Operative Versus Nonoperative Management of Nonfunctioning Pancreatic Neuroendocrine Tumors

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Scholarly Report submitted in partial fulfillment of the MD Degree at Harvard Medical School

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Scholarly Report Title: Operative Versus Nonoperative Management of Nonfunctioning Pancreatic Neuroendocrine Tumors

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ABSTRACT

Operative Versus Nonoperative Management of Nonfunctioning Pancreatic Neuroendocrine Tumors.

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Introduction: Surgical resection is the only curative treatment for pancreatic neuroendocrine tumors (PNETs), but pancreatic operations carry a significant morbidity. We investigated whether the resection of small, asymptomatic nonfunctioning PNETs is beneficial. Clinicopathologic factors were retrospectively reviewed for all PNET cases from 1998 to 2014.

Methods: Kaplan-Meier survival and multivariable regression analyses were performed. A total of 249 patients had nonfunctioning PNETs with adequate follow-up, of whom 193 were resected and 56 were observed. Median age was 56 years, and 48% of the patients were female.

Results: Overall, the resected patients had a significantly longer survival (OS) ($p = 0.001$). However, for the patients with PNETs ≤ 2.5 cm in size and without metastasis at presentation, tumor size significantly modified the effect of resection on overall survival ($p < 0.05$). The protective effect of resection increased as tumor size increased. An operation became a significant predictor of overall survival for tumors > 1.5 cm ($p = 0.050$ or less for larger tumors) but was not significant for tumors < 1.5 cm ($p = 0.317$ or more for smaller tumors), controlling for age-adjusted Charlson comorbidity index.

Conclusion: Resection of nonfunctioning PNETs over 1.5 cm is independently and significantly associated with a longer survival. However, the benefit of resection for tumors under 1.5 cm is unclear.

STUDENT'S CONTRIBUTION

Under the mentorship of principal investigator Dr. Cristina Ferrone, I initiated this research project in 2014 and helped to develop the research questions and hypotheses. After applying for and receiving IRB approval for the study, I created an institutional database of patients with pancreatic neuroendocrine tumors. I did the primary work for patient identification and data collection through retrospective chart review, with assistance in querying the institution's electronic medical records for relevant patients (by ICD-9 codes) from Yvonne Braun and Shadi Razmdjou. I then collaborated with Jing Zhao in the biostatistics department to conduct the statistical analysis of the data. In discussion with Dr. Ferrone, I helped to design the different parts of our analysis, and Jing completed the statistics, including developing Kaplan-Meier curves and multivariable regression models. Jing and I worked closely and had regular discussions on how best to structure our analysis and interpret the results. Finally, I synthesized our results with Dr. Ferrone. I wrote the manuscript describing our findings as first author, with guidance and revisions from Dr. Ferrone, as well as Dr. Warshaw, Dr. Fernandez, and Dr. Lillemoe. I also presented the results from this project at two meetings in 2015.

PUBLICATION INFORMATION

Zhang IY, Zhao J, Fernandez-del Castillo C, Braun Y, Razmdjou S, Warshaw AL, Lillemoe KD, Ferrone CR. Operative versus nonoperative management of nonfunctioning pancreatic neuroendocrine tumors. *Journal of Gastrointestinal Surgery*. 2016; 20:277–283.

<https://www.ncbi.nlm.nih.gov/pubmed/26691146>

<http://link.springer.com/article/10.1007%2Fs11605-015-3043-5>