

Outcome of Surgical Resection after Neoadjuvant Peptide Receptor Radionuclide Therapy (PRRT) for Pancreatic Neuroendocrine Neoplasms: A Case-Matched Analysis

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Background: Peptide receptor radionuclide therapy (PRRT) can be an option for advanced pancreatic neuroendocrine neoplasms (PNETs) to allow patients undergo resection. Whether or not neoadjuvant PRRT increases postoperative morbidity remains unclear.

Methods: Patients with initially metastatic and/or locally advanced PNET who underwent neoadjuvant PRRT (neoadjuvant group) were compared with a group of patients who underwent upfront surgery (control group). Patients were matched for tumor size, grading, staging, and intent of resection.

Results: 20 patients underwent sequential PRRT and pancreatic resection. The reason for neoadjuvant PRRT was liver metastases in 6 patients and organ/vascular infiltration in the remaining 14. After PRRT tumor size decreases from 59 mm to 50 mm ($P=0.047$). The rate of curative resection was 65%. Histology revealed a PNET-G1 in 10 cases, a PNET-G2 in 7 patients, and a PNET-G3 in 3 patients. Pre- and postoperative tumor grading was concordant in 13 patients whereas 5 were upstaged and 2 were downstaged. Patients who underwent neoadjuvant PRRT had a lower risk of pancreatic fistula (25% versus 65%, $P=0.011$) although the rate of complications was similar (45% versus 60%, $P=0.342$). The two groups had similar distribution of tumor grading, T stage, TNM stage, R2 resection, microvascular invasion, perineural invasion, and necrosis. Patients who underwent upfront surgery were more likely to have nodes metastases (80% versus 35%, $P=0.004$). The 2-year progression free survival rate was 67% for the neoadjuvant group versus 58% in the control group ($P=0.319$). Predictors of progression free survival were PNET-G3 and stage IV tumor.

Conclusion: Pancreatic resection for PNET after neoadjuvant PRRT is safe and is associated with a lower risk of developing pancreatic fistula.