Editorial

Lung cancer surgery for octogenarians: an option for select patients only?

Jun Nakajima

Department of Thoracic Surgery, The University of Tokyo Graduate School of Medicine, Tokyo, Japan

Correspondence to: Jun Nakajima. Department of Thoracic Surgery, The University of Tokyo Graduate School of Medicine, 7-3-1 Hongo, Bunkyo-ku, Tokyo 113-8655, Japan. Email: nakajima-tho@h.u-tokyo.ac.jp.

Provenance: This is an invited Editorial commissioned by the Section Editor Laura Chiara Guglielmetti (Cantonal Hospital Winterthur, Kantonsspital Winterthur, Switzerland).

Comment on: Detillon DDEMA, Veen EJ. Postoperative Outcome After Pulmonary Surgery for Non-Small Cell Lung Cancer in Elderly Patients. Ann Thorac Surg 2018;105:287-93.

Submitted Apr 09, 2018. Accepted for publication Apr 28, 2018.
doi: 10.21037/jtd.2018.05.102
View this article at: http://dx.doi.org/10.21037/jtd.2018.05.102

The incidence of primary lung cancer largely depends on aging as well as smoking habits. In western and East Asian countries, the number of older people is increasing (1). In parallel, thoracic surgeons have recently been treating more octogenarians with lung cancer. Pulmonary resection for patients with early lung cancer is still the mainstay of curative treatment, and there is an increasing need for safer and more effective surgical treatment for older patients with non-small cell lung cancer.

Original articles on surgical treatment of octogenarians with lung cancer have been published since the 1980s (2). Along with the prevalence of thoracoscopic surgery, the number of articles and the number of subjects in each of these articles have been increasing. The eligibility criteria for lung cancer surgery in octogenarians have thus become an important clinical issue.

Recently, a large multi-institutional database was analyzed to provide more reliable results with less variance. Detillon and Veen conducted a cross-sectional analysis based on the Dutch Lung Surgery Audit database, a nationwide database that covers all surgeries for patients with non-small cell lung cancer. They extracted 2,133 patients, aged 60 years or older, who had undergone potentially curative surgery for non-small cell lung carcinoma (NSCLC) between 2013 and 2014 (3). Thoracoscopic surgeries were performed for 70.5% of the patients, and they were subdivided into 3 groups by age. The octogenarian group included 168 patients who were older than 80 at surgery. Their results showed that overall mortality rate was 2.1%, but that of patients in the octogenarian group was 6.0%, significantly higher than younger patients. Univariate and multivariate analyses showed that older age, reduced forced expiratory volume at 1 s (FEV1), higher Eastern Cooperative Oncology Group (ECOG) performance status score, and congestive heart failure were significant risk factors associated with perioperative mortality.

Detillon and Veen reported that cumulative postoperative complications occurred in 29.9% of patients, with no difference among 3 groups stratified by age. On the other hand, postoperative pneumonia, respiratory failure, and supraventricular arrhythmia were more frequently observed in the octogenarian group. Pneumonia, respiratory failure, and cardiac failure were generally serious postoperative complications that affected mortality. In this study, higher mortality of the octogenarian patients was also associated with higher rate of cardiovascular morbidity after surgery.

It is necessary to clarify the goals of treatment of octogenarians with lung cancer. We should consider whether treatment can improve survival time or quality of life for these very old patients. Generally, curative surgery for lung cancer may be justified because life expectancy of octogenarians is estimated to be no less than 5 years. In fact, the average life expectancy of an 80-year-old individual has reached 8.92 years for men and 11.82 years for women in Japan (4).

In past reports, postoperative mortality and morbidity

rates of octogenarians with lung cancer have been reported to range from 0–16% and 30–60%, respectively (2-3,5-15). Preoperative factors affecting postoperative complications include preoperative general condition, cardiopulmonary function, and other chronic diseases. Male sex, low performance status score, and impaired cognitive function are reported to be risk factors for postoperative complications. Low % vital capacity, low FEV1, and low arterial blood PO_2 were predictive of postoperative complications. Cardiac failure was also a risk factor for increased morbidity. Operative procedures affect postoperative mortality and morbidity, and so extended resection and open thoracotomy (compared with thoracoscopic surgery) are also risk factors. The postoperative mortality rate has largely decreased to 2% recently (13-15), and this may be caused by prevalence of thoracoscopic surgery and limited resection for early lung cancer.

The majority of patients had stage I lung cancer in each cohort, but postoperative 5-year overall survival rate of octogenarians was reported to be 30% to 50%, which was generally worse than that of younger patients (3,6,8-11). Brock showed that older patients with stage IA lung cancer had a good prognosis, where those with stage IB had a poorer prognosis (9). In clinical practice, it is presumed that curative surgery may not be strictly adhered to (e.g., radical lymph node dissection may be omitted) in older patients.

Older patients often have comorbidities and abnormalities on physical and clinical examination. Dominguez-Ventura reported that no patients who had dyspnea preoperatively survived for 5 years (11). Patients with poorer general condition may not be good candidates for surgery. The Charlson Comorbidity Index (CCI) is a scoring system for a range of comorbid systemic diseases aligned with the general condition of the patient, and is reported to be correlated with postoperative mortality and morbidity (16). The Glasgow prognostic score (GPS), a simple score calculated from levels of serum albumin and C-reactive protein, which is representative of systematic inflammatory status, has been also surveyed (17). In the field of lung cancer, CCI and GPS have been reported to show a significant relationship with postoperative mortality and morbidity as well as long-term survival after surgery.

