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Title: Diffusing capacity for carbon monoxide and mortality in patients with chronic thromboembolic pulmonary hypertension

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Body: Background: Diffusing capacity for carbon monoxide (DLCO) reflects the ability of gas exchange across the alveolar-capillary interface and is also used as a marker of pulmonary vascular disease. Recently, Chandra et al. reported that DLCO predicts mortality in patients with pulmonary arterial hypertension. However, there is little data about DLCO in chronic thromboembolic pulmonary artery hypertension (CTEPH). Objectives: The aim of this study is to reveal the correlation between DLCO and other clinical markers and to evaluate DLCO as a predictor of mortality in CTEPH patients. Methods and Results: We performed observational retrospective study of 202 consecutive patients with CTEPH (female 69.8%, age 54.6±12.8 yrs., 99:medial, 103:surgical) who underwent both pulmonary function test including DLCO and right heart catheterization from 1986 to 2011 in Chiba University Hospital. %DLCO showed correlation with age, NYHA, Hugh-Jones classification, oxygen delivery, PvO₂, %VC, %FEV1 and 6 minutes walk distance. However, no correlation was shown between %DLCO and mean pulmonary artery pressure, pulmonary vascular resistance, PaO₂ and AaDO₂. Among surgically treated patients, there is no difference about operative mortality between normal %DLCO (≥70%) group and decreased %DLCO group (<70%)(11.7% vs. 13.3%, p=0.8166). Among the medically treated patients, decreased %DLCO group showed significantly poor survival than normal %DLCO group (5-year survival 69.1% vs. 86.0% p=0.0263). Conclusion: Decreased DLCO was associated with impaired quality of life, pulmonary function, oxygen delivery in CTEPH, and predicted the mortality in medically treated patients.