

Racial Disparities in Histology and Short-Term Renal Functional Outcomes Following Robotic Nephron-Sparing Surgery

Julie C. Wang,¹ Weil R. Lai,¹ Elizabeth J. Traore,¹ James Liu,¹ Andrew B. Sholl,² Sree Harsha Mandava,¹ Michael M. Maddox,¹ Gregory C. Mitchell,¹ Sarayuth Viriyasiripong,¹ Jonathan L. Silberstein,¹ Rick Kittles,³ Benjamin R. Lee³

Abstract

To identify variations in renal function and histology between Caucasian Americans (CA) and African Americans (AA) undergoing robotic nephron-sparing surgery (NSS), a retrospective chart review was performed on patients who underwent NSS. Postoperatively, AA experienced a greater increase in serum creatinine. Final histology demonstrated greater incidence of papillary renal cell carcinoma in AA and increased likelihood for type II papillary renal cell carcinoma, a more aggressive histology.

Purpose: To identify variations in renal function and histology between Caucasian Americans (CA) and African Americans (AA) undergoing robotic nephron-sparing surgery (NSS). **Methods:** A retrospective chart review was performed on patients who underwent NSS. Multivariate analysis identified factors affecting postoperative estimated glomerular filtration rate (eGFR). Histology was re-reviewed by pathology to confirm papillary type. **Results:** A total of 331 patients underwent NSS: CA (n = 212), AA (n = 105), Hispanic (n = 10), and other (n = 4). AA average age (60.1 years) was lower than CA (62.3 years) ($P < .001$), with a higher proportion of AA women (46%) than CA (37%) ($P = .021$). AA had a higher incidence of diabetes (58.2%) and hypertension (93.9%). Preoperative average eGFR was similar: 70.35 mL/min for AA versus 69.06 mL/min for CA. Average postoperative eGFR was 50.59 mL/min for AA and 57.85 mL/min for CA. Postoperative creatinine increased more in AA (0.44 mg/dL) versus CA (0.33 mg/dL) ($P < .001$) even when stratified by pathological stage. Clear cell renal cell carcinoma (RCC) was the most common histology with AA (45%) and CA (60%). A greater than 2-fold higher incidence of papillary RCC was observed in AA (31%) versus CA (13%). AA exhibited a greater proportion of high-grade or type 2 papillary RCC (40% and 30%) versus CA (25% and 13%). **Conclusions:** AA patients were treated at a younger age, with a larger proportion of women. Postoperatively, AA experienced a greater increase in serum creatinine. Final histology demonstrated greater papillary RCC incidence in AA and increased likelihood for type 2 papillary RCC, a more aggressive histology.

Clinical Genitourinary Cancer, Vol. ■, No. ■, ■-■ © 2016 Published by Elsevier Inc.

Keywords: Nephron sparing surgery, Papillary, Pathology, Renal cell carcinoma, Robotic Partial Nephrectomy

Introduction

Kidney and renal malignancy continues to be a significant urologic malady in the United States, ranking as 7th in cancer incidence and 10th in cancer mortality, for which most tumors are

renal cell carcinoma (RCC).¹ In past decades, RCC has risen significantly for both sexes, with a more prominent increase observed in the African American (AA) population,² a subset that the Centers for Disease Control and Prevention reports makes up 13.2% of the US population.³ In 2003, a Surveillance, Epidemiology, and End Results (SEER) database study including 40,785 cases of kidney cancer showed that AA patients experienced a greater incidence in localized disease of 4.46% for patients ages 20 to 59 years, and 4.35% for patients 60 years and older when compared with Caucasian Americans (CA).⁴ Several follow-up studies have since shown that AA patients have poorer survival time when compared with CA patients with a similar localized

¹Department of Urology

²Department of Pathology, Tulane University School of Medicine, New Orleans, LA

³Division of Urology, University of Arizona College of Medicine, Tucson, AZ

Submitted: May 16, 2016; Revised: Jul 14, 2016; Accepted: Jul 17, 2016

Address for correspondence: Benjamin R. Lee, MD, Professor and Chief, Division of Urology, University of Arizona College of Medicine, Tucson, AZ 85724
E-mail contact: brlee@surgery.arizona.edu

Racial Disparities in Renal Cell Carcinoma

disease.⁴⁻⁶ Possible explanations for this racial disparity include differences in risk factors, including hypertension, family and genetic history, environmental factors, and socioeconomic and racial norms.^{5,6} However, studies that have attempted to normalize and eliminate these confounding risk factors have continued to find worse prognosis for AA patients with renal disease.⁶ Paradoxically, even when cancer is found earlier and with a smaller tumor size in AA patients, there appears to be a decreased survival time when compared with CA patients.^{5,6} Likewise, CA patients are more likely to be diagnosed with clear cell RCC, a traditionally more malignant tumor associated with greater mortality.⁷

Treatment for renal masses has evolved from open radical nephrectomy to minimally invasive nephron-sparing surgery (NSS) modalities.^{8,9} Studies comparing partial nephrectomy and radical nephrectomy for cT1b lesions demonstrate similar overall mortality rates between partial nephrectomy versus radical nephrectomy.¹⁰ Therefore, current American Urological Association (AUA) Guidelines for small renal masses recommend NSS whenever technically possible.

