



MEETING ABSTRACT

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Acute effect of an e-cigarette with and without nicotine on lung function

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Background

E-cig is an electrical device that vaporizes propylene or polyethylene glycol-based liquid solution into an aerosol mist containing different concentration of nicotine. Our preliminary study showed an increase in Raw, a concomitant decrease in sGaw and an increase in slope of phase III in a limited number of subjects immediately after smoking a single e-cig containing nicotine.

Materials and methods

We extended our protocol in a larger group of never smokers and in smokers. We implemented the same protocol with a nicotine free e-cig in a group of never smokers. We studied 60 subjects before and after smoking an e-cig containing 11mg nicotine (Group A). Group A: 9 never smokers and 51 smokers (24 had no overt airways disease, 11 asthma, 16 COPD). Another group of 10 never smokers used a nicotine free e-cig (Group B). Lung function assessed pre and post e-cig use including lung volumes, airway resistance (Raw), specific airway conductance (sGaw) and the slope of phase III. The same brand of e-cig used in both groups, with 11 and 0mg of nicotine.

Results

Group A: a significant increase in Raw was shown in smokers and in never smokers (0.284 ± 0.13 - 0.308 ± 0.14 ; $p = 0.033$, 0.246 ± 0.07 - 0.292 ± 0.05 ; $p = 0.006$) with significant decrease in sGaw (1.197 ± 0.50 - 1.060 ± 0.42 ; $p = 0.009$, 1.313 ± 0.22 - 1.109 ± 0.18 ; $p = 0.043$). Increased slope in phase III was shown only in asthmatic patients ($p = 0.008$). Group B: increase in Raw

(0.247 ± 0.03 - 0.333 ± 0.08 ; $p = 0.005$) and a decrease in sGaw (1.213 ± 0.29 - 0.944 ± 0.18 ; $p = 0.009$) noted.

Conclusions

The present study supports our preliminary results showing increased Raw and a concomitant decrease in sGaw. These changes might be due to the vaporizing liquid but not to the inhaled nicotine per se.

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