COMPUTED TOMOGRAPHY SURVEILLANCE OF PATIENTS WITH RESECTED LUNG CANCER: RECURRENCE OR SECOND PRIMARY LUNG CANCER?

To the Editor:

We read with interest the results of the study by Hanna and colleagues¹ demonstrating that for survivors of lung cancer, minimal dose computed tomography is superior to chest radiography for detecting new or recurrent lung cancer. Their findings of new or recurrent lung cancer are consistent with data from recent work illustrating that intrathoracic disease progression represents a high burden in such patients.^{2,3} As acknowledged by the investigators, a limitation of their study is the lack of distinction between new and recurrent lung cancer on follow-up, an important consideration given the disparate prognosis associated with each. Patterns of failure studies by Lou and colleagues² and Demicheli and colleagues³ differentiated between these 2 entities using commonly accepted criteria,⁴ and showed that disease detected on follow-up could be attributed to second primary lung cancer (SPLC) in 26% and 16% of cases, respectively.

Specifically in the present study, the median survival of 25 months (range, 6-48 months) in asymptomatic patients who were referred for palliative care suggests that some cases of SPLC may have

inadvertently been classified as metastatic disease. We would appreciate it if the investigators could clarify their clinical approach for deciding when a new pulmonary lesion is not an SPLC, and provide details of the local therapies used in cases detected during surveillance, both symptomatic (median survival ranging from 7 to 63 months) and asymptomatic. Was fitness to undergo further surgery used to decide if invasive re-staging was mandated? With the growing availability of stereotactic ablative radiotherapy, which is a highly effective local therapy for high-risk patients, even patients who are unfit for further surgery may become eligible for curative therapy in this situation.^{5,6}

The investigators have provided useful evidence-based data to support posttreatment computed tomography surveillance for early-stage non-small cell lung cancer. Access to these additional details would be useful for others who need to implement this in practice.

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Reply to the Editor:

We would like to thank Dr Louie and Dr Senan for their insightful comments on our article.¹ We acknowledge that the differentiation between disease recurrence and a second primary lung cancer is important, but we specifically did not attempt to make this distinction for 3 reasons. First, unless the 2 tumors are of different histology, there is no reliable way of differentiating them. The criteria suggested by Martini and Melamed,² such as tumor location, intervening lymph node basins, association with a premalignant tumor, and DNA ploidy, although useful, are not absolute. Second, because lung cancer survivors are at risk for both recurrence and a second primary, the distinction may not matter for the purposes of surveillance. Third, we believe that new parenchymal lesions in lung cancer survivors should be aggressively managed and treated, regardless of whether they are new primary tumors or isolated local recurrences. Fitness to undergo a second surgery was not an absolute criterion for further invasive investigation, and patients who were eligible for stereotactic ablative therapy were evaluated and treated accordingly. The range of local therapies used in this study included further anatomic resection, nonanatomic resection, external beam radiation, and stereotactic

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body radiation. We are grateful for the opportunity to discuss these important issues with you and look forward to further advances in the postoperative surveillance and treatment of lung cancer.

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DOES THE SOCIETY OF THORACIC SURGEONS RISK SCORE ACCURATELY PREDICT OPERATIVE MORTALITY FOR PATIENTS WITH PULMONARY HYPERTENSION?

To the Editor:

We read with interest the article by Kennedy and colleagues,¹ "Does the Society of Thoracic Surgeons Risk Score Accurately Predict Operative Mortality for Patients With Pulmonary Hypertension?" We concur with Kennedy and colleagues¹ that the current Society of Thoracic Surgeons system² poorly models patients with elevated pulmonary arterial pressure (PAP) or associated right heart dysfunction. In our experience and that of others, patients undergoing cardiac surgery with PAP hypertension have worse outcomes than patients without PAP elevation. An important question is why is PAP hypertension an important prognostic marker? To complement the work by Kennedy and colleagues,¹ we would like to emphasize that although

elevated PAP is a good marker for increased morbidity and mortality, the potential underlying reason for worse outcomes in these patients is right heart dysfunction.

For better independent quantification of right heart function, we have begun implementing cardiac magnetic resonance imaging (cMRI) on a routine basis for patients deemed to be at increased risk for right heart dysfunction arising from elevated PAP. Use of cMRI allows accurate interpretation of right ventricular ejection fraction as well as chamber volumes or right ventricular end-diastolic and end-systolic volumes, which serve as the criterion standard for establishment of right heart function in patients with elevated PAP.³ We perform cMRI selectively during our preoperative workup in patients with suspected elevated PAP and in those deemed to be at risk for possible right heart dysfunction, such as patients with valvular heart disease and those with ischemic cardiomyopathy.⁴⁻⁶ Patients who are not found to have any associated right heart dysfunction are then reevaluated to establish whether there are interventions available for medical optimization, because increased PAP is often due to other reversible cardiac causes or noncardiogenic causes in this subset (sleep apnea, volume overload, interstitial lung disease, etc).⁴ Those who demonstrate severe right heart dysfunction are also reevaluated for medical optimization, as well as for appropriateness of surgical intervention, especially in patients with apparent advanced biventricular disease. Within our population, this method has allowed us to improve preoperative risk stratification and our ability to select appropriate surgical candidates, improving our outcomes.^{5,6}

We believe that cMRI should be used in patients with elevated PAP (mean PAP >35 mm Hg) to help define right ventricular function and better select patients for cardiac

surgical procedures. Consideration should be also given to adding right heart function to existing risk models to accurately risk stratify this population.

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Reply to the Editor:

We appreciate the comments by Trachiotis and colleagues on the importance of right ventricular (RV) function in perioperative morbidity and mortality. We agree that a comprehensive assessment of RV function