The aim of this study was to investigate differences in preoperative factors and intraoperative and postoperative outcomes between AA and CA patients undergoing NSS at a single institution.

Materials and Methods

After institutional review board approval (number 142291), we performed a retrospective study to review patients at a single institution who underwent robotic NSS from July 2008 to March 2015. Informed consent was obtained from all individual participants included in the study. We collected preoperative, intraoperative, and postoperative data. Pathologic review was conducted that confirmed diagnosis of RCC histology and reviewed all surgical specimens according to World Health Organization 2004 classification of renal tumors. Histology was categorized into clear cell, papillary, and chromophobe subtypes. Papillary RCC was then re-reviewed by a single pathologist to confirm papillary type 1 versus type 2 histology.

Surgical stage was categorized according to the 2010 American Joint Committee on Cancer guidelines. Additional information, such as age at presentation, body mass index, race, ischemic time, tumor diameter, preoperative and postoperative renal function including creatinine and estimated glomerular filtration rate (eGFR), diabetes, gender, and histology, was identified.

Data analysis was performed using R version 3.2.3 (Vienna, Austria). For continuous variables, comparisons of means were carried out with the Welch 2-sample *t*-test. For categorical variables, comparisons of proportions were carried out with the Pearson χ^2 test. Comparisons of nonparametric samples were carried out with the Mann-Whitney *U* test. Multivariate analysis was carried out with logistic regression for histologic outcomes and with linear regression for postoperative eGFR outcomes. Statistical significance was defined at $P < .05$.

Results

We identified 331 patients who underwent robotic NSS at our institution over the past 7 years. Of that group, 212 were CA (64%), 105 were AA (32%), 10 Hispanic (3%), and 4 identified themselves with another ethnic group (1%). The patients who

identified themselves as Hispanic and with another ethnic group were excluded from the analysis. Some significant differences in patient demographics were observed between CA and AA patients, as shown in Table 1. There was a difference in the average age of patients undergoing NSS, with 60.1 years of age for AA patients and 62.3 years for CA patients ($P < .001$). A significantly greater proportion of the AA cohort was female (45), representing 46% of the AA cohort, and 78 patients of the CA cohort were females, representing 37% ($P = .021$). The average body mass indices (BMI) for both groups were similar as shown in Table 1. Although a greater proportion of AA patients (41.8%) than CA patients (24.8%) presented with diabetes mellitus, it did not significantly affect postoperative eGFR ($P = .429$). On multivariate analyses, none of the patient demographics were significantly associated with postoperative eGFR.

The average tumor diameter was 3.26 cm for CA patients and 3.19 cm for AA patients. The maximum tumor diameter in these nephron-sparing patients for the CA group was 11.5 cm and 7.8 cm for AA patients. The average ischemia time for both groups was similar: 20.31 minutes for CA patients and 20.13 for AA patients. The average hospital length of stay was also similar for both groups, 2.42 days for CA patients and 2.55 days for AA patients.

Preoperative renal function was not statistically significant, with an average serum creatinine of 1.2 mg/dL in the AA group and 1.1 in the CA group. This correlated with an average eGFR of 70.35 mL/min for AA patients and 69.06 mL/min for CA patients, preoperatively. The average postoperative eGFR was 50.59 mL/min for AA patients and 57.85 mL/min for CA patients, and was statistically different ($P < .001$). A greater absolute value of increase in serum creatinine was seen postoperatively in AA versus CA patients: 0.44 mg/dL versus 0.33 mg/dL, respectively ($P < .001$). On multivariate analyses, the difference in serum creatinine was significantly associated with greater age ($P < .001$), AA status ($P < .001$), postoperative hemoglobin on the day of hospital discharge ($P = .012$), and greater warm ischemia time ($P = .001$).

Of the 286 cases that exhibited RCC, 16 patients demonstrated positive margins, demonstrating a 5.5% positive margin rate. There was no difference in positive margin rate between AA and CA

Table 1 Baseline Characteristics of African American and Caucasian Patient Populations Undergoing Nephron-Sparing Surgery

	AA (n = 105)	Caucasian (n = 212)	P
Age (years)	60.1	62.3	<.001
BMI	30.1 (range, 16-56)	31.7 (range, 16-71)	.162
Proportion of patients with diabetes (%)	58.2	24.9	<.001
Proportion of patients with hypertension (%)	93.9	26.8	<.001
Creatinine (preop)	1.15	1.15	.930
eGFR (preop)	70.35	69.06	.250
Diameter of primary tumor, largest (cm)	3.26	3.44	.300

Abbreviations: AA = African American; BMI = body mass index; eGFR = estimated glomerular filtration rate; preop = preoperative.

Download English Version:

<https://daneshyari.com/en/article/5581223>

Download Persian Version:

<https://daneshyari.com/article/5581223>

[Daneshyari.com](https://daneshyari.com)