Title: Muscular dysfunction in COPD: Systemic effect or deconditioning?

Body: Background: Muscular dysfunction is one of the systemic manifestations of chronic obstructive pulmonary disease (COPD). Objective: The aim of this study was to evaluate muscular strength of the different anatomical compartments in patients with moderate-severe COPD compare with healthy controls. Method: Cross sectional study in patients with moderate-severe COPD. Muscular strength of the respiratory muscles, flexors and extensors of the cervical spine, knee and handgrip force were evaluated. Six minute walking test (6MWT) and serum inflammatory markers (TNF-α, IL-1 IL-6, IL-8 and PCR) were also analysed. Results: Twenty-eight male patients with COPD (mean age 67.8 yrs, mean FEV1(%) 39%) and 24 male healthy controls (mean age 70.2 yrs) were studied. A significantly reduced strength of the flexors and extensors of the knee was observed in patients with COPD (p<0.001 and p=0.003). No differences in the flexors and extensors of the cervical spine and handgrip force were observed between groups. In COPD, no correlation was observed between the muscular strength in the different anatomic compartments and the concentrations of blood inflammatory biomarkers or with meters walked in the 6MWT. However, a negative significant linear correlation was observed between meters in the 6MWT and the levels of IL6 and IL8 (rho=-0.67, p=0.001; rho=-0.57, p=0.008). In addition, there was a negative correlation between meters in the 6MWT and inspiratory capacity rho=-0.755, p=0.031) Conclusions: Our results suggest a different impact of muscular dysfunction in different muscular compartments of patients with COPD. The main limiting factor for a reduced exercise capacity was a reduction in inspiratory capacity.