Detillon and colleagues showed that patients in the octogenarian group had significantly higher CCI, a larger number of comorbidities, and higher rates of peripheral vascular disease and history of stroke than those in younger groups. However, the octogenarian patients showed higher FEV1 or diffusing capacity of the lungs for carbon monoxide than younger patients, and ECOG performance status was similarly distributed among the groups (2). This implies that patients in the octogenarian group were carefully selected from among a large number of patients with lung cancer.

Preoperative rehabilitative intervention can reduce the rate of postoperative complications in older lung cancer patients. A short-term preoperative intensive rehabilitation program was proven to be effective by a prospective randomized controlled study (18).

Stereotactic body radiotherapy (SBRT) has an established a role in treatment of patients with early lung cancer who are not fit for surgery because of poor general condition. Mortality and morbidity rates were 0–1.7% and 0.9–10% respectively, and 3-year overall survival after SBRT was reported to range from 40% to 53% in a systematic review (19). Moreover, among patients who were eligible for surgery but declined pulmonary resection, a high overall survival rate has been reported after SBRT if they had an early, peripherally located stage I NSCLC. Although radiotherapy cannot completely replace surgery at present, SBRT should be recommended for older patients who are not eligible for pulmonary resection because of comorbidity.

In conclusion, with the prevalence of less-invasive surgery, carefully selected patients among octogenarians have become good candidates for pulmonary resection if they have early lung cancer and are in good general condition.

Acknowledgements

None.

Footnote

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

References

1. Torre LA, Bray F, Siegel RL, et al. Global cancer statistics, 2012. CA Cancer J Clin 2015;65:87-108.
2. Shirakusa T, Tsutsui M, Iriki N, et al. Results of resection for bronchogenic carcinoma in patients over the age of 80. Thorax 1989;44:189-91.
3. Detillon DDEMA, Veen EJ. Postoperative outcome after pulmonary surgery for non-small cell lung cancer in

elderly patients. Ann Thorac Surg 2018;105:287-93.
4. Ministry of Health, Labour and Welfare. The 2016 annual report from the Ministry of Health, Labour and Welfare of Japan. Available online: http://www.mhlw.go.jp/toukei/saikin/hw/life/life16/dl/life16-02.pdf
5. Naunheim KS, Kesler KA, D'Orazio SA, et al. Lung cancer surgery in the octogenarian. Eur J Cardiothorac Surg 1994;8:453-6.
6. Pagni S, Federico JA, Ponn RB. Pulmonary resection for lung cancer in octogenarians. Ann Thorac Surg 1997;63:785-9.
7. Tanita T, Hoshikawa Y, Tabata T, et al. Functional evaluations for pulmonary resection for lung cancer in octogenarians. Investigation from postoperative complications. Jpn J Thorac Cardiovasc Surg 1999;47:253-61.
8. Aoki T, Yamato Y, Tsuchida M, et al. Pulmonary complications after surgical treatment of lung cancer in octogenarians. Eur J Cardiothorac Surg 2000;18:662-5.
9. Brock MV, Kim MP, Hooker CM, et al. Pulmonary resection in octogenarians with stage I nonsmall cell lung cancer: a 22-year experience. Ann Thorac Surg 2004;77:271-7.
10. Mizuguchi S, Inoue K, Iwata T, et al. Impact of mediastinal lymph node dissection on octogenarians with non-small cell lung cancer. Jpn J Thorac Cardiovasc Surg 2006;54:103-8.
11. Dominguez-Ventura A, Cassivi SD, Allen MS, et al. Lung cancer in octogenarians: factors affecting long-term survival following resection. Eur J Cardiothorac Surg 2007;32:370-4.
12. Okami J, Higashiyama M, Asamura H, et al. Pulmonary resection in patients aged 80 years or over with clinical stage I non-small cell lung cancer: prognostic factors for overall survival and risk factors for postoperative complications. J Thorac Oncol 2009;4:1247-53.
13. Guerra M, Neves P, Miranda J. Surgical treatment of non-small cell lung cancer in octogenarians. Interact Cardiovasc Thorac Surg 2013;16:673-80.
14. Saji H, Ueno T, Nakamura H, et al. A proposal for a comprehensive risk scoring system for predicting postoperative complications in octogenarian patients with medically operable lung cancer: JACS1303. Eur J Cardiothorac Surg 2018;53:835-41.
15. Hino H, Karasaki T, Yoshida Y, et al. Risk factors for postoperative complications and long-term survival in lung cancer patients older than 80 years. Eur J Cardiothorac Surg 2018;53:980-6.
16. Charlson ME, Pompei P, Ales KL, et al. A new method of classifying prognostic comorbidity in longitudinal studies: development and validation. J Chronic Dis 1987;40:373-83.
17. McMillan DC, Forrest LM, O'Gorman P, et al. Performance status of male and female advanced cancer patients is independently predicted by mid-upper arm circumference measurement. Nutr Cancer 2002;42:191-3.
18. Lai Y, Huang J, Yang M, et al. Seven-day intensive preoperative rehabilitation for elderly patients with lung cancer: a randomized controlled trial. J Surg Res 2017;209:30-6.
19. Nguyen NP, Godinez J, Shen W, et al. Is surgery indicated for elderly patients with early stage nonsmall cell lung cancer, in the era of stereotactic body radiotherapy? Medicine (Baltimore) 2016;95:e5212.

Cite this article as: Nakajima J. Lung cancer surgery for octogenarians: an option for select patients only? J Thorac Dis 2018;10(Suppl 17):S1920-S1922. doi: 10.21037/jtd.2018.05.102

