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Upfront Small Bowel Resection for Small Bowel Neuroendocrine Tumors With Synchronous Metastases: A Propensity Matched Comparative Population-Based Analysis

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BACKGROUND: Surgical resection of the primary tumor in metastatic small bowel neuroendocrine (SB-NET) remains controversial, with conflicting data regarding its impact on survival and morbidity. We hypothesized that upfront small bowel resection (USBR) would decrease long-term healthcare utilization, compared to non-operative management (NOM).

METHODS: We conducted a population-based analysis of patients with SB-NET metastatic at diagnosis between 2001-2017 in Ontario. USBR was defined as resection within 6 months of diagnosis. Primary outcomes were subsequent unplanned admissions and small bowel surgery. Secondary outcome was overall survival (OS). USBR and NOM patients were matched 2:1 using a propensity-score. We used time-to-event analyses with cumulative incidence functions and Andersen-Gill regression for primary outcomes, and Kaplan-Meier methods with Cox regression for OS. E-value methods assessed for residual confounding.

RESULTS: Of 1000 patients identified, 785 (78.5%) had USBR. Median follow-up was 4.6 years. The matched cohort included 348 patients with USBR and 174 with NOM. Matched groups were well balanced with standardized mean differences <10% for matched variables. Patients with USBR had lower 3-year risk of subsequent admissions (72.6% vs 86.4%, p<0.001) than those with NOM, with hazard ratio (HR) 0.72 (95%CI 0.57-0.91). USBR was associated with lower risk of subsequent small bowel related surgery (15.4% vs 40.3%, p<0.001), with HR 0.44 (95%CI 0.29-0.67). Sensitivity analysis excluding patients undergoing emergency surgery as their index operation found no difference in the above associations. E-values indicated that it is unlikely that these risk estimates could be explained by an unmeasured confounder. Both groups had prolonged survival, with a median of 12.4 years for the entire cohort.

CONCLUSION: USBR should be considered for metastatic SB-NETs to decrease subsequent admissions and surgery and improve patient outcomes. Prolonged survival due to disease biology and novel therapies likely contribute to a high rate of healthcare utilization in patients not undergoing primary tumor resection.

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