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Enhancing the understanding of the time course of AECOPD.

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Figures & Data

Info & Metrics

Abstract

Acute exacerbations of chronic obstructive pulmonary disease (AECOPD) are associated with pulmonary/systemic changes, however quantification of those changes during AECOPD and factors influencing recovery are lacking. This study characterised patients' evolution during AECOPD and identified factors influencing their recovery.

44 outpatients with AECOPD (31♂; 68.2±9.1y; 51.1±20.3 FEV1%predicted) were enrolled. Body mass index (BMI) and modified medical research council–dyspnea (mMRC) (independent variables) were collected within 24–48h of hospital presentation (T1) and quadriceps muscle strength (QMS, handheld dynamometry), 5 times sit-to-stand (5STS) and COPD Assessment (CAT) tests (dependent variables) were collected at T1 and at days 8 (T2), 15 (T3) and 45 (T4) after T1. Generalized Estimating Equations were used for analysis.

QMS, 5STS and CAT improved overtime ($p<.05$). QMS was lower in dyspneic ($\text{mMRC}\geq 2$; $24.3\pm 11.7\%$ predicted; $p<.05$) patients. CAT scores were higher in overweight ($\text{BMI}\geq 25$; 4.6 ± 1.8 ; $p<.05$) and dyspneic (8.0 ± 1.8 ; $p<.05$) patients. Changes in 5STS during AECOPD were influenced by BMI and dyspnea, whilst changes in CAT were influenced only by BMI ($p<.05$). No influences were observed in QMS. Results are in Fig.1.

Fig 1. Changes in quadriceps muscle strength (QMS, a.I), 5 times sit-to-stand (5STS, b.I) and COPD assessment (CAT, c.I) tests during an acute exacerbation of COPD (T1-T4) and the effects of the interactions time*body mass index (a.II, b.II, c.II) and time*medical research council - dyspnea (mMRC, a.III, b.III, c.III) in changes occurring during an acute exacerbation of COPD.

* Significantly different from T1.
x Significant interaction with time.

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Significant changes on muscle strength, functionality and impact of the disease occur during an AECOPD. BMI and mMRC values at the onset seem to be factors playing a key role on patients' recovery from an AECOPD.

Footnotes

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