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Development of a Highly Sensitive and Specific Carboxy-terminal Human Pancreastatin Assay to Monitor Neuroendocrine Tumor Behavior

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Objective: Pancreastatin is a fragment of the chromogranin A (CgA) molecule. Existing pancreastatin assays, which depend on antibodies which cross-react in varying percents with the larger prohormone, may lack sensitivity and specificity to detect small changes in neuroendocrine tumor volume.

Methods: We developed a highly specific, sensitive pancreastatin assay. The antibody used recognizes the carboxyl terminal of the peptide hormone and was raised against a 17-amino acid porcine pancreastatin fragment with high homology with the carboxy-terminal amino-acids 286-301 of human CGA.

Results: Our assay measures > 95% of circulating pancreastatin levels; has little or no cross-reactivity with CGA, even at plasma concentrations of 1,000 ng/ml; and can detect pancreastatin levels of 17 pg/ml. Inter-assay reproducibility for the pancreastatin RIA was determined from results of three quality control pools in 15 consecutive assays. Coefficients of variation for low, medium, and high pancreastatin levels were < 20%. The sensitivity of serial pancreastatin assays to detect early tumor recurrence was demonstrated in two patients with slowly progressive neuroendocrine tumors and in patients undergoing surgical cytoreduction.

Conclusion: This highly specific, sensitive pancreastatin assay can detect small changes in liver tumor progression and is up to 100-fold more sensitive and specific than CgA assays in the U.S.