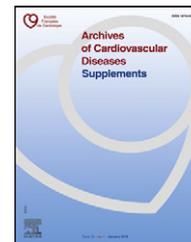




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08 - Pharmacology

High wattage e-cigarette vaping induces arterial hypoxemia and tissue hypoxia in tobacco smokers suffering from coronary artery disease: A RCT



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Background Whereas high wattage electronic cigarettes (e-cigarettes) vaping (V) is increasingly popular, its health effects are largely unknown. We tested the hypothesis that pure propylene glycol/glycerol e-liquid vehicles V decreases arterial oxygen partial pressure in heavy tobacco smokers suspected of coronary artery disease.

Methods After their coronary angiogram, twenty tobacco smokers participated in an open-label randomized parallel study; serial intra-arterial blood samples were performed before and after 1-gram propylene glycol/glycerol e-cigarette V at 60 Watts (N=10) or sham-vaping (SV) (N=10). Peripheral pulse oximetry, transcutaneous gas tension and microcirculatory blood flow were also assessed throughout the experimental sessions.

Results Eighty % of the patients were hypertensive and 60% had a left ventricular ejection fraction < 50%. Established coronary artery disease was found in 65% patients, of whom 62% underwent a coronary stent procedure during the index angiogram. Compared to SV, V decreased the following parameters 5 minutes after the exposure: – Δ -arterial oxygen partial pressure (SV: $+5.4 \pm 3.3$ mmHg vs. V: -5.4 ± 1.9 mmHg; $P=0.012$) (difference between groups; 10.8 [95%CI, 8.4–13.2]mmHg); – Δ -arterial oxygen saturation (SV: $+0.9 \pm 0.6\%$ vs. V: $-0.8 \pm 0.3\%$; $P=0.023$); – Δ -oxyhemoglobin fraction (SV: $+1 \pm 0.5\%$ vs. V: $-0.6 \pm 0.3\%$; $P=0.028$); – Δ -peripheral oxygen saturation (SV: $+1.3 \pm 0.4\%$ vs. V: $-1.3 \pm 0.5\%$; $P < 0.0001$); – Δ -transcutaneous oxygen partial pressure (SV: $+6 \pm 3.4$ mmHg vs. V: -1.2 ± 2.1 mmHg; $P=0.041$). The decrease in Δ -peripheral oxygen saturation (SV: $+0.7 \pm 0.6\%$ vs. V: $-0.7 \pm 0.5\%$; $P=0.036$) persisted up to 20 minutes after V compared to SV.

Conclusions Acute high wattage e-cigarette V in smokers with heart disease induces arterial hypoxemia with subsequent tissue hypoxia. The latter could be related to ventilation/perfusion mismatches.

Disclosure of interest The authors declare that they have no competing interest.

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