Commentary: How to predict disaster?

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It is well known that idiopathic pulmonary fibrosis (IPF) is associated with an increased risk of lung cancer. Surgical treatment for patients with lung cancer with IPF may provoke acute exacerbation (AE) of IPF. Clinical features of AE include worsening or development of dyspnea, new radiologic infiltration, and poor oxygenation. Once AE occurs, it is associated with mortality rates between 33.3% and 100%. It is indeed a disastrous postoperative complication for which no effective treatment has been established. According to the annual report by The Japanese Association for Thoracic Surgery,¹ hospital mortality rate after lung cancer surgery was 0.6% and AE was the leading cause of death.

To avoid this disastrous complication, it is very important to identify risk factors of AE. In our previous report on 1763 patients with lung cancer with interstitial lung diseases including 1235 patients with IPF, we identified following 7 independent risk factors of AE: surgical procedures, male sex, history of exacerbation, preoperative steroid use, serum sialylated carbohydrate antigen KL-6 levels, usual interstitial pneumonia appearance on computed tomography scan, and reduced percent predicted vital capacity.² Among these, surgical procedures showed the strongest association with AE (using wedge resection as the reference, lobectomy or segmentectomy: odds ratio, 3.83; 95% confidence interval, 1.94-7.57; bi-lobectomy or pneumonectomy: odds ratio, 5.70; 95% confidence interval, 2.38-13.7; $P < .001$).

In this issue of the *Journal*, Yamamichi and colleagues³ demonstrate that the maximum standardized uptake values of non-lung tumor area (NTL-SUVmax) on fluorodeoxyglucose-positron emission tomography (PET) may be used to predict postoperative AE after surgical resection for patients with lung cancer associated with IPF. They identified 822 patients including 120 patients with IPF. Among 822 patients, AE occurred in 15 patients

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Central Message

Maximum standardized uptake values of non-lung tumor area on FDG-PET may be used to predict postoperative acute exacerbation for patients with lung cancer associated with idiopathic pulmonary fibrosis.

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(1.8%). Among 120 patients with IPF, AE occurred in 12 patients (10%). With multivariate analysis, the NTL-SUVmax was identified as an independent predictive factor for AE. It is known that fluorodeoxyglucose-PET can measure cellular glucose metabolism and PET signals an increase in the area of active inflammation.⁴ The idea of evaluating NTL-SUVmax is unique and interesting, because it may be reflecting the activity of inflammatory process in patients with IPF.

It would be interesting if NTL-SUVmax is correlated with our previously reported 7 risk factors of AE, a disastrous complication.

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