



ASO Author Reflections: Distant Metastatic Parathyroid Carcinoma—Has the “Train Left the Station?”

Elliot A. Asare, MD MS¹, and Nancy D. Perrier, MD¹

Department of Surgical Oncology, University of Texas, M. D. Anderson Cancer Center, Houston, TX

PAST

Refractory hypercalcemia from parathyroid carcinoma (PC) causes enormous morbidity, poor quality of life, and eventual mortality. The only proven curative modality available for PC is complete surgical resection. However, despite adequate initial resection, some patients are still at risk of local–regional (LR) or distant metastasis (DM). Distant metastasis and prognosis for patients with PC have not been well characterized.^{1–3} Key objectives we sought to address in this current study were to identify factors predictive of DM, quantify the cumulative incidence (CI) of DM, and assess the prognosis for patients who develop DM.⁴

PRESENT

Distinguishing between the risk of distant versus LR recurrence in patients with PC is important, because they present with different treatment challenges, may be driven by different biological behaviors, and have different prognosis. After reviewing data for 75 patients with PC treated or surveilled at the MD Anderson Cancer Center over a 37-year span, we found younger patients (< 47.5 years) with larger tumor size (> 3.2 cm) to be at increased risk of DM.⁴ At 5, 10, and 20 years of follow-up,

the CI of DM was 20.1%, 25.8%, and 37.6% respectively. Patients with DM had a median overall survival of 40 months compared with 17 years for those without DM. Our surveillance strategy involves history and physical with serum calcium levels every 6 months \times 2, then annually \times 2, and then every other year. Patients undergo annual neck ultrasound. Biochemical suspicion for recurrence is investigated with computed tomography of neck, lungs, liver, and bone. Protocols for early adjuvant use of novel agents are being explored for patients at higher risk for recurrence.

FUTURE

Designing standardized operative report templates for parathyroidectomy that includes the surgeon’s index of suspicion may help to improve data collection in the future. Preoperative and intraoperative suspicion for PC may impact the extent of surgical resection. However, additional quality data are still needed to address the question of whether extended resection improves survival. Molecular profile sequencing of tumors in all patients with PC may allow identification of mutations that portend poorer outcome as well as potential actionable targets for therapy. A novel scoring system to help predict aggressiveness of PC may help guide timing of adjuvant novel therapies.⁵ Given the potential for late distant metastasis, continued long-term surveillance is advocated. Finally, continued research into effective therapies for managing hypercalcemia will greatly improve the quality of life of patients with parathyroid carcinoma.

ASO Author Reflections is a brief invited commentary on the article, “Risk of distant metastasis in parathyroid carcinoma and its effect on survival: a retrospective review from a high-volume center”. *Ann Surg Oncol.* (2019) (in press).

DISCLOSURES The authors have no conflicts of interest to disclose.

© Society of Surgical Oncology 2019

First Received: 25 June 2019;
Published Online: 16 July 2019

E. A. Asare, MD MS
e-mail: eaasare@mdanderson.org

REFERENCES

1. Lee PK, Jarosek SL, Virnig BA, et al. Trends in the incidence and treatment of parathyroid cancer in the United States. *Cancer*. 2007;109:1736–41.
2. Harari A, Waring A, Fernandez-Ranvier G, et al. Parathyroid carcinoma: a 43-year outcome and survival analysis. *J Clin Endocrinol Metab*. 2011;96:3679–86.
3. Silva-Figueroa AM, Hess KR, Williams MD, et al. Prognostic scoring system to risk stratify parathyroid carcinoma. *J Am Coll Surg*. 2017;22: 980–7.
4. Asare EA, Silva-Figueroa A, Hess KR, et al. Risk of distant metastasis in parathyroid carcinoma and its effect on survival: a retrospective review from a high-volume center. *Ann Surg Oncol*. 2019 (**in press**).
5. Silva-Figueroa A, Villalobos P, Williams MD, et al. Characterizing parathyroid carcinomas and atypical neoplasms based on the expression of programmed death-ligand 1 expression and the presence of tumor-infiltrating lymphocytes and macrophages. *Surgery*. 2018;164:960–4.

Publisher’s Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.