Differences at Presentation and Treatment of Testicular Cancer in Hispanic Men: Institutional and National Hospital-based Analyses

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OBJECTIVE To describe epidemiologic patterns, stage at presentation, histology, and treatment differences associated with Hispanic men diagnosed with testicular germ cell tumor (TGCT). Hispanics are the fastest growing demographic in the United States and reports suggest that the incidence of TGCT is rising most rapidly in this demographic, yet little is known about TGCTs in Hispanic patients.

MATERIALS AND METHODS We compared patient factors, tumor characteristics, treatment patterns, and outcomes of non-Hispanic white (NHW) vs Hispanic patients at our own institution in North Texas from 2010 to 2016. The findings were corroborated by analyzing the National Cancer Database testicular cancer registry from 2004 to 2014.

RESULTS We identified 154 patients with TGCT at our institution, of which 89 were NHW (56.0%) and 65 were Hispanic (40.9%). A review of the National Cancer Database identified 49,607 NHW patients (81.5%) and 6724 Hispanic patients (11.0%) diagnosed with TGCT. At presentation, Hispanic patients were approximately 5 years younger than NHW patients, delay seeking care for testicular cancer, were more likely to have nonseminomatous histology, had a larger tumor size, and had a higher disease burden at presentation. Additionally, we identified differences in treatment patterns at the national level.

CONCLUSION Differences in outcomes and treatment patterns of Hispanic and NHW patients with TGCT may represent underlying socioeconomic issues and access to care; however, discrepancies in age of onset and histology of TGCT between Hispanic and NHW patients may signify differences in tumor biology or risk factors. We suggest that this possibility be explored further as we embark upon the genomic classification of TGCT. UROLOGY ■■: ■■–■■, 2017. © 2017 Elsevier Inc.

Testicular germ cell tumors (TGCTs) are the most common solid malignancy in young men between the ages of 20 and 35 years in the United States,[1] and the rate of TGCT diagnosis in the United States and in other Western countries appears to be increasing over the past several decades.[2] Hispanics are the fastest-growing demographic group in the United States, accounting for more than half of the total US population growth in the past decade,[3] and recent studies indicate that rates of TGCT are rising most quickly in Hispanics.[4-6] There is limited information on TGCT in Hispanic men, and most of the preliminary genomic assessments of TGCT are being performed in a predominantly white patient population.[7] Given the complex links between race, tumor biology, socioeconomic factors, and oncological outcomes, we sought to explore the burden of TGCT on Hispanic patients at our institution in North Texas—a region with a significant native born and immigrant Hispanic population—and validate our observations a nationwide, hospital-based tumor registry.

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MATERIALS AND METHODS

Institutional Cohort

With institutional review board approval, our institution (University of Texas Southwestern Medical Center) was queried from 2010 to 2016 for all patients diagnosed with TGCT. Our medical center consists of both a large, urban university and a county hospital. Given its location in North Texas, there is a large proportion of Hispanic patients, both native born and immigrant. We sought to examine the differences in presentation, histology, treatment, and outcomes in patients with TGCT based on patient self-identified race and ethnicity with a focus on Hispanic men compared with non-Hispanic white (NHW) men. We examined variables including age at presentation, comorbidity status, hospital type at presentation, the presentation setting (office or clinic, emergency department, or outside facility), insurance status, symptoms at presentation, delay in presentation and initial diagnosis, stage at presentation, histopathologic features, and International Germ Cell Cancer Collaborative Group (IGCCCG) risk grouping.[8]

National Cancer Database Cohort

The National Cancer Database (NCDB) was queried from 2004 to 2014. The NCDB is a hospital-based tumor registry sponsored by the American College of Surgeons and the American Cancer Society, which captures approximately 71% of all cancer diagnoses from over 1500 Commission on Cancer accredited facilities in the United States and in Puerto Rico.[9,10] We restricted our analysis to TGCTs based on International Classification of Disease for Oncology, third edition codes 9060-9102. Patients with nontesticular cancers, spermatocytic seminoma, or sex cord-stromal tumors were excluded. The NCDB defines race and ethnicity separately, with race divided into white, black, American Indian, Aleutian, Eskimo, or numerous Asian races, whereas ethnicity is defined as non-Hispanic or Hispanic. Patients with Hispanic ethnicity could be racially categorized as either white or black. For the purposes of this analysis, race and ethnicity were combined into 1 categorical variable; which we defined as NHW, black (Hispanic or non-Hispanic), Hispanic (non-black), Asian (including American Indian, Aleutian, or Eskimo), other, and unknown. We excluded patients with black, Asian, other, and unknown race and ethnicity from our analysis.

