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Title: Impairment of mucociliary clearance in COPD and smokers: Same or different?

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Body: Mucociliary clearance (MC) is a key defense mechanism in airways. Smokers and patients with chronic obstructive pulmonary disease (COPD) exhibit modifications in MC, which predisposes these populations to recurrent infections. It is known that ex-smokers with normal lung function may present MC reversing after smoking cessation, but there are no studies that evaluate COPD ex-smokers' MC. Aim: To evaluate and to compare the MC and exhaled carbon monoxide (eCO) in smokers and COPD ex-smokers. Methods: We evaluated 83 subjects, divided in four groups: severe COPD (n=22), moderate COPD (n=19), current smokers (n=20) and nonsmokers (n=22). Severe and moderate COPD patients were ex-smokers (FEV1% = 38[34-43] and 60[53-63], 48[11-100] and 50[40-75] pack/years, respectively). Current smokers presented normal lung function and 40[22-44] pack/years. Nonsmokers were matched for age and sex. Were evaluated eCO levels and MC by saccharin transit time (STT) test. Tests were conducted between 8 and 9 AM with air temperature and relative humidity controlled. Statistical analyses were performed using Kruskal-Wallis test followed by Dunn's test. Results: STT was higher in smokers compared to control group (p=0,006). There was no difference in STT between smokers and COPD groups, but in both groups of COPD STT values were similar to control group. Also, there was no difference in STT between severe and moderate COPD. eCO levels was higher in smokers compared to other three groups (p<0,0001). Conclusion: Smokers showed worse STT and moderate and severe COPD were similar to nonsmokers. These results suggest that quitting smoking, even in people who developed COPD, may lead to MC's reversibility.