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Pancreastatin Predicts Survival in Neuroendocrine Tumors

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Background: Serum neurokinin A, chromogranin A, serotonin, and pancreastatin reflect tumor burden in neuroendocrine tumors. We sought to determine whether their levels correlate with survival in surgically managed small bowel (SBNETs) and pancreatic neuroendocrine tumors (PNETs).

Methods: Clinical data were collected with Institutional Review Board approval for patients undergoing surgery at one center. Progression-free (PFS) and overall (OS) survival were from the time of surgery. Event times were estimated by the Kaplan–Meier method. Preoperative and postoperative laboratory values were tested for correlation with outcomes. A multivariate Cox model adjusted for confounders.

Results: Included were 98 SBNETs and 78 PNETs. Median follow-up was 3.8 years; 62 % had metastatic disease. SBNETs had lower median PFS than PNETs (2.0 vs. 5.6 years; $p < 0.01$). Median OS was 10.5 years for PNETs and was not reached for SBNETs. Preoperative neurokinin A did not correlate with PFS or OS. Preoperative serotonin correlated with PFS but not OS. Higher levels of preoperative chromogranin A and pancreastatin showed significant correlation with worse PFS and OS ($p < 0.05$). After multivariate adjustment for confounders, preoperative and postoperative pancreastatin remained independently predictive of worse PFS and OS ($p < 0.05$)(Figure). Whether pancreastatin normalized postoperatively further discriminated outcomes. Median PFS was 1.7 years in patients with elevated preoperative pancreastatin versus 6.5 years in patients with normal levels ($p < 0.001$). Patients with elevated preoperative pancreastatin had a 5-year OS rate of 72.6% versus 88.3% in those with normal levels (p=0.04).

Conclusion: Higher pancreastatin levels are significantly associated with worse PFS and OS in SBNETs and PNETs. This effect is independent of age, primary tumor site, and presence of nodal or metastatic disease. Pancreastatin provides valuable prognostic information and identifies surgical patients at high risk of recurrence who could benefit most from novel therapies.

Figure: Median progression-free (PFS) (a) and overall survival (OS) (b) were significantly better in patients with normal (upper green solid line, n=46) versus elevated (lower dashed purple line, n=84) preoperative pancreastatin levels (median PFS 6.5 vs. 1.7 years; 5-year OS 88 vs. 73%).