

What could be the key elements to determine the optimal number of lymph nodes sampled?

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Provenance: This is an invited Editorial commissioned by the Section Editor Min Zhang (The First Affiliated Hospital of Chongqing Medical University, Chongqing, China).

Comment on: David EA, Cooke DT, Chen Y, *et al.* Does Lymph Node Count Influence Survival in Surgically Resected Non-Small Cell Lung Cancer? *Ann Thorac Surg* 2017;103:226-35.

Submitted Feb 01, 2017. Accepted for publication Feb 06, 2017.

doi: 10.21037/jtd.2017.03.49

View this article at: <http://dx.doi.org/10.21037/jtd.2017.03.49>

It is obvious that lymph node status is a major determinant of stage and survival in patients with lung cancer. Precise lymph node staging allows more adequate treatment planning and early detection of disease recurrence. The role of lymphadenectomy itself, however, in terms of prognosis and cancer recurrence predicting contributors still remains unclear. This study of the article by David and colleagues in this issue of *Annals of Thoracic Surgery* is a large sample size study with population-based registry data where they sought to determine the influence of the number of lymph nodes sampled (NLNS) on overall survival (OS) and cancer-specific survival (CSS) for surgically resected stage I to III NSCLC (1). In other words, this study was aimed at seeking whether lymphadenectomy of varying extents could offer patients with resected NSCLC a survival advantage. It turned out that NLNS was a predictor of OS and CSS for resected NSCLC while the impact is modest when comparing four to ten nodes and more than ten nodes, especially for stage II and III diseases. One of two main possible reasons for these results is that as the authors described, lymphadenectomy is a critical part of surgical treatment for adequate staging and treatment. It has been well established that the benefit of adjuvant chemotherapy for resected NSCLC translates into an absolute increase in OS according to published meta-analysis even though there are a lot of question of adjuvant chemotherapy in terms of patient's selection that remain unsolved (2). The point here is that the relationship between NLNS and survival

is probably affected by stage migration. The more lymph nodes surgeons take out, the more accurate staging could be obtained. The other could be biological significance of lymphadenectomy itself although to my knowledge, there are no specific studies to show that lung cancer lymph node metastasis is the controlling and determining factor of prognosis. It is recognized that multiple cellular events such as detachment of a malignant cell from the primary tumor, invasion of the lymphatic space, and attachment, implantation, and progressive growth in the lymph node, have to occur for the development of lymph node metastasis.

The authors concluded surgeons should perform mediastinal lymphadenectomy to maximize patient survival while the optimal NLNS still remains debatable. That is one of the key issues since the way sampled lymph nodes are counted can vary depending on surgeon, pathological assessment, and how to count fragments of resected nodes that might have been one node. The optimal NLNS can also vary according to type of surgical procedures. It is indisputable in this article that patients who were younger, male, higher stage, or larger tumor size had more nodes removed as well as there was a difference of distribution of sampled nodes by surgery type. However, the term "sublobar resection" should no longer be used in these settings because wedge resection and anatomical segmentectomy are conceptually different in terms of the access for hilar and intrapulmonary lymph nodes and that could alter outcomes.

Although there must inherently be the limitations even in these large-scale population-based studies, at least comorbid conditions and postoperative treatment status are needed for NLNS to be of value to predict prognosis.

The American College of Surgeons Oncology Group Z0030 study showed that a systemic lymph node sampling did not improve survival compared with a lymph node dissection in highly selected early stage NSCLC (3). Many studies have shown that the prevalence of lymph node involvement at each mediastinal region and the pathways of the lymphatic spread in lung cancer fundamentally depend on the location of the primary tumor (4,5). Moreover there are also a lot of studies that have shown that patients with small peripheral lung cancer with pure or predominantly ground-glass opacities in HRCT images or lower (or negative) FDG-PET uptake are reported to have favorable prognoses without showing any lymph node metastasis, suggesting that those patients cannot require even lymph nodes sampling (6,7). We should therefore take account of these factors such as preoperative HRCT images, PET-CT findings of primary lesions and lymph nodes, comorbidities, or performance status in addition to some variables shown in this study in developing a model to help determine the optimal NLNS thresholds for lymph node assessment to predict prognosis.

Acknowledgements

None.

Footnote

Conflicts of Interest: The author has no conflicts of interest to declare.

Cite this article as: Shimada Y. What could be the key elements to determine the optimal number of lymph nodes sampled? J Thorac Dis 2017;9(3):E290-E291. doi: 10.21037/jtd.2017.03.49

References

1. David EA, Cooke DT, Chen Y, et al. Does Lymph Node Count Influence Survival in Surgically Resected Non-Small Cell Lung Cancer? Ann Thorac Surg 2017;103:226-235.
2. Pignon JP, Tribodet H, Scagliotti GV, et al. Lung adjuvant cisplatin evaluation: a pooled analysis by the LACE Collaborative Group. J Clin Oncol 2008;26:3552-9.
3. Darling GE, Allen MS, Decker PA, et al. Randomized trial of mediastinal lymph node sampling versus complete lymphadenectomy during pulmonary resection in the patient with N0 or N1 (less than hilar) non-small cell carcinoma: results of the American College of Surgery Oncology Group Z0030 Trial. J Thorac Cardiovasc Surg 2011;141:662-70.
4. Watanabe S, Asamura H, Suzuki K, et al. The new strategy of selective nodal dissection for lung cancer based on segment-specific patterns of nodal spread. Interact Cardiovasc Thorac Surg 2005;4:106-9.
5. Okada M, Sakamoto T, Yuki T, et al. Border between N1 and N2 stations in lung carcinoma: lessons from lymph node metastatic patterns of lower lobe tumors. J Thorac Cardiovasc Surg 2005;129:825-30.
6. Tsutani Y, Miyata Y, Misumi K, et al. Difference in prognostic significance of maximum standardized uptake value on [18F]-fluoro-2-deoxyglucose positron emission tomography between adenocarcinoma and squamous cell carcinoma of the lung. Jpn J Clin Oncol 2011;41:890-6.
7. Tsutani Y, Miyata Y, Nakayama H, et al. Prognostic significance of using solid versus whole tumor size on high-resolution computed tomography for predicting pathologic malignant grade of tumors in clinical stage IA lung adenocarcinoma: a multicenter study. J Thorac Cardiovasc Surg 2012;143:607-12.