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Comparison of Demographics and Overall Survival (OS) Among Patients with Young-Onset(YO) and Late-Onset(LO) GI Neuroendocrine Tumors/Carcinomas (NETs/NECs) in the United States

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BACKGROUND

More than 12,000 people are diagnosed with neuroendocrine malignancies each year in the US. There are limited data on YO-NETs/YO-NECs. In the present study, we seek to evaluate clinical characteristics/trends of patients with GI-YO-NETs and GI-YO-NECs.

METHODS

Using the National Cancer DataBase, NCDB, we identified 124,081 GI-NETs and 52,063 GI-NEC cases 18 or older, diagnosed between 2004 and 2019. Histology codes to identify NETs and NECs were 8150-8153, 8155-8157, 8240-8244, 8249 for NETs and 8246 for NECs. YO was defined as age <50 and LO was defined as age ≥50. Logistic regression was used to associate factors with YO status. OS, estimated by Kaplan-Meier methodology, was compared using log rank test.

RESULTS

YO-NETs comprise 21% of GI-NETs and YO-NECs comprise 17% of GI NECs. NETs/NECs most frequently arose from small intestine, colon, rectum, pancreas, and stomach. Females had higher proportion of YO-NETs and YO-NECs versus males: 23.4% vs 19.1%; p<0.0001 for YO-NET and 19.0% vs 15.8%; p<0.0001 for YO-NEC, respectively. The proportion of YO-NETs was lowest for non-Hispanic Whites (19.6%), highest for Hispanics (32.6%) and intermediate for Asians (24.7%) and African Americans (22.1%). Same trend was observed for YO-NECs. A majority of YO-NETs/YO-NECs presented as stage I-III disease, 86.6% and 59.7%, respectively, although stage was unavailable in a large fraction of patients. Consistent with prior data and unlike other cancers, YO-NETs/NECs had significantly better OS than LO-NETs/NECs in both surgical and non-surgical groups. Seventy-three percent of YO-NETs had private insurance and 19.3% had government-based insurances. While the proportion of YO-NECs decreased over time, the proportion of YO-NETs stayed the same. Differences in rates of YO-NETS and YO-NECS were within 2% across income, level of education, and geographical location.

Overall Survival for GI-YO-NETs w/wo surgery

	Number	5-year survival	p-value
NET			
YO-No Surgery vs LO-No Surgery	2,921 vs 17,330	75% vs 54%	<0.0001
YO-Surgery vs LO-Surgery	20,631 vs 69,494	94% vs 81%	<0.0001
NEC			
YO-No Surgery vs LO-No Surgery	3,018 vs 18,873	31% vs 20%	<0.0001
YO-Surgery vs LO-Surgery	5,490 vs 21,357	83% vs 66%	<0.0001

CONCLUSIONS

Our NCDB analysis suggests the proportion of GI-YO-NETS/NECs is higher among females and Hispanics and lowest among White non-Hispanics. In addition, GI-YO-NETs/NECs have higher 5-year survival compared to GI-LO-NETs/NECs. These data may have biologic or environmental explanations and will need further investigation, but one must be careful in interpreting results in diseases such as NETs, that are often chronic and whose incidence rises with age.

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