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DOTATATE PET/CT at Diagnosis Is Associated With Decreased Mortality in Gastroenteropancreatic Well-Differentiated Neuroendocrine Tumors: A Propensity-Matched Retrospective Cohort Study

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BACKGROUND

Advanced functional imaging with Copper-64 or Gallium-68 DOTATATE PET/CT has become integral to the evaluation of well-differentiated gastroenteropancreatic neuroendocrine neoplasms (GEP-NENs), but it remains unclear whether it is associated with significant survival benefit.

METHODS

A retrospective cohort study using the TriNetX US Collaborative Network (2018–2023) identified adults with well-differentiated neuroendocrine neoplasms of the stomach, small intestine, pancreas, or large intestine/appendix/rectum. Patients undergoing DOTATATE PET/CT within 6 months were compared with those without imaging. One-to-one nearest-neighbor propensity score matching was performed using demographics and major comorbidities. Kaplan-Meier and Cox models estimated hazard ratios (HRs) with 95% CI.

RESULTS

Among 13,632 patients, 1,960 (14.4%) underwent DOTATATE PET/CT within 6 months. After matching, cohorts included stomach (192 vs 192), small intestine (1,207 vs 1,207), pancreas (179 vs 179), and large intestine/appendix/rectum (380 vs 380). DOTATATE use was associated with significantly increased 5-year survival rate in pancreatic primaries (72.2% vs 60.9%, HR 0.50, p=0.001) and large intestinal/appendiceal/rectal primaries (80.9% vs 77.4%, HR 0.68, p=0.037). Small intestinal tumors demonstrated lower mortality at 1 year (HR 0.48, 95% CI 0.32–0.71; p<0.001) and 3 years (HR 0.76, 95% CI 0.59–0.97; p=0.028), without difference at 5 years. No significant differences were observed in gastric primaries.

CONCLUSIONS

DOTATATE PET/CT within 6 months of diagnosis was strongly associated with improved 5-year survival rate in pancreatic and large intestine/appendix/rectum well-differentiated neuroendocrine neoplasms. This association may reflect improved survival among patients treated at multidisciplinary centers with access to neuroendocrine-specific imaging, although further investigation is needed to clarify this relationship.

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