Number of Positive Nodes and Their Localization Correlate with Recurrence in Pancreatic Neuroendocrine Neoplasms: Implications for Surgery, Staging and Surveillance

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Background: Nodal involvement is an adverse factor for pancreatic neuroendocrine neoplasms (PNEN). The prognostic value of the number and localization of positive lymph-nodes (PLN) is unknown.

Methods: Among 370 patients with PNEN who underwent resection, those who underwent radical pancreaticoduodenectomy (PD) (2000-2014) were identified. Patients with functioning neoplasms, inherited syndrome and distant metastases were excluded.

Results: 53 patients were included. Of those, 31 patients (58.5%) had node metastases (N1). The median number of examined lymph nodes (ELN) and positive lymph nodes (PLN) were 20 and 1, respectively. The median number of ELN was higher among N1 tumors (23 versus 17.5, P=0.048). N1 PNEN had a significantly worse 3-year DFS compared with N0 PNEN (69% versus 94%, P=0.013). Patients with PLN>1 had a better DFS compared with patients who had 0 or 1 PLN (62% versus 90%, P=0.005). On multivariate analysis, age>60 years, G3 PNEN versus G2-G1 PNEN, and PLN>1 were independent predictors of recurrence. No differences were found in terms of DFS among patients with N0 PNEN according to different cut-offs of ELN. PLN were localized in posterior and anterior pancreaticoduodenal stations (13 and 17) in all 31 patients with N1 NF-PNEN. Superior mesenteric artery nodes (station 15) and hepatoduodenal ligament nodes (station 12) were involved in 5 and 3 cases, respectively. Metastatic involvement of station 12 was associated with a significant poorer DFS (HR 2.5, P=0.005).

Conclusion: The number of PLN and their localization are associated with the risk of recurrence after PD for NF-PNEN. An adequate lymphadenectomy including station 12 and 15 should be performed. This study suggests preliminary findings to support a revision of the current TNM-based staging systems for PNEN.

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