Mgr Marta Dulęba

Assessment of alcohol consumption and cigarette smoking by pregnant women

Streszczenie w języku angielskim

Objectives: The aim of the study is to assess the frequency of consumption and addiction to alcohol in pregnant women based on surveys using standardized and recommended by the World Health Organization (WHO) tests: CAGE, TWEAK and the T-ACE test. Assessment of the level of MCV in the peripheral blood in women who drank alcohol during pregnancy, as well as the assessment of nicotine addiction, based on measurements of the concentration levels of the nicotine metabolite - cotinine in the blood and urine of pregnant women and with the standardized test of nicotine dependence - test according to Fagerström.

Materials and methods: The study included 149 healthy pregnant women who had a physiological pregnancy with healthy fetuses and reported for childbirth to the PZOZ in Starachowice in the period from January 2019 to December 2020. The respondents were between 18 and 46 years of age. The surveyed women came from the voivodeship Świętokrzyski – 55,7% lived in the city, and 44,3% in the countryside. The test was performed when the patient reported for delivery. Each respondent gave informed and voluntary consent to participate in the study. After presenting for delivery, venous blood was collected for standard antenatal examinations, and additionally, before or immediately after delivery, a drop of blood from the finger and urine to assess the level of cotinine. In addition, each subject completed a demographic questionnaire and three