Role of chromogranin A-derived fragments after resection of non-functioning pancreatic neuroendocrine tumors

V. Andreassi1,2, S. Partelli1,2, M.F. Manzoni3, B. Colombo4, F. Muffatti1, A. Corti2,4, M. Falconi1,2
1Pancreatic Surgery Unit, Pancreas Translational & Clinical Research Center, IRCCS San Raffaele Scientific Institute, Milan, Italy; 2Endocrinology Unit, San Raffaele Scientific Institute, Milan, Italy; 3Tumor Biology and Vascular Targeting Unit, San Raffaele Scientific Institute, Milan, Italy; 4Vita-Salute San Raffaele University, Milan, Italy

Vasostatin-1 (VS-1), the N-terminal fragment of Chromogranin A (CgA), is more accurate than CgA as neuroendocrine biomarker, as its plasma levels are not altered by proton pump inhibitors (PPI).

Objective of the study

Aim of this study was to investigate several CgA-derived fragments as neuroendocrine biomarkers, comparing preoperative and postoperative plasma levels.

Methods

Consecutive patients who underwent surgery for NF-PanNETs at San Raffaele Scientific Institute were included (n=35). Plasma levels of CgA and CgA-derived fragments were measured, preoperatively and postoperatively.

Results

Preoperative VS-1 was significantly higher compared to VS-1 measured on postoperative day 5 (P<0.001, Fig. 1A), whereas total-CgA significantly increased after surgery (P=0.006, Fig. 1B). Overall, 24 patients showed ≥1 pathological feature of tumor aggressiveness. The median percentage decrease in VS-1 plasma levels was 63% among patients with aggressive tumors, compared to 13% in the remaining population (P=0.033) (Fig. 2). No significant differences in terms of VS-2 (P=0.909, Fig. 1C) and PST (P=0.870, Fig. 1C) were observed between preoperative and postoperative time.

N = 35
Patients submitted to surgery for NF-PanNET

Measurement by ELISA

Figure 1. Comparison between preoperative and postoperative (postoperative day 5) plasma levels of Vasostatin-1 (VS-1) (A), total-CgA (B), vasostatin-2 (VS-2) (C) and pancreastatin (PST) (D).

Figure 2. Comparison of VS-1 percentage decrease between patients with and without aggressive NF-PanNETs (features of aggressiveness: T3-T4 tumors, nodal/distant metastases, Ki67 >5%, microvascular and perineural invasion, necrosis).

Conclusions

VS-1 was able to provide an early assessment of surgical efficacy in patients who undergo resection for NF-PanNETs, especially in those with aggressive neoplasms. Total-CgA, PST and VS-2 showed no clinical utility in this setting.