	32 (11%)	148 (16%)	
Metastatic disease	140 (12%)	19 (6%)	121 (13%)	
T stage				0.003
T1a	540 (45%)	152 (52.2%)	388 (42.7%)	
T1b	257 (21%)	68 (23.4%)	189 (20.8%)	
T2a and b	147 (12%)	30 (10.3%)	117 (12.9%)	
T3a–c	223 (19%)	35 (12.0%)	188 (20.7%)	
T4	32 (3%)	6 (2.1%)	26 (2.8%)	
N+	68 (5%)	11 (3%)	57 (5%)	0.138
Pathology				0.556
Benign disease	236 (17.8%)	62 (18.2%)	174 (17.6%)	
RCC	1,073 (80.7%)	272 (79.8%)	801 (81.1%)	
Other malignant	20 (1.5%)	7 (2.1%)	13 (1.3%)	
Benign pathology				0.353
Oncocytoma	90 (38.1%)	19 (30.6%)	71 (40.8%)	
AML	61 (25.8%)	18 (29.0%)	43 (24.7%)	
Other	85 (36.0%)	25 (40.3%)	60 (34.5%)	
Histotype (RCC)				<0.001
Papillary	224 (18.6%)	118 (40.8%)	106 (11.6%)	
Clear cell	910 (75.5%)	153 (52.9%)	757 (82.6%)	
Other	72 (6.0%)	18 (6.2%)	54 (5.9%)	
Fuhrman grade				0.035
1 and 2	881 (73.6%)	228 (79.2%)	653 (71.8%)	
3	227 (19.0%)	46 (16.0%)	181 (19.9%)	
4	89 (7.4%)	14 (4.9%)	75 (8.3%)	

N+ = positive lymph nodes; AML = angiomyolipoma.