Parathyroid Carcinoma: Is It Time for Change?

David F. Schneider, MD, MS

Section of Endocrine Surgery, Department of Surgery, University of Wisconsin, Madison, WI

Parathyroid carcinoma is a rare etiology for primary hyperparathyroidism, but recurrence and even mortality occur much more frequently in this disease compared with its more common, benign counterparts—adenomas or hyperplasia. Asare et al. study detailing the prognostic factors for parathyroid carcinoma from the National Cancer Data Base (NCDB) provides useful insights into the behavior of this rare disease and changes current surgical dogma on the appropriate treatment.¹

Analyses from large population-level cancer registries like NCDB often receive criticism from the stalwart, because they fail to capture disease-specific outcomes. Endocrine tumors like parathyroid carcinoma certainly fall into this category. The authors point out many of the limitations within NCDB, such as the lack of operative findings or disease-specific mortality. Recurrence would be another useful outcome for parathyroid cancer, but this also is lacking in the NCDB. Instead, the authors chose overall survival as their primary outcome for analysis. On its surface, overall survival may seem like a poor outcome indicator for this disease. However, it may reflect the disease course for those patients who do recur. These patients will suffer the consequences of uncontrolled hypercalcemia. If disease specific mortality were recorded, how accurately would these deaths be coded? Many would probably be recorded as cardiovascular or renal causes of death when the underlying etiology is really

hypercalcemia from their parathyroid carcinoma. Hence, overall survival may serve as a realistic outcome for parathyroid cancer.

The most striking finding from Asare et al. analysis is that nodal status did not significantly impact survival. This adds to a growing body of literature suggesting that tumor size impacts prognosis much more than lymph node status.^{1–3} This makes sense given that parathyroid carcinoma spreads by local extension and not via lymphatic channels. A similar analysis from the surveillance epidemiology and end results (SEER) dataset found that only large tumors (greater than 3 cm) were associated with lymph node involvement.² Although difficult to determine from cancer registry data, this likely reflects local extension of larger tumors rather than metastases via lymphatic channels. Asare et al. also identified larger tumor size as an important prognostic factor.

Currently no consensus staging system for parathyroid carcinoma exists. The existing framework of the American Joint Committee on Cancer (AJCC) TNM staging system typically features nodal status (“N”) in staging. More importantly, the results from this study and others like it call into question our current treatment of this disease. Surgical texts dictate an en bloc resection of the parathyroid tumor with the ipsilateral thyroid lobe and a central compartment lymph node dissection. If lymph nodes are not important, then maybe this practice needs to change?

While large population-level datasets like NCDB certainly have limitations, they compile data from many more patients than any single-institution retrospective review could potentially capture for a rare disease like parathyroid carcinoma. Studies, such as that of Asare et al. can indicate how to better risk stratify patients and thereby tailor surgical treatment. They also can indicate when long-standing dogma needs to change.

ACKNOWLEDGMENTS The author was supported by NIH UL1TR000427 (UW CTSA) and NIH KL2TR000428.

REFERENCES

1. Asare EA, Sturgeon C, Winchester DJ, Liu L, Palis B, Perrier ND, Evans DB, Winchester DP, Wang TS. Parathyroid carcinoma: an update on treatment outcomes and prognostic factors from the National Cancer Data Base (NCDB). *Ann Surg Oncol*. 2015. doi:[10.1245/s10434-015-4672-3](https://doi.org/10.1245/s10434-015-4672-3).
2. Hsu KT, Sippel RS, Chen H, Schneider DF. Is central lymph node dissection necessary for parathyroid carcinoma? *Surgery*. 2014;156(6):1336–41. doi:[10.1016/j.surg.2014.08.005](https://doi.org/10.1016/j.surg.2014.08.005); discussion 41.
3. Talat N, Schulte KM. Clinical presentation, staging and long-term evolution of parathyroid cancer. *Ann Surg Oncol*. 2010;17(8): 2156–74. doi:[10.1245/s10434-010-1003-6](https://doi.org/10.1245/s10434-010-1003-6).