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**Title:** Telomere length in chronic obstructive pulmonary disease

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**Body:** Background: Telomere length (TL) is considered a biomarker of cellular aging. Chronic obstructive pulmonary disease (COPD) is found to be associated with premature aging and the senescence hypothesis is now accepted as a molecular pathway for COPD development. Objectives: to measure TL in patients with COPD and to study its relation to demographic data, spirometric-indices and arterial blood gases parameters. Methods: We measured TL using quantitative polymerase chain reaction, in 20 patients with severe to very severe COPD and 11 nonsmokers with normal lung function; both patients and controls were age and sex-matched males. Measurements and Main Results: Telomere length was significantly shorter in patients with COPD than in controls ( $P < 0.001$ ). Among COPD patients TL was significantly shorter in current-smokers than ex-smokers. No relationship was found between TL and pack/year exposure in COPD patients. In COPD patients TL was correlated to  $O_2$  sat %, pH ( $P < 0.05$ ) and  $PaO_2$  ( $P < 0.01$ ). TL was shorter in patients with very severe COPD when compared to severe COPD ( $P < 0.001$ ). In COPD patients TL was correlated to spirometric-indices FVC % ( $P < 0.05$ ) and  $FEV_1$  %,  $FEF_{25-75}$  % ( $P < 0.001$ ). BODE index was correlated negatively with TL ( $P < 0.01$ ) in COPD patients; among BODE index parameters; dyspnea score showed significant negative correlation ( $P < 0.05$ ) with TL. Conclusions: Our data support accelerated cellular senescence in COPD represented by shortening of telomere length, TL was positively correlated with air flow limitation and it may be related to impaired physical activities in COPD patients, which is a manifestation of aging process.