

## Pattern and Clinical Predictors of Lymph Node Involvement in Neuroendocrine Neoplasms of the Pancreas

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**Background:** Pancreatic neuroendocrine neoplasms (PNEs) are often indolent without pathological lymph node metastasis (pN1). Therefore, in patients with low risk of pN1, a lymphadenectomy could be avoided. Aim of this study was to construct a model for predicting the risk of pN1 prior to surgical resection.

**Methods:** Databases from the University of Verona and the Beaujon Hospital were queried. Data of all patients with resected (R0 or R1) non-functioning PNE between 1993 and 2009 were analyzed.

**Results:** Data were analyzed for 194 patients. Metastases were present in the dissected lymph nodes of 58 patients (30%). The 5-year disease free survival for pN1 patients was significantly lower than for pN0 (66% vs 93%,  $P < 0.0001$ ). Multivariable analysis suggested the independent predictors of pN1 were radiological nodal status (rN) (OR 3.4,  $P = 0.008$ ), localization in the pancreatic head (OR 3.4,  $P = 0.002$ ) and the degree of differentiation (G2 vs G1 OR 3.5,  $P = 0.001$ ). When the degree of differentiation was excluded, on multivariable analysis rN1 (odds ratio 4.1,  $P = 0.001$ ), localization in the pancreatic head (odds ratio 3.2,  $P = 0.002$ ), and radiological

size > 4 cm (odds ratio 2.5, P=0.012) were independent predictors of pN1.

**Conclusion:** Patients with PNEN-G1 of the pancreatic body, in the absence of radiological node involvement, have a low risk of pN1. If a preoperative cytological diagnosis is not achieved, radiological size of the lesion is a powerful alternative predictor of pN1.