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Elevated Serum Pancreastatin is an Indicator of Hepatic Metastasis in Patients with Small Bowel Neuroendocrine Tumors

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Background: Serum pancreastatin has greater sensitivity and specificity in diagnosing neuroendocrine tumors (NETs) than serum chromogranin A (1). Additionally, elevated pancreastatin levels are associated with worse progression free survival and overall survival in small bowel and pancreatic NETs (2). In this study, we investigated the clinical significance of elevated serum pancreastatin in identifying metastatic disease to the liver.

Methods: A retrospective chart review of patients with NET managed at a single institution was performed. The site of primary NET, laboratory data, and presence of metastatic disease was reviewed. Sensitivity, specificity, positive predictive value, and negative predictive value for pancreastatin and chromogranin A as indicators of liver metastasis were ascertained. Serum pancreastatin measurements were performed by Cambridge Medical, Boston, MA, using a quantitative radioimmunoassay.

Results: Data was abstracted from 77 patients (54% female, n= 42). Small bowel was the primary tumor site in 44 patients (57%). Metastatic disease to the liver was noted in 49 patients (64%). Elevated serum pancreastatin was found to be more sensitive (85.7% vs. 61.5%) and specific (66.7% vs. 43.8%) than elevated chromogranin A in identifying liver metastasis in patients with primary tumors of the small bowel.

Conclusion: Elevated serum pancreastatin is a more sensitive and specific assay for detecting the incidence of liver metastasis in patients with small bowel NET compared to chromogranin A, which is the current preferred prognostic biomarker in NET. This study supports the usefulness for routine measurements of pancreastatin in patients with NET, especially in patients with disease arising from their small bowel.

Table 1: Calculated Performance of Elevated Serum Pancreastatin and Chromogranin A in Identifying the Incidence of Liver Metastasis in NET

Site of 1° tumor	Test	Performance Measures			
		Sensitivity (%) [95% CI]	Specificity (%) [95% CI]	PPV (%)	NPV (%)
Small Bowel (n = 44)	PST	85.71 [57.16 – 97.80]	66.67 [38.41 – 88.05]	70.59	83.33
	CGA	61.54 [40.58 – 79.75]	43.75 [19.83 – 70.08]	64.00	41.18
Other* (n = 33)	PST	53.33 [26.65 – 78.66]	75.00 [35.05 – 96.07]	80.00	46.15
	CGA	75.00 [50.89 – 91.25]	72.73 [39.08 – 93.65]	83.33	61.54
All (n = 77)	PST	68.97 [49.17 – 84.68]	69.57 [47.08 – 86.74]	74.07	64.00
	CGA	67.39 [51.98 – 80.46]	55.56 [35.34 – 74.50]	72.09	50.00

PST = pancreastatin, CGA = chromogranin A, PPV = positive predictive value, NPV = negative predictive value.

* Sites include: pancreas (n = 10), lungs (n = 10), and unknown (n = 10), stomach (n = 1), large bowel (n = 1), and rectum (n = 1).

References:

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2. Sherman SK, Maxwell JE, O'Dorisio MS, O'Dorisio TM, Howe JR. Pancreastatin Predicts Survival in Neuroendocrine Tumors. *Ann Surg Oncol.* 2014 Apr 22. [Epub ahead of print]