

Deleterious impact of trivial to severe pulmonary fibrosis and
emphysema on mortality and acute lung injury in patients with lung
cancer: A retrospective cohort study

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Abstract

Objective: Pulmonary fibrosis and emphysema may complicate patients with lung cancer. However, clinical significance of trivial and mild extent of these pulmonary abnormalities is unclear. This study aimed to investigate whether trivial and mild pulmonary fibrosis and emphysema, in addition to their advanced forms, impact the prognosis and acute lung injury (ALI) in patients with lung cancer.

Methods: This retrospective cohort study was conducted at a tertiary hospital and included patients with lung cancer. Computed tomography images were evaluated using the interstitial lung abnormality (ILA) score for pulmonary fibrosis, which included no ILA, equivocal ILA, ILA, interstitial lung disease (ILD), and the Goddard score for emphysema. Cox analyses were performed using the ILA and Goddard scores as the main explanatory variables, adjusting for multiple covariates.

Results: Among 1,507 patients with lung cancer, 1,033 had no ILA, 160 had equivocal ILA, 174 had ILA, and 140 had ILD. In total, 474 patients (31.5%) exhibited pulmonary fibrosis and 638 (42.3%) showed emphysema. The log-rank trend test showed that survival probability was significantly better in patients with no ILA, followed by those with equivocal

ILA, ILA, and ILD ($P<0.001$). After adjustment, the ILA and Goddard scores remained significant variables for increased hazard ratios (HR) for mortality: no ILA (HR, 1.00: reference), equivocal ILA (HR, 1.31; 95% confidence interval [CI], 1.18–1.46; $P<0.001$), ILA (HR, 1.71; 95% CI, 1.39–2.12; $P<0.001$), ILD (HR, 2.24; 95% CI, 1.63–3.09; $P<0.001$), and Goddard score (HR, 1.03; 95% CI, 1.01–1.06; $P<0.010$). Moreover, both scores were associated with increased cause-specific hazard ratios for ALI.

Conclusion: This study revealed that approximately one-third of patients with lung cancer had pulmonary fibrosis when incorporating trivial and mild cases. Because pulmonary fibrosis and emphysema, ranging from trivial to severe, significantly impact mortality and ALI in patients with lung cancer, we should recognize trivial and mild cases of these pulmonary abnormalities among patients with lung cancer in addition to the advanced ones.

Keywords: Acute Lung Injury, Combined pulmonary fibrosis and emphysema, Interstitial lung abnormalities, Interaction, Lung Neoplasms, Pulmonary Emphysema, Pulmonary Fibrosis.