Prognostic factors of tumor recurrence in completely resected lymph node–negative pulmonary adenocarcinoma

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Background: Patients with completely resected lymph node–negative pulmonary adenocarcinoma have a relatively better prognosis, however, a significant number of these patients have recurrent diseases. This study aimed to identify the clinical, pathological, or molecular prognostic factor for tumor recurrence in these patients.

Methods: We recruited 220 patients with lymph node-negative pulmonary adenocarcinoma who were diagnosed and treated at the King Chulalongkorn Memorial Hospital from January 1, 2009, to December 31, 2016. Recurrence was documented by pathological diagnosis, imaging confirmations, or death. Recurrence-free survival was analyzed by univariable and multivariable Cox regression analysis.

Results: Median time of follow up was 4 (2.7-5.6) years. Majority of patients were female (61.8%), never smoking (67.7%), stage I (85.5%) and EGFR mutations (53.6%). The average number of lymph node removed from surgery was 10 (6-16). There were 60 out of 220 (27.3%) patients had recurrent disease. The median time to recurrence was 2.3 years. The rate of loco-regional, distant and both types of recurrence was 26.7%, 68.3%, and 5% respectively. Univariate analyses revealed smoking ≥ 10 pack-year, performance status ≥ 2, tumor size ≥ 4 cm, histologic grade ≥ 2, lymphovascular invasion, visceral pleural invasion, tumor necrosis, and bronchial resection margin < 2 cm were significant prognostic factors for tumor recurrence. Sensitizing EGFR mutation was not a significant prognostic factor in this cohort. However, tumor size ≥ 4 cm, visceral pleural invasion, tumor necrosis, and bronchial resection margin < 2 cm were the remaining significant prognostic factors under multivariate analyses.

Conclusions: We found a moderate incidence of recurrence in resected lymph node–negative pulmonary adenocarcinoma. Tumor size ≥ 4 cm, visceral pleural invasion, tumor necrosis, and bronchial resection margin < 2 cm are the significant prognostic factors of tumor recurrence in lymph node-negative pulmonary adenocarcinoma. These prognostic factors may serve as important clinic-pathological characteristics in determining the outcome of these patients.

Keywords: Early stage lung cancer, Lymph node-negative, Prognostic factors, Recurrence, EGFR mutation