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# Racial Differences in Gastroenteropancreatic Neuroendocrine Tumor Treatment and Survival

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**BACKGROUND:** Gastroenteropancreatic neuroendocrine tumors (GEP-NETs) have demonstrated increasing incidence over the past four decades. Previous epidemiologic studies have suggested that disparities in survival and treatment modalities may exist in black and other underrepresented minorities. The objective of this study was to evaluate racial differences in cancer treatment and survival in GEP-NET patients.

**METHODS:** Using the Surveillance, Epidemiology, and End Results Registry (SEER), we identified patients with GEP-NETs of the stomach, small intestine, colon, rectum, appendix, and pancreas diagnosed between 1973 and 2014. Demographic, cancer, and treatment information were collected and compared using $_X2$ tests. Multivariable logistic regressions were performed to evaluate the odds of receiving surgery and chemotherapy. Cox regression was used to determine disparities in disease-specific survival.

**RESULTS:** We identified 19,031 GEP-NET patients, of whom 2,839 were non-Hispanic blacks, 12,832 non-Hispanic whites, 2,098 Hispanics, and 1,262 Asians. The most common primary sites were small bowel (32.0%), pancreas (19.9%), and rectum (18.9%). In general, black patients were diagnosed at younger age, with more advanced stage and grade tumors as compared to others. Black patients diagnosed with small intestine and pancreatic NETs were treated less frequently with surgery (Odds Ratio [OR] 0.6, 95% Confidence Interval [CI]: 0.46-0.69; OR 0.67, 95% CI 0.52-0.85). This treatment disparity did not persist in

Hispanics or Asians. In general, non-Hispanic black was not an independent predictor of poor survival; however, there was a borderline association in stomach, small intestine, and pancreas NETs (Table 1). Hispanics had better survival than whites in gastric NETs, while Asians had improved survival in rectal NETs.

**CONCLUSION:** In this population-based sample, black patients with GEP-NETs were less likely to undergo surgical resection. However, these disparities did not appear to confer worse disease-specific survival across the majority of primary sites. Further studies will be performed to better understand disparities in treatment.

**Table 1:**

**Influence of Race on Risk of Disease-Specific Mortality**

| Race | Small Intestine HR (95% CI) | Pancreas HR (95% CI) | Rectum HR (95% CI) |
|---|---|---|---|
| White | 1.0 | 1.0 | 1.0 |
| Black | 1.2 (0.99-1.45) | 1.22 (1.0-1.48) | 1.13 (0.86-1.48) |
| Hispanic | 0.8 (0.6-1.1) | 1.14 (0.92-1.42) | 1.25 (0.9-1.73) |
| Asian | 0.87 (0.55-1.4) | 0.9 (0.69-1.16) | 0.54 (0.37-0.79) |