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Regional Lymph Node Involvement and Outcomes in Appendiceal Neuroendocrine Tumors: A SEER Database Analysis

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BACKGROUND: Appendiceal neuroendocrine neoplasms are most often diagnosed incidentally during appendectomy. The need for subsequent right hemicolectomy (RHC) is determined based on the risk of regional lymph node (LN) involvement. Tumor size has historically been used as an indicator of this risk, but controversy remains regarding its cut off. Furthermore, the impact of RHC on cancer-specific survival (CSS) is unclear.

METHODS: We used the SEER database to identify patients diagnosed with appendiceal tumors between 1988 and 2012.

RESULTS: Of 1731 patients, 38.0% had well-differentiated neuroendocrine tumors (WDNETs), 60.8% had mixed histology tumors (MHTs), and 1.2% had poorly-differentiated neuroendocrine carcinomas (PDNECs) with 10-year CSS of 92.6%, 78.1% and 0%, respectively. LN involvement was noted in 19.2% of all patients. In patients with WDNETs and MHTs who had adequate LN dissection (defined as examination of ≥ 12 LN), higher rates of LN involvement were noted for tumors size 11-20 mm than ≤ 10 mm (56.8% vs. 11.6%, $p < 0.001$; 32.9% vs. 10.4%, $p = 0.004$, respectively). In CSS analysis of cases with no distant metastasis, only histologic type, age > 65 years old at the time of diagnosis and lymph node involvement remained significant after adjusting for other characteristics. The type of surgery (RHC vs. simple appendectomy) did not affect survival in cases

with regionally advanced MHTs (HR 1.00; 95% CI, 0.53–1.89; p=0.99). Patients with regionally advanced WDNET showed excellent prognosis irrespective of type of surgery, and only 3/118 died from cancer within 10 years.

CONCLUSION: 10 mm appears to be a more appropriate cutoff than 20 mm for predicting LN metastasis in appendiceal NETs. However, cases with WDNETs and nodal involvement demonstrate overall excellent prognosis and therefore, RHC may be omitted in selected patients with competing co-morbidities. In MHTs with LN metastases, survival is markedly worse in spite of RHC. The role of adjuvant therapy should be evaluated in this subset.