IGCCCG risk classification is not explicitly stated in the NCDB but can be inferred. Clinical staging is variably recorded as M1 (not otherwise specified) or, more specifically, M1a (nonregional nodal or pulmonary metastasis) or M1b (nonpulmonary visceral metastasis). Patients classified as M1 (not otherwise specified) were excluded from IGCCCG risk classification. For seminoma, patients with clinical node-positive disease (not including M1b disease) or M1a were categorized as "good risk," whereas those with M1b disease were categorized as "intermediate risk." For nonseminomatous germ cell tumor (NSGCT), the serum tumor marker status was incorporated. Patients classified as M1 (not otherwise specified) or those without recorded serum tumor marker status were excluded. The NCDB is a testicular cancer registry rather than a germ cell tumor registry; thus, all patients had primary testicular tumors rather than extragonadal germ cell tumors, and the lack of a variable defining "mediastinal primary" germ cell tumor did not influence our categorization of poor-risk patients with NSGCT.

Treatment was defined both by variables explicitly defined in the NCDB and by inferences from available data. Performance of retroperitoneal lymph node dissection (RPLND) was recorded in the NCDB variable designating the performance of regional lymph node surgery. Treatment with chemotherapy or radiation is recorded in the NCDB. The absence of chemotherapy, radiation treatment, or RPLND for stage IA or IB NSGCT or seminoma was defined as "surveillance." For stage II or III NSGCT, we assessed for the performance of postchemotherapy RPLND (PC-RPLND). This analysis included only patients treated with primary chemotherapy, defined as multiagent chemotherapy within 60 days of diagnosis. Patients treated after 60 days were excluded as this could represent a salvage regimen. Patients who underwent regional lymph node surgery following primary chemotherapy were categorized as having undergone PC-RPLND, whereas patients who did not were categorized as having undergone surveillance following chemotherapy.

Using the NCDB, we analyzed the impact of patient race and ethnicity, age, comorbidity,[11] as well as socioeconomic factors on disease presentation, management, and outcomes. Although the NCDB does report on geographic location and facility type (ie, academic vs community hospital), these data were censored for patients <40 years old because of confidentiality concerns. Therefore, we excluded these parameters in TGCT, which most commonly afflicts young men. Additionally, we reviewed the impact of race and ethnicity on national practice patterns for TGCT in areas of controversy. These include management of stage IA or IB seminoma, management of stage IA or IB NSGCT, and use of PC-RPLND for stage II or III NSGCT.[12-14]

Statistical Analysis

Statistical analysis was performed on IBM SPSS Statistics, Version 22.0 (IBM Corporation, Armonk, NY). Means and standard deviations or median and interquartile ranges (IQRs) were reported for normally or non-normally distributed continuous variables, respectively. Categorical and ordinal variables were presented as proportions. The covariates between Hispanic and NHW patients were compared utilizing the χ^2 test for categorical values, the Mann-Whitney *U* test was used for ordinal variables and continuous median comparison, and the independent samples *t* test was used for continuous mean comparisons. For the NCDB cohort, the impact of covariates on overall survival was estimated by univariate and multivariate Cox regression analyses. Statistical tests were 2 sided, and *P* values of <.05 were considered significant.

RESULTS

Institutional Data

From 2010 to 2016, we identified 171 patients diagnosed with testicular tumors; of these patients, we excluded nonprimary testicular cancers (n = 6) and sex cord-stromal tumors (n = 6). A total of 89 patients were NHW (56.0%), 65 patients were Hispanic (40.9%), 3 patients were black (1.9%), and 2 patients were Asian (1.3%). For comparison purposes, we included NHW or Hispanic patients, resulting in 154 patients in our cohort for analysis.

There was no difference in the prevalence of risk factors for TGCT (history of cryptorchidism, infertility, marijuana use, and familial history of testicular cancer) between NHW and Hispanic patients (Table 1). However, Hispanic patients were significantly younger at presentation than NHW patients; 29.9 ± 8.9 years vs 34.0 ± 11.2 (*P* <.001), more likely to be underinsured or uninsured (80% vs 25.8%, *P* <.001), more likely to present through the