

Multiple and Secondary Hormone Secretion in Patients with Metastatic Pancreatic Neuroendocrine Tumors

Joakim Crona¹; Olov Norlén²; Pantelis Antonodimitrakis¹; Staffan Welin¹; Peter Ståhlberg²; Barbro Eriksson¹

¹Department of Medical Sciences; ²Department of Surgical Sciences

Background: Neuroendocrine tumors secrete many different peptide hormones, yet hitherto each NET patient is thought to produce one hormone that causes a distinct hormonal syndrome. A minority of patients have multiple hormones at diagnosis and may also develop secondary hormone secretion at a later stage. The aim of the study was to determine the frequency and impact of multiple and secondary hormone secretion in sporadic pancreatic NETs.

Methods: A retrospective analysis of patients (n=323) with pancreatic NETs treated at Uppsala University Hospital, Uppsala, Sweden, was performed. Patients with these characteristics were identified and studied in further detail.

Results: In pancreatic NETs (PNETs) a total of 19/23 (6%) had secretion of multiple hormones at diagnosis and 14/23 (4%) had secondary changes during the disease course. These phenomena occurred exclusively in patients with advanced disease and secondary changes were detected in close timespan with progressive disease. Patients with secondary insulin secretion had increased morbidity and reduced survival ($p < 0.002$).

Conclusion: Diversity of PNET hormone secretion at diagnosis or during the disease course occurred in a minority of patients (9.3%). These phenomena had a major impact on patient outcome both through increased morbidity and mortality. Our results support that patients with metastatic PNETs should be monitored for clinical symptoms of secondary hormone secretion during the disease course.