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Socioeconomic Factors, Treatment Modality, and Survival in Islet Cell Carcinoma: A National Cancer Database Analysis

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BACKGROUND

Islet cell carcinoma is a rare cancer of neuroendocrine origin. There has yet to be a study analyzing the treatment type and survival outcomes in this cancer. In this study, we utilized a national database to understand the correlations between patient demographics, socioeconomic factors, modality of treatment, and survival.

METHODS

The National Cancer Database was queried to identify patients diagnosed with islet cell carcinoma (ICD-O-3 histology code 8150/3) between 2004-2019 (N=2364). Chi-squared test was utilized to analyze healthcare disparities that exist in these patients and how various socioeconomic variables contribute to the treatment modality received. Descriptive statistics, Kaplan-Meier, log rank test, and multivariate Cox proportional hazards analyses were used to study correlations in treatment modality and survival.

RESULTS

Of the patients studied, 53.7% were male and 46.3% were female; 84.3% were White, 10.7% African American, and 4.9% other. Median age at diagnosis was 59 years. Chi-squared testing demonstrated that facility type, facility location, insurance status, high school degree (HSD), and medium income quartile were significantly associated with treatment modality. Kaplan-Meier analysis demonstrated that those who received surgery had significantly higher mean survival time (152 months) compared to all other modes of treatment. Furthermore, those who received any form of treatment had a significantly higher mean survival time (98 months) compared to those without treatment (51 months). Cox regression indicated that age, insurance status, HSD, comorbidities, and treatment modality contributed to survival outcomes in patients with islet cell carcinoma.

Table 1: Multivariate Analysis of Survival Outcomes

Variable		Hazard Ratio (95% CI)	P-value
Age	**Youth (14-47 years)**	1 (Reference)	
	Elderly (>65)	2.51 (1.93-3.27)	<0.001
Insurance Status	**Not Insured**	1 (Reference)	
	Private Insurance	0.54 (0.32-0.89)	0.015
Percent No High School Degree	**≥17.6%**	1 (Reference)	
	<6.3%	0.80 (0.65-0.97)	0.026
Treatment Modality	**No Treatment**	1 (Reference)	
	Surgery Only	0.22 (0.19-0.26)	<0.001
	Systemic Treatment Only	1.546 (1.28-1.88)	<0.001

CONCLUSIONS

For patients with islet cell carcinoma, various socioeconomic factors impacted the treatment modality received. Demographic and socioeconomic factors, including age, insurance status, and HSD led to greater overall survival. Surgery as a category was the treatment modality that resulted in greatest overall survival. Further studies should be conducted to analyze how certain variables may affect treatment and outcomes so that we may better understand how healthcare disparities impact patients with islet cell carcinoma.

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