Background: Smoking represents the most widespread substance dependence in the world. Several studies show the nicotine’s ability to alter women hormonal homeostasis. Women smokers have higher testosterone and lower estradiol levels throughout life compared to women non-smokers. This negatively affects women reproductive function. The aims of our study were to examine the effect of smoking cessation to hormonal spectrum and form the recommendation of timing for fertility improvement.

Methods: We monitored the effect of smoking discontinuation on steroid spectrum in 40 premenopausal women smokers and 20 controls (age and BMI matched). The women smokers were examined before they began to discontinue smoking and after quitting smoking every 6 weeks. The controls have the basal sampling. In each examination blood was collected to determine steroid spectrum, LH, FSH and SHBG, also basic anthropometric data were measured using GC-MS or immunoanalysis. Repeated measures ANOVA model was used for evaluation data. The local Ethics Committee approved the study.

Results: Smokers have higher androgens levels compare to control. A slight increase in androgens after the smoking discontinuation occurred after first six weeks. No changes in C21 steroids were found. Given the small number of women who endured not to smoke, the data could be analysed only after 6 weeks. But it seems that androgens increase also after 12 and 24 weeks.

Conclusion: Chronic smoking causes hyperandrogenism in fertile women; after smoking discontinuation further increase occurs. It is highly recommended to stop smoking before planning pregnancy at least eight month in advance.

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