



Clinical characteristics of COPD Phenotypes

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Abstract

Comprehensive understanding of COPD phenotypes, incorporating simple, widely used and meaningful outcomes (e.g., functional status), might contribute to personalise patients' assessment and management. We described COPD phenotypes and developed a classification tree for its prediction.

A cross-sectional study was conducted with patients with COPD. Data collection included airway obstruction (FEV1pp); comorbidities (Charlson comorbidity index); functional status (one-minute sit-to-stand test [1-minSTS]) and impact of the disease (COPD assessment test [CAT]). Clustering analysis using k-medoids was used to explore existent phenotypes. A classification tree was generated with 70% of the sample. The remaining 30% was used for its validation, i.e., to determine its prediction ability to identify the correct phenotype.

Accuracy/agreement (Cohen's Kappa) were determined.

364 patients with COPD (67yrs; 76%male; FEV1 57±21pp) participated. Four phenotypes (C1, C2, C3, C4) were found (Fig. 1): two presenting severe (C1, C4) and two mild-to-moderate (C2, C3) airflow obstruction; two low (C1, C2) and two high (C3, C4) impact of the disease; two low (C3, C4) and two high (C1, C2) functional status. The classification tree established cut-offs for these variables and correctly classified 85% of new individuals in their phenotype (Cohen's Kappa=0.8).

Meaningful and easily available assessments were able to differentiate COPD phenotypes and may guide patient-centred interventions.

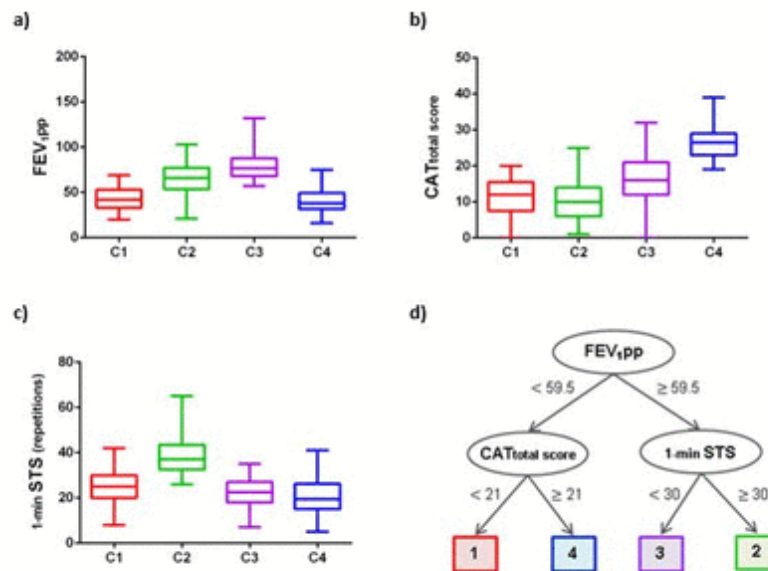


Figure 1 – Clinical characteristics of patients with COPD. Graphs from a) to c) represent the data distribution of each variable. The thick central horizontal line within each box plot represents the median, the box represents the interquartile range, and the vertical lines the range from the minimum to the maximum value of each cluster of patients for each variable: a) forced expiratory volume in one second percentage predicted (FEV_{1pp}); b) 1-minute sit-to-stand test (1-min STS_{repetitions}) and c) COPD assessment test total score (CAT_{Total score}) per cluster (C1, C2, C3 and C4). Figure 1d) represents the classification tree to assist in the prediction of the COPD phenotype with the proposed cut-offs for each variable.

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