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Association Between Surveillance Imaging and Survival Outcomes in Small Bowel Neuroendocrine Tumors

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BACKGROUND: Despite increasing incidence, guidelines for gastroenteropancreatic neuroendocrine tumor (GEP-NET) surveillance following resection remain inconsistent. We evaluated the impact of surveillance imaging on survival outcomes in small bowel NETs (SB-NET).

METHODS: 341 patients with SB-NETs referred to a provincial cancer centre between 2004-2015 were reviewed and baseline characteristics recorded. Imaging studies (CT, MRI, PET, MIBG, Octreotide scans) for 195 completely resected SB-NET patients were obtained. Association between imaging frequency and survival was determined using univariate and Cox-regression analyses.

RESULTS: Among 341 patients, median age was 64 years and 57% were male. 303 patients underwent surgery with 64% having completely resected tumors. Amongst these, 74% were followed at a tertiary center; these patients were more likely to be age <70 (74%, p= 0.019). Patients with SB-NETs had a mean of 1.45 imaging studies/year with median follow-up of 59 months. Patients who recurred underwent more imaging (2.04/year) than those who did not recur (1.19/year) (p<0.001) but without significant differences in 5-year overall survival (OS) (88% vs. 91%, p=0.148). In addition, patients underwent more imaging (1.66/year) if followed by a tertiary center than the community (0.83/year) (p<0.001) with similar 5-year incidence of recurrence (29% vs. 19%, p=0.097) and OS (89% vs. 93%, p=0.388). In multivariate analyses controlling for age, sex, stage, and grade, number of imaging studies (HR 2.54, 95% CI 1.90-3.39, p<0.001) predicted recurrence but not OS. Additionally, patients followed at a tertiary center were less likely to have disease recurrence (HR 0.39, 95% CI 0.16-0.95, p=0.037).

CONCLUSION: Patients with SB-NETs receiving follow-up at a tertiary center underwent significantly more imaging but had less recurrence with no effect on OS; therefore, the necessity for frequent imaging following resection should be considered when building personalized surveillance strategies.

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