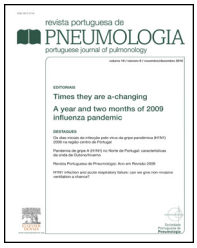
Rev Port Pneumol. 2015;21(1):11–15

revista portuguesa de PNEUMOLOGIA
portuguese journal of pulmonology
www.revportpneumol.org



ORIGINAL ARTICLE

The overall impact of COPD (CAT) and BODE index on COPD male patients: correlation?

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Received 29 November 2013; accepted 22 February 2014
Available online 17 January 2015

KEYWORDS
BODE index;
CAT;
COPD;
Respiratory rehabilitation;
Quality of life

Abstract
Background: Chronic Obstructive Pulmonary Disease (COPD) will be the 5th leading cause of disability (DALYs) and the 4th leading cause of death by 2030. Measuring the real impact of COPD using CAT (''COPD Assessment Test'') can complement BODE index, an indicator of mortality.
Aims: To assess correlation between CAT and BODE index in COPD patients.
Materials and methods: A retrospective study was conducted in a population of patients with COPD in a Respiratory Rehabilitation program. We analyzed demographic variables, variables in respiratory function – 6 min walking test (6MWT), post-BD forced expiratory volume in 1st second (FEV1%); dyspnea by mMRC scale; BODE Index and CAT.
Results: The study included 50 patients – GOLD stage I (7), II (25), III (14) and IV (4), 48 men; mean age 62.6 years (±9.5), average BMI 25.8 kg/m^2 (±4.8) and FEV1 57.1% (±19.6); 6MWT of 443.3 m (±61.6); 46% patients in classes 2 and 3 of mMRC scale; 84% were class 2 in BODE Index. About 80% reported slight to medium impact in CAT. CAT score and impact were correlated with BODE index score: $R = 0.475$, $p < 0.01$, and $R = 0.377$, $p = 0.004$, and BODE index class: $R = 0.357$, $p = 0.011$, and $R = 0.326$, $p = 0.021$.

Abbreviations: BMI, body mass index; BODE, body mass index, airflow limitation (forced expiratory volume in one second), dyspnoea and 6-min walk distance; FEV1, forced expiratory volume in one second; CAT, COPD assessment Test; CCQ, Clinical COPD questionnnaire; COPD, chronic obstructive pulmonary disease; FEV1%predicted, forced expiratory volume in one second in percent of the predicted value; mMRC, Modified Medical Research Council dyspnoea scale; GOLD, global initiative for chronic obstructive lung disease; SGRQ, St. George's Respiratory Questionnaire; 6MWT, 6-min walking test.

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http://dx.doi.org/10.1016/j.rppnen.2014.02.004

Conclusion: As pre-existent data in the literature (exacerbations and benefit of rehabilitation in COPD), the positive correlations found with BODE index reinforce the discriminative validity of CAT as a complement in the evaluation of what the true impact of COPD is on a patient's daily life.

Background

Chronic Obstructive Pulmonary Disease (COPD) is a common disease[1] (in Lisbon BOLD survey the estimated prevalence of COPD was 14.2%[2]) and the World Health Organization (WHO) estimates that it will be the fifth leading cause of disability (DALYs) and the fourth leading cause of death by the end of 2030.[1]

COPD patients often develop symptoms such as dyspnea, cough, chest tightness, exercise intolerance, sleep and mental disorders and social activity restriction, but COPD management and treatment have been largely based on spirometric assessment.[3] Recently, GOLD guidelines proposed dyspnea measurement, health status/quality of life impairment, and number of exacerbations as key elements (in addition to spirometry) with which to manage and treat COPD,[4] allowing health status and quality of life impairment to become part of overall COPD patients' management and a major concern for physicians. Several health status questionnaires and/or quality of life tools, such as St. George's Respiratory Questionnaire (SGRQ),[5] Chronic Respiratory Questionnaire (CRQ),[6] Clinical COPD Questionnaire (CCQ),[7] and COPD Assessment Test (CAT),[8] have been developed due to this growing awareness of the importance of health status, in an attempt to find a reliable tool to use in clinical practice.[9] CAT is the most recently developed questionnaire for COPD (2009); it is simple, validated, and self-completed and should be given to all COPD patients, irrespective of disease severity. Although no study has been carried out as to how applicable this is to the Portuguese population, CAT has been validated for use in the Portuguese language and its applicability has been tested in several countries, including Spain[10] and Brazil,[11] where it was considered a reliable instrument for evaluating patients with COPD. A recent study performed in 2011[12] proved that there was substantial agreement between CAT and SGRQ since CAT correlates very well with the SGRQ-C in stable COPD patients and during exacerbations.

The BODE index (body mass index, airflow obstruction, dyspnea, and exercise capacity) is a multidimensional grading system for COPD that includes symptoms assessment, nutritional state, exercise capacity and spirometric measure of airflow (FEV1 post-bronchodilator).[13] BODE reflects the progressive modification in the disease[14] and it is useful for predicting hospitalization and the risk of death among patients with COPD,[15] in the follow-up of lung functional change during pulmonary rehabilitation,[16] in predicting patient's survival after receiving lung volume reduction surgery[17] and the worsening of health-related quality of life in COPD patients as measured by SGRQ[18–20] and the total Clinical COPD Questionnaire CCQ score (specially the functional status) which corroborates the link between BODE index and quality of life.[21]

Since CAT is a recently developed questionnaire, little is known about its correlation with BODE index in terms of measurement of quality of life. This study aimed to understand if there is a relationship between the CAT questionnaire and the BODE index in order to enhance the understanding of COPD in its global disease spectrum and consequences. Measuring COPD using CAT (''COPD Assessment Test'') may complement the BODE index as an indicator of morbidity and mortality.

Materials and methods

Subjects

This was a retrospective study using existing data of stable COPD patients, with optimized therapy (correct inhalation techniques after repeated teaching) in a Respiratory Rehabilitation program at the Pulmonology Department in Centro Hospitalar de Vila Nova de Gaia, Portugal, between January 2010 and October 2011. Fifty patients had been included after excluding those with concomitant asthma or any respiratory disease other than COPD. The study was approved by the Ethics Committee of the hospital.

Data collection

Demographic information and medical records were reviewed (data collection was approved by the head of department and patient confidentiality was maintained). Baseline spirometry and carbon monoxide diffusion (DLCO) were performed before the beginning of the rehabilitation program respecting the ATS/ERS recommendations[22] and using a standard Pulmonary Function Tests (PFT) unit. Blood gases were determined in arterialized samples. COPD diagnosis was based on examination by a chest physician including spirometry test after bronchodilator use with FEV1/FVC ratio lower than 0.70, and GOLD guidelines reviewed in 2010[4] were used to classify disease severity since the latest GOLD guidelines[3] were not available at the time this study was performed.