Acute effects of passive smoking on blood pressure and heart rate in healthy females.

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**Background:** Carbon monoxide (CO) is suspected of playing a major role in cigarette smoke-induced cardiovascular diseases. Hypertension is one of the common chronic cardiovascular diseases that lead to heart attacks, strokes, chronic heart failure, and chronic renal failure. We aimed to investigate the immediate effects of passive smoking on blood pressure and heart rate during and after exposure in healthy females. In addition, we examined that whether carboxyhemoglobin (COHb) levels were correlated with heart rate and blood pressure measurements.

**Methods:** Thirty healthy nonsmoker female volunteers (mean age: 26±5 years) were prospectively enrolled in the study. Systolic and diastolic blood pressure and heart rate were obtained at baseline, 5th, 10th, 15th, 30th minute of exposure and at 5th, 15th, and 30th minute after exposure. Blood samples for measuring COHb were taken at baseline and after spending 30 min in the smoking room from all volunteers. Difference between baseline and second measurements of COHb were described as ΔCOHb.

**Results:** Mean COHb level was significantly higher at the end of exposure when compared with baseline values (COHb 0.5±0.1 vs. 1.8±0.4%, P<0.05). Heart rate and systolic blood pressure measurements at 15th and 30th minute of exposure were higher than at baseline and 5th minute of exposure (88±3.2 and 90±3.7 vs. 76±3.9 and 78±4.5 beats/min, P<0.05; 135±1.1 and 136±4.0 vs. 113±5.7 and 115±3.5 mmHg, P<0.05). They elevated significantly at the same time interval. Diastolic blood pressure was significantly increased at 30th minute of exposure when compared with earlier measurements (90±5.1 vs. 74±2.2, 72±3.2 vs. 71±4.5 mmHg, P<0.05). Heart rate and systolic blood pressure decreased notably at 15th minute and returned to baseline values at 30th minute after exposure (80±1.2 and 76±3.2 vs. 88±4.5 beats/min, P<0.05; 120±4.4 and 115±1.9 vs. 135±2.2 mmHg, P<0.05). Diastolic blood pressure decreased significantly at 30th minute and returned to baseline values at 60th minute after exposure (75±3.6 and 70±2.5 vs. 89±4.3 mmHg, P<0.05). Heart rate and diastolic blood pressure measurements were moderately correlated and systolic blood pressure measurements were closely correlated with ΔCOHb values at the end of the exposure.

**Conclusion:** Our results suggested that passive smoking has remarkable acute effect on heart rate and blood pressure in young healthy females. Beside this, we found that ΔCOHb level is closely correlated with systolic blood pressure and moderately correlated with heart rate and diastolic blood pressure measurements.

**Conflict of interest:** None