

LONGITUDINAL CHANGES IN EXERCISE CAPACITY AND SPIROMETRY IN INTERSTITIAL LUNG DISEASE

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Introduction: Traditional spirometry measures of forced vital capacity (FVC) and diffusion capacity for carbon monoxide (DL_{CO}) are used in interstitial lung disease (ILD) for prognostic monitoring and evaluating treatment efficacy. Cardiopulmonary exercise testing (CPET) has been proposed as an alternative to spirometry, although it is unknown how the primary outcome of CPET – peak oxygen uptake (VO_{2peak}) – changes relative to both FVC and DL_{CO}.

Objectives: To identify the direction and magnitude of longitudinal changes in VO_{2peak}, FVC and DL_{CO} in patients with ILD, and identify independence between variables.

Methods: 21 patients with ILD (17 male, 69.8 ± 7.6 years) performed three CPETs on a cycle ergometer within a mean period of 42 ± 14 weeks. Spirometry was retrospectively obtained from medical records. One-way ANOVA determined significant changes in time. Pearson's correlation coefficients established relationships between variables. Regression values and correlations were established for each patient's change in VO_{2peak}, FVC and DL_{CO}.

Results: The correlation between VO_{2peak} and FVC regressions was $r = 0.34$ ($p = 0.145$) and between VO_{2peak} and DL_{CO} this was $r = -0.20$ ($p = 0.432$). The majority of patients showed consistent decline in both VO_{2peak}, FVC and DL_{CO} ($n = 9$). However, some patients ($n = 4$) showed an increase in one variable (with decreases in the other two), whilst a further $n = 4$ showed an increase in two variables (decreasing in the third).

Conclusions: This analysis has shown varied directions and magnitude of change in VO_{2peak} relative to traditional spirometric variables of FVC and DL_{CO}. This confirms the

potential utility of CPET as an independent prognostic tool and further investigation is required to assess its clinical utility and associations with alternative clinical markers (e.g. biomarkers, radiology, patient reported outcomes).

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