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Title: Early diagnosis of small airway disease

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Body: Inflammatory changes in the peripheral airways of smokers are detected even when “normal” spirometry is still present, indicating that early structural damage in the small airways develop before the diagnosis of overt COPD is established. There are several tests, as $FEF_{25-75\%}$, slope of phase III, and effective time (Thorax 1980; 35: 375-378) and its variations, advocated to early detect small airways disease and discriminate between smokers and non-smokers. However, it is not clear which of the aforementioned tests is the “best” for early detection of small airways disease. We studied 30 (15 men) Caucasian subjects (10 never smokers, 10 smokers with normal spirometry, and 10 COPDers in GOLD I), aged (mean±SD) 52±14 y with $FVC\%pred=111±12$, $FEV_1\%pred=98±14$, $FEV_1/FVC\%=73±10$. All smokers had smoking history more than 10 pack-years. Simple spirometry, the slope of phase III ($\Delta N_2/l$), and the effective time at the 60-70% part of the forced vital capacity of the lung ($TEFF_{p7}$) were measured. The $FEF_{25-75\%}\%pred$ (64±29) was abnormal in 16/30 subjects. The $\Delta N_2/l\%pred$ (192±150) was abnormal in 14/30 subjects. $TEFF_{p7}\%pred$ was 155±88 and was abnormal in 17/30. Multiple linear regression analysis showed that $TEFF_{p7}\%pred$ is more appropriate, among the tests performed, for discriminating smokers from never smokers ($p=0.008$). In conclusion, $TEFF_{p7}$ appears to be a sensitive test for the early detection of small airway disease.