O-8

Role of Chromogranin A-derived Fragments as Biomarkers for Pancreatic Neuroendocrine Tumors (PanNET)

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BACKGROUND: 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. Furthermore, an association between preoperative VS-1 plasma levels and pathological features of aggressiveness was previously reported in patients with surgically resected nonfunctioning (NF)-PanNET. Aim of this study was to investigate several CgA-derived fragments as neuroendocrine biomarkers, comparing preoperative and postoperative plasma levels.

METHODS: Patients submitted to surgery for NF-PanNET at San Raffaele Hospital were retrospectively screened. Patients having both a preoperative and a postoperative plasma sample [collected on postoperative day 5 (POD 5)] were included in the study. Circulating levels of VS-1, Total-CgA, Pancreastatin and Vasostatin-2 were investigated by sandwich Enzyme-Linked ImmunoSorbent Assays (ELISA).

RESULTS: Overall, 35 patients with NF-PanNET were considered. VS-1 plasma levels significantly decreased after surgical resection (median 0.34 vs. 0.15 nM,

p < 0.001), whereas total-CgA plasma levels significantly increased after surgery (median 1.12 vs.1.95 nM, p = 0.006). The proportion of patients with VS-1 plasma levels > 0.39 nM decreased significantly from preoperative time (15/35, 43%) to POD 5 (2/35, 6%) (p < 0.001). All the patients with a preoperative VS-1 plasma level ≤ 0.390 nM still had a VS-1 plasma level lower than this cut-off on POD 5. Pancreastatin plasma levels were below the detection limit in the majority of cases (25/35 preoperatively, 28/35 postoperatively) and no statistically significant differences were found between preoperative and postoperative values (p = 0.870). Vasostatin-2 plasma levels were similar as well between pre- and postoperative time (p = 0.909).

CONCLUSION: VS-1 was found to be able to provide an early assessment of surgical efficacy. Total-CgA, PST and VS-2 showed no clinical utility in this setting.

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