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Title

The prevalence and clinical implications of frailty in middle-aged people with COPD

Priority 1 (Research Category)

Pulmonary and critical care

Presenters

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Abstract

Context: Frailty, a state of reduced physiological reserve, is common in people with chronic obstructive pulmonary disease (COPD). Frailty can occur at any age, however the implications in younger people (aged <65 years) with COPD is unclear. Objective: To assess the prevalence of frailty in middle- and older-aged with COPD; explore relationships between frailty and FEV1; and quantify the association between frailty and adverse outcomes. Study design: Longitudinal cohort. Dataset: UK Biobank. Population: UK Biobank participants with COPD aged 40-70 at baseline. Instrument: Two frailty measures (frailty phenotype and frailty index) were quantified at baseline. Outcomes: Relationship with forced expiratory volume in 1 second (FEV1) was assessed for each frailty measure. The association between frailty and mortality, Major Adverse Cardiovascular Event (MACE), all-cause hospitalisation, hospitalisation with COPD exacerbation, and community COPD exacerbation were assessed over 8 years follow-up using cox-proportional hazards models. Models were adjusted for age, sex, socioeconomic status, smoking and alcohol, and then additionally for FEV1. Results: Frailty was common by both definitions (17% frail using frailty phenotype, 28% moderate and 4% severely frail using frailty index). The frailty phenotype, but not the frailty index, was associated with lower FEV1. Frailty phenotype [frail vs robust] was associated with mortality (hazard ratio 2.33; 95%CI 1.84-2.96), MACE (2.73; 1.66-4.49), hospitalisation (incidence rate ratio 3.39; 2.77-4.14) hospitalised exacerbation (5.19; 3.80-7.09), and community exacerbation (2.15; 1.81-2.54), as was frailty index [severe vs robust] (mortality (2.65; 95%CI 1.75-4.02), MACE (6.76; 2.68-17.04), hospitalisation (3.69; 2.52-5.42), hospitalised exacerbation (4.26; 2.37-7.68), and community exacerbation (2.39; 1.74-3.28). Relationships between frailty and outcomes were similar before and after adjusting for FEV1. Conclusion: Frailty, regardless of age or measure, identifies people with COPD at risk of adverse clinical outcomes. This relationship is independent of severity of airflow limitation (FEV1). Frailty assessment may aid risk stratification and guide targeted intervention in COPD and should not be limited to people aged >65 years.