PC 038. CUT-OFF POINTS OF THE 1-MINUTE SIT-TO-STAND TEST TO DETECT FUNCTIONAL IMPAIRMENT AND MORTALITY RISK IN PEOPLE WITH COPD

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Introduction: Functional status is a key outcome in people with chronic obstructive pulmonary disease (COPD) and can be defined as an individual's ability to perform normal daily activities required to meet basic needs, fulfill usual roles, and maintain health and well-being. The 1-minute sit-to-stand test (1-min STS) is a well-established measure to assess functional status in people with COPD that can be used in different settings (e.g., office, clinic, hospital, home) with limited resources (i.e., a chair and a stopwatch). This test is a strong predictor of exacerbations, hospitalizations and mortality in people with COPD. Yet, cut-off points to determine functional impairment with the 1-min STS in people with COPD are lacking for use in clinical practice. Recently, our group established a cut-off (19.5 repetitions) for increased mortality risk, however, it still lacks external validation.

Objectives: To explore the predictive ability of the 1-min STS to detect functional impairment and the validity of the previously established cut-off for increased risk of mortality in people with COPD.

Methods: A cross-sectional study was conducted with people with COPD. Age, sex, body mass index (BMI), lung function, the 1-min STS and the five-repetitions sit-to-stand tests were collected. We used two cut-offs for the five-repetitions sit-to-stand test known to be associated with low functional performance (12.1 seconds) and increased risk of mortality (15.98 seconds) in people with COPD. Receiver operating characteristics analysis (ROC) was performed and the area under the curve (AUC), sensitivity, specificity, and accuracy were calculated. The optimal cut-off points were identified by the highest Younden index.

Results: In total, 302 people with COPD (67.5 ± 10.4 years; 79.1% male; BMI 26.7 ± 4.6 kg/m^2; FEV1 55.2 ± 20.4%predicted) participated. Cut-off points in the 1-min STS of 23.5 repetitions for low functional performance (AUC = 0.92; 95%CI 0.89-0.95; 96.4% sensitivity; 80.9% specificity; accuracy = 0.84) and 18.5 repetitions for increased risk of mortality (AUC = 0.97; 95%CI 0.94-0.987; 95.5% sensitivity; 88.6% specificity; accuracy = 0.89) were found in people with COPD.

Conclusions: The 1-min STS showed an outstanding discriminative ability and excellent accuracy in determining low functional performance and increased risk of mortality in people with COPD. A cut-off of 23.5 repetitions can be used to identify people with functional impairment. The cut-off point found for increased risk of mortality is similar to the previously published using the 6-minute walk test as an anchor, reinforcing the validity of this cut-off. These cut-offs support healthcare professionals in tailoring an appropriate management plan for this treatable trait and might possibly contribute to the implementation of timely preventive or palliative strategies.

Keywords: COPD. Functional status. Prediction. Mortality.

PC 039. FEV1/FVC: THE FIXED RATIO VS THE LOWER LIMIT OF NORMAL

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Introduction: Pulmonary function tests (PFT) play an essential role in the diagnosis and follow-up of obstructive pulmonary diseases (OPD). Airflow obstruction (AO) is defined as a reduction of forced expiratory volume in the first second (FEV1) to forced vital capacity (FVC) ratio, but the best cut off value remains uncertain. The two most commonly used criteria are the fixed ratio (FR: < 0.7) and the lower limit of normal (LLN: < 5th percentile) according to Global Lung Function Initiative 2012 equations. Lung function varies with age, height, sex and ethnicity. While using the FR can lead to underdiagnosis in younger individuals and overdiagnosis in older individuals, the use of LLN can be more complex to apply in daily practice. This ongoing debate has led to the proposal of alternate means of defining AO, including MEF/FVC, FEV1/FEV6 and FEV3/FVC ratios. The use of indirect measurements of AO, such as signs of small airway obstruction (SAO), hyperinflation and airway resistance may also contribute to earlier identify OPD.

Objectives: To evaluate the clinical and functional profile of patients with discrepant criteria for AO (FR *vs.* LLN).

Methods: Retrospective observational study of patients who performed PFT during an 18 months period (from 01/2021 to 06/2022). The patients who only filled the criteria of AO by FR or LLN were selected and their demographic, clinical, spirometry and plethysmography data were collected.

Results: Of the 2,045 PFR analyzed, 90 patients (4.4% - all Caucasian) had discordance of AO defining criteria. AO was only identified according to LLN in 47 individuals and to FR in 43 individuals. Considering patients with FEV1/FVC > 0,7 but below the LLN, 97.8% (46/47) of these exams were performed due to clinical suspicion of OPD (n = 46 Asthma). The mean value of FEV1/FVC was 73.0% (SD: 2.3%) and it was on average 2.2% lower than the LLN. The patients' mean height was 161 cm (SD: 12.8 cm) and average age was 19.3 years (SD: 9.0), with 21 patients < 18 years. Other changes in spirometry were found in 89.4% (42/47) of patients (n = 42 SAO, n = 13 low FEV1). Changes in plethysmography were found in 57.4% (27/47) of patients (n = 13 hyperinflation, n = 22 high airway resistance). Regarding patients with FEV1/FVC < 0.7 but above the LLN, 53.4% (23/43) of these exams were performed due to clinical suspicion of OPD (n = 12 DPOC, n = 11 Asthma). The FEV1/FVC was on average 3.2% higher than the LLN, with a mean value of 62.8% (SD: 2.4%). The patients had average height of 166.2 cm (SD: 10.9 cm) and mean age of 72.1 years (SD: 8.7). 41.8% (18/43) of patients had other changes in spirometry (n = 14 SAO, n = 17 low FEV1) and 60.5% (26/43) of patients had changes in plethysmography (n = 9 hyperinflation, n = 26 high airway resistance).

Conclusions: The discrepancies between AO criteria using LLN or FR should be interpreted taking into consideration the demographic and clinical characteristics of the study population, and it is important to adopt an individualized approach in these cases. In this study, discordances occurred mainly at extreme age groups. Thus, it is necessary to investigate alternative definitions of obstruction that optimize diagnosis in these subgroups.

Keywords: Obstructive pulmonary disease. Airway obstruction. FEV1/FVC. Pulmonary function tests.

PC 040. ALPHA-1-ANTITRYPSIN DEFICIENCY IN A PULMONOLOGY APPOINTMENT

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Introduction: Alpha-1-antitrypsin deficiency (AATD) is an autosomal codominant inherited condition that results from a mutation in the SERPINA1 gene. There are currently about 120 described alleles, in which alpha-1-antitrypsin variants are classified from A to Z. Normal alleles are present in 85-90% of individuals and are