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Number of Positive Nodes Accurately Predicts Recurrence after Pancreaticoduodenectomy for Neuroendocrine Tumors

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BACKGROUND: TNM classification recently suggested to divide N+ pancreatic neuroendocrine tumors (PanNET) between N1 [1 to 3 positive lymph nodes (PLN)] and N2 (more than 3 PLN), but only for PanNEC-G3. The role of the number of PLN in predicting recurrence is unclear. Aim of the study was to evaluate the effect of the number of PLN on prognosis after pancreaticoduodenectomy (PD) for PanNET.

METHODS: Retrospective analysis of all consecutive radical PDs performed for sporadic nonfunctioning PanNET. Univariate and multivariate analyses of disease free survival (DFS) were performed.

RESULTS: 157 patients were included. The median number of examined lymph nodes (ELN) was 18. 58 patients (63%) had N0 PanNET whereas 99 patients (37%)

had lymph node involvement (N+). Patients with a N+ PanNET had a significantly higher frequency of T3-T4 tumors, perineural and microvascular infiltration. Median Ki67values and ELN were significantly higher in patients with N+ PanNET. Thirty patients (19%) had a recurrence and 17 (11%) eventually died of disease. Patients with N0 PanNET had a 3-year DFS rate of 89% compared with 83% and 75% in patients with N1 PanNET and N2 PanNET, respectively. Independent predictors of DFS were the presence of necrosis (HR 4.407, P<0.0001) and nodal status (N1, HR 3.246, P<0.005; N2, HR 9.934, P<0.0001). Factors positively correlated with the number of PLN were the Ki67 value, T stage, and number of ELN. Similar percentage of N0 and N+ PanNET was demonstrated for a cut-off of 13 ELN.

CONCLUSION: The number of PLN is accurate in predicting recurrence for PanNET. TNM staging systems should include a N-stage that distinguishes also between N1 (1 to 3 PLN) and N2 (more than 3 PLN) tumors. Thirteen ELN seems to be the minimum number of LN to be resected/examined in patients who undergo PD for PanNET.