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Racial disparities in treatment and survival of hepatocellular carcinoma in native Americans and Hispanics

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Abstract

BACKGROUND: We investigated if there were any differences in disease presentation and survival between the 3 major ethnicities in New Mexico; non-Hispanic whites (NHW), native Americans (NA), and Hispanics (H).

METHODS: A retrospective analysis of patients with hepatocellular carcinoma treated at our institution between 2000 and 2014 was performed. Overall survival was analyzed using the Kaplan–Meier and Cox regression models.

RESULTS: We identified 326 patients; 106 (32.5%) NHW, 183 (56.1%) H, and 37 (11.4%) NA. No difference in disease stage, resectability, rate of offering surgery, or chemotherapy was found. Advanced cirrhosis was more common in H and NA than NHW ($P = .01$). NA had a higher incidence of nonviral hepatocellular carcinoma ($P = .0009$). NHW were more likely to receive transarterial chemoembolization/radiofrequency than NA or H ($P = .04$). Median survivals for NA, NHW, H were 24, 14, and 11 months, respectively, ($P = .01$).

CONCLUSIONS: Although there was no difference in disease stage or resectability, NA and H had more advanced cirrhosis and were less likely to undergo transarterial chemoembolization and/or radiofrequency than NHW. NA had the best survival, whereas H had the worst survival.

The incidence of hepatocellular carcinoma (HCC) is rising in the United States and worldwide, and the disease continues to have a dismal prognosis with an overall 5-year survival of 6%.[1] In patients with earlier stage of disease, however, survival is improved up to 50% at 5 years by potentially curative therapy including surgical resection, liver transplant, and loco-regional therapy.[1,2] Racial variation in the survival has been reported. Using the Surveillance, Epidemiology, and End-Results registries (SEER) database, Davila et al showed that African-Americans and Hispanics were less likely to receive therapy for HCC. In that study, Hispanics had the highest mortality risk from the disease, whereas Asian patients had the lowest.[3] Mathur et al showed that there was no difference in the survival between whites and Hispanics when accounting for stage and therapy used; however, African-Americans had a persistently poor survival.[4] In

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another study by Jan et al, African-Americans with HCC were more likely to have hepatitis C and less likely to have insurance when compared with whites. Despite this, there was no difference in survival between the 2 groups.[5] Studies from the SEER database also showed that Asians and African-Americans were less likely to receive liver transplantation for HCC.[6]

Patterns of HCC treatment and survival in native Americans have been studied less extensively. Suryaprasad et al showed that native Americans have higher mortality from chronic liver disease and HCC than the rest of the population. Cirrhosis-attributed deaths among native Americans were associated with alcoholic liver disease in 52.6%, Hepatitis C infection in 10.7%, and Hepatitis B infection in 1% of cases.[7] Furthermore, a Center for Disease Control (CDC) study in 2008 showed that age-adjusted alcohol-attributed death rate for native Americans was approximately twice that of the US general population.[8]

The State of New Mexico has the highest percentage of Hispanics (47.7%) and the second-highest percentage of native Americans (10.4%) in the United States (Source US Census Bureau: State and County QuickFacts), creating an opportunity to study HCC in these populations. The annual incidence of HCC in New Mexico is 2 per 100,000 according to a report by Davila et al. In this 2006 report, 44% of HCC patients are non-Hispanic whites, another 44% are Hispanics, and 9% are native Americans.[9] We hypothesized that racial disparities existed in the presentation patterns, therapies given, and overall survival (OS) in patients with HCC.

Methods

After obtaining Institutional Review Board approval, a retrospective analysis of all patients with HCC who were treated at our NCI-comprehensive cancer center was performed. Patients from one of the self-identified 3 major ethnic groups in the state of New Mexico; non-Hispanic whites (NHW), Hispanics (H), or native Americans (NA) were selected for the study. There was insufficient number of patients from other ethnicities for the analysis, and they were excluded.

Patients' demographics, etiology of cirrhosis, Child-Pugh classification, AJCC Version 7.0 stage at diagnosis, treatments offered and received were analyzed using analysis of variance for continuous variables and Chi-squared test for categorical values with P value less than .05 considered statistically significant.

Technical resectability was defined by the absence of extrahepatic disease, an adequate future liver remnant, and no tumor involvement of the portal vein or vena cava. The rate of offering surgery was also studied in patients with technically resectable disease, and the reasons behind not offering surgery were also recorded. These included decompensated cirrhosis and portal hypertension that would render hepatectomy unsafe. We follow the National Comprehensive Network treatment guidelines for consideration of liver transplantation; however, it is not available in New Mexico and potential candidates are referred out of state. These patients were not included in our analysis. The contraindications for interventional radiologic (IR) treatment were Child C cirrhosis and the presence of extrahepatic metastasis. Charlson Comorbidity Index scoring was used to objectively classify patients' comorbidities.

The OS was compared using the Kaplan–Meier curves with SPSS Version 14.0 (SPSS, Chicago, IL). Cox regression models were performed to calculate the hazard ratio and 95% confidence intervals. Multivariable analysis was performed using the SAS software (SAS Institute, Cary, NC).

Results

We identified 326 patients during the study period. There were 106 (32.5%) non-Hispanic whites (NHW), 183 (56.1%) Hispanics (H), and 37 (11.4%) native Americans (NA) (Table 1). There was no difference in the mean age at the time of diagnosis between the 3 groups (59 for NHW vs 59 for H vs 61 years for NA, $P = .28$). Although male predominance was present in NHW (83.9%) and H (81.9%), NA had a more even sex distribution with only 56.7% of patients being males ($P = .02$).

Decompensated cirrhosis (Child B/C) was more common in H (58.5%) and NA (59.5%) than NHW (41.5%; $P = .01$). NA had a higher incidence of nonviral HCC when compared with NHW and H (NA 62.2% vs NHW 30.2% vs H 31.7%, $P = .0009$). Nonalcoholic steatohepatitis cirrhosis was more prevalent in NA (NA 16.2% vs NHW 2.8% vs H 6.5%, $P = .01$). Hepatitis C was the most common identified risk factor for cirrhosis in NHW (70%) and H (63.4%), while it occurred in only 37.8% of NA ($P = .01$). Alcohol abuse as a risk for cirrhosis and HCC was present in most NA (67.5%) but less commonly in NHW (40.5%) and H (52.4%; $P = .01$).

The stage of HCC at presentation did not differ among the 3 groups. The technical resectability rate in NHW was 55.7%, in H 56.8%, and in NA 64.9% ($P = .44$). The proportion of patients with resectable disease eventually undergoing hepatectomy did not differ between the 3 groups (NHW 49.1% vs H 42.3% vs NA 45.8%, $P = .69$).

The 2 modes of IR treatment used in these patients were transarterial chemoembolization (TACE) and radiofrequency ablation (RFA). After excluding patients with contraindications for IR treatment, TACE/RFA was received in 38 of 66 NHW (57.5%), 43 of 112 H (38.4%), and 10 of 24 NA (41.7%; $P = .04$). There was no difference in the rate of receiving chemotherapy between the 3 groups ($P = .67$).

Native Americans had the best overall median survival (24 months) when compared with NHW (14 months) and H (11 months) ($P = .01$; Fig. 1). When we performed survival analysis by stage, there was no difference in survival for stages I, II, and IV. The significant difference in OS was