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See Article page 495.

Commentary: A final episode in the first trilogy

Kenneth A. Kesler, MD

Given that the lungs are a frequent site of hematogenous metastases from many solid neoplasms, and that continuing advances in cancer therapy are prolonging life, it can be anticipated that a growing number of patients will present with metastatic pulmonary disease. Although a multidisciplinary approach is clearly optimal to determine treatment strategies in these cases, the thoracic surgeon is not infrequently the final arbiter of not only if, but which, local therapies are used. Thus, as new technologies emerge, state-of-the-art information becomes increasingly important.

Survival after pulmonary metastasectomy according to primary tumor type. (Used with permission.)

CENTRAL MESSAGE

This article provides a state-of-the-art review of local therapies for pulmonary metastatic disease, including the more recent modalities of stereotactic radiation and percutaneous ablation.

Although hundreds of retrospective, typically single-institution studies provide support to the safety and potential curability of surgical pulmonary metastasectomy, truly landmark publications on this topic are few and far between. Arguably pioneering publications include a report from the

From the Division of Thoracic Surgery, Department of Surgery, Indiana University Melvin and Bren Simon Cancer Center, Indianapolis, Ind.

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Address for reprints: Kenneth A. Kesler, MD, Department of Surgery, Indiana University Bren Simon Cancer Center, Barnhill Dr, EM #212, Indianapolis, IN 46202 (E-mail: kkesler@iupui.edu).

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International Registry of Lung Metastases in 1997 analyzing more than 5000 cases of lung metastasectomy from 18 centers of excellence.¹ This publication more convincingly demonstrated the efficacy of surgical therapy as well as identified variables predictive of survival, including tumor cell type. Other variables now accepted to impact survival were identified, such as longer disease-free intervals and small numbers of metastatic lesions. Of note, data were collected for this study before the use of positron emission tomography imaging, when patient selection for pulmonary metastasectomy might not have been as strict as current standards. Consequently, reported survival after surgery has the potential to be underestimated in today's practice. More than 2 decades later, motivated by the lack of prospective randomized data and thus high levels of evidence-based recommendations, Handy spearheaded a consensus report on surgical pulmonary metastasectomy sponsored by the Society of Thoracic Surgeons Work Force of Evidence-Based Surgery.² In this article, available evidence is examined through the context of expert opinion.

Finally, in this issue of the *Journal*, Antonoff and co-workers³ have provided the most recent landmark publication in review form of local therapies for pulmonary metastatic disease, with inclusion of the more recent modalities of stereotactic radiation and percutaneous ablation in addition to the surgical standard.

When considering local intervention for pulmonary metastases, the authors' initial 4 questions pertaining to "who, when, and what" are critical. They provide a

state-of-the-art review of outcomes after local therapy for pulmonary metastatic disease in this regard. However, as the authors point out, this topic remains complex and challenging, because published series (virtually all retrospective in nature) contain heterogeneous patient populations, pathologies, and treatments. Moreover, reported outcomes after the newer modalities of stereotactic radiation and percutaneous ablation are limited by relatively short-term follow-up, as well as potentially disadvantaged because their use currently tends to be reserved for higher-risk or inoperable patients. In the future, a fifth question, "is an effective immunotherapy or targeted therapy option available?" may become even more relevant.

Similar to other landmark review articles, the authors not only provide state-of-the-art information—in this case, on a topic important to our thoracic surgeon community—but also keep us anxiously awaiting the next sequel.

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