Telomere shortening and progression in patients with COPD

POSTER PRESENTATION

Authors

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RATIONALE

Chronic Obstructive Pulmonary Disease (COPD) is a multidimensional chronic disease thought to be associated with accelerated aging. Telomere loss, a primary hallmark of aging, is greatly accelerated in cells with increased levels of oxidative stress and inflammation. Telomere shortening could be related to COPD progression and clinically relevant outcomes.

OBJECTIVES

We sought to investigate telomere shortening over time and its relationship to clinical and lung function parameters in a COPD patient cohort.

METHODS

Telomere length was measured by qPCR in circulating leukocytes of 334 individuals (254 smokers with COPD and 80 smokers without the disease) at baseline. The measurements were repeated in 104 DNA samples of patients after 3 years of follow up and 55 samples after 5 years of follow up.

RESULTS

Telomere length (ln(T/S ratio)) decreased with age in COPD patients (r=0.196; p=0.001). Telomeres were significantly shorter independent from age, gender and pack-years in COPD patients when compared to smoker controls (1.64 (95%CI: 1.1-2.4), p=0.012). The T/S ratio decreased in COPD patients after three years (lnT/S₃=-0.29 vs. lnT/S₅=-0.96; p<0.0001) and after five years (lnT/S₅=-0.37 vs. lnT/S₇=-0.80; p<0.0001). Patients with >20% decrease in telomere length after three and five years showed a worsening in lung function (FEV₁, p= 0.017; PaO₂, p=0.001 and FEV₁, p= 0.001; FVC, p=0.002; PaO₂, p<0.0001; KCO=0.007, respectively).

CONCLUSIONS

We suggest that telomere shortening may be associated with lung function worsening over time. Further studies are needed to confirm the present findings.