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6 MINUTE WALKING TEST UNIVERSAL TOOL FOR DETECTING SYSTEMIC EFFECTS IN CHRONIC OBSTRUCTIVE PULMONARY DISEASE (COPD)

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Relevance. Chronic obstructive pulmonary disease (COPD) is a progressive respiratory disorder characterized by persistent airflow limitation, systemic inflammation, and reduced exercise tolerance [1,4]. Evaluation of functional capacity is essential for assessing disease severity, prognosis, and therapeutic effectiveness. The Six-Minute Walk Test (6MWT) is a simple, standardized submaximal test that reflects integrated cardiopulmonary and systemic function [4,5]. Six-minute walk distance (6MWD) is a strong predictor of morbidity and mortality in COPD [1]. A reduced 6MWD (<350 m) is associated with increased risk of death, exacerbations, and hospitalizations [1]. Decreased 6MWT correlates with pulmonary vascular remodeling, muscle dysfunction, and impaired gas exchange [1,2]. However, the relative contribution of cardiopulmonary reserve, muscle dysfunction, and systemic inflammation to its predictive value remains under study [1].

Aim: to evaluate the clinical and prognostic value of the Six-Minute Walk Test (6MWT) as a universal tool for detecting systemic effects in patients with chronic obstructive pulmonary disease (COPD), including functional capacity assessment, prediction of morbidity and mortality, detection of exercise-induced desaturation, and monitoring of therapeutic responsiveness.

Materials and methods. This study is a narrative synthesis of peer-reviewed studies (2002–2023) including Celli et al. (2016), Kalinov et al. (2023), Ghiasi et al. (2022), ATS (2002), and ERS/ATS (2014) [1–5]. Inclusion criteria: adults with confirmed COPD, standardized 6MWT, outcomes including 6MWD, mortality, SpO_2, or therapy response.

Results and their discussion. We analyzed clinical and functional data from 21 patients with confirmed COPD, divided into three severity groups according to GOLD criteria: Light COPD (n=7), Moderate COPD (n=7), and Severe COPD (n=7). The mean age was similar across groups: 66.3±8.9 years in the Light group, 68.5±10.2 years in the Moderate group, and 61.4±10.1 years in the Severe group. Spirometry results showed a progressive decline in lung function with increasing disease severity. Mean FEV_1 (% predicted) was 78.8±26.5% in the Light COPD group, 58.3±15.4% in the Moderate group, and 37.5±28.3% in the Severe group. The FEV_1/FVC ratio was <70% in all patients with moderate and severe COPD, confirming the presence of irreversible airflow obstruction. The six-minute walk distance (6MWD) demonstrated a clear stepwise reduction according to COPD severity. Patients with Light COPD walked 427.4±79.5 meters, those with Moderate COPD walked 358.1±98.3 meters, and those with Severe COPD walked only 270.8±80.2 meters. According to Celli et al. (2016), a 6MWD below 350 meters is associated with increased risk of mortality, exacerbations, and hospitalizations. In our cohort, 71% (5/7) of patients in the Severe group and 43% (3/7) in the Moderate group had 6MWD <350 m, compared to only 14% (1/7) in the Light group. These findings support the 6MWT as a sensitive tool for detecting systemic effects of COPD, including exercise intolerance and functional decline that correlate with disease severity. The test reflects not only pulmonary impairment but also cardiovascular, musculoskeletal, and metabolic dysfunction. Our results are consistent with previous studies demonstrating that 6MWD provides prognostic information beyond FEV_1 alone [1,4].

Conclusions. The Six-Minute Walk Test is a valuable, patient-centered tool for functional assessment, prognostic stratification, and monitoring therapeutic response in COPD patients. Its simplicity, reproducibility, and clinical relevance support its routine use in both clinical practice and research. However, the relative contribution of cardiopulmonary reserve, skeletal muscle dysfunction, and systemic inflammation to its predictive power remains an area of ongoing investigation, warranting further research into the pathophysiological mechanisms underlying functional decline in COPD [1].