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The Effect of Cigarette Smoking on Blood Parameters and Serum Minerals on Smoker's Women in Basrah (Iraq)

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Abstract

Introduction. Cigarette smoking is a common cause of health problems. To date, the adherence to smoking in women, as well as the specific effects of smoking on the morphological composition of the blood and the content of certain minerals in it, depending on the age of smokers, remain insufficiently studied.

Purpose. To compare the effect of cigarette smoke on some hematological parameters and minerals between smoker and non-smoker women.

Materials and methods. Samples of whole blood and serum of volunteers were studied, among whom were 20 smokers and 14 non-smokers aged from 20 to 40 years; smokers were divided according to smoking experience into two groups – 1–15 years and 16–30 years. The work used an automated method for studying the content of blood cells (erythrocytes, platelets, leukocytes with the establishment of the average volume of erythrocytes and taking into account the hemoglobin content) on a hematological autoanalyzer, as well as photometric methods for determining the content of serum iron, magnesium, total calcium, zinc.

Results. The result of this study showed significant differences in red blood cell count, hemoglobin, platelet count and mean cell volume between female smokers and non-smokers, while there was no statistically significant difference in white blood cell count was not found. Against this background, a significant decrease in the concentration of calcium, magnesium, and zinc was revealed in smoking women compared to non-smokers, while the concentration of iron increased significantly. In a smoking history of 16–30 years, changes in the content of blood cells and the elemental composition of blood serum were significantly more pronounced both in relation to those in the control group of persons and in relation to the contingent of women with less smoking experience: 1–15 years.

Conclusion. Cigarette smoking affects hematological parameters and blood elemental composition (including trace elements) in women who smoke compared to non-smokers. Changes in the parameters of morphological blood elements and the content of the studied mineral substances turned out to be significantly more pronounced in women with a long history of smoking.

Keywords: cigarette smoke, blood counts, nutrients, non-smokers, trace elements, hematological parameters