Abstract

Introduction: The percentage of low attenuation area (%LAA) on computed tomography (CT) is useful for evaluating the severity of lung emphysema. We previously found a significantly higher %LAA in patients with CLAD at a single time point after bilateral LT. This study investigated the relationship between the postoperative change in %LAA and the development of chronic lung allograft dysfunction (CLAD) after bilateral lung transplantation (LT).

Methods: We conducted a single-center retrospective study of 75 recipients who underwent bilateral LT; the recipients were divided into a CLAD group (n = 30) and a non-CLAD group (n = 45). The %LAA was calculated using CT and compared between the two groups from 4 years before to 4 years after the diagnosis of CLAD. The relationships between the %LAA and the percent baseline values of the pulmonary function test parameters were also calculated.

Results: The %LAA was significantly higher in the CLAD group than in the non-CLAD group from 2 years before to 2 years after the diagnosis of CLAD ($P < 0.05$). In particular, patients with bronchiolitis obliterans syndrome (BOS) exhibited significant differences even from 4 years before to 4 years after diagnosis ($P < 0.05$). Significant negative correlations between the %LAA and the percent baseline values of the forced expiratory volume in 1 s (r = -0.36, $P = 0.0031$), the forced vital capacity (r = -0.27, $P = 0.027$), and the total lung capacity (r = -0.40, $P < 0.001$) were seen at the time of CLAD diagnosis.

Conclusion: The %LAA on CT was associated with the development of CLAD and appears to have the potential to predict CLAD, especially BOS, after bilateral LT.