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Cardiovascular Disease Risk Factors in Women Working in a Tobacco Plant

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Abstract: To estimate the effect of exposure to tobacco dust on lipid parameters that increase the incidence of cardiovascular disease (CVD), 70 female workers were selected from the tobacco processing section of a tobacco plant, and 55 women were selected from the administration selection as the controls. The subjects were homogeneous in terms of primary and secondary risk factors such as age, alcohol intake, menstrual status, physical activity, diet, familial hyperlipidemia and heart disease. They were divided into two subgroups, smokers and nonsmokers. Venous blood and morning urine samples were simultaneously taken from workers after a 12-14 h period without food or cigarettes. Triglyceride (TG), total cholesterol (TC) and high-density lipoprotein cholesterol (HDL-C) in the serum of the workers were measured spectrophotometrically, while apolipoprotein-AI (Apo-AI), apolipoprotein-B100 (Apo-B) and lipoprotein a (Lp(a)) were determined nephelometrically. The levels of urinary cotinine, a metabolite of nicotine, was measured using the radioimmunoassay method. The urine cotinine/creatinine ratio and low-density lipoprotein cholesterol (LDL-C) were calculated. The data obtained were defined as the mean \pm SD. In the comparison of the groups, Student's test was used. The urinary cotinine/creatinine ratio, and serum levels of TC, TG and LDL-C in the tobacco workers were significantly higher than in the controls ($p < 0.001$, $p < 0.05$, $p < 0.001$ and $p < 0.05$ for nonsmokers; $p < 0.001$, $p < 0.05$, $p < 0.01$ and $p < 0.01$ for smokers, respectively). However, the serum levels of HDL-C in the tobacco workers were significantly lower ($p < 0.001$ for non-smokers and $p < 0.05$ for smokers). Smokers had significantly high urine cotinine/creatinine ($p < 0.001$), high serum levels of TC (0.001), TG ($p < 0.01$) and LDL-C ($p < 0.05$), but significantly low HDL-C ($p < 0.001$) when compared with non-smokers. Similarly, when smokers were compared with nonsmokers in the controls, smokers had significantly high urine cotinine/creatinine ($p < 0.001$), high serum levels of TC ($p < 0.05$), TG ($p < 0.01$) and LDL-C ($p < 0.01$), but significantly low HDL-C ($p < 0.05$). There were no significant correlations between the urine cotinine/creatinine ratio and the other parameters we used in the smokers and nonsmokers of both groups. These results suggest that chronic exposure to tobacco dust results in harmful changes in the serum lipid profile, which could increase the incidence of CVD.

Key Words: Tobacco dust, tobacco worker, Lipids, occupational diseases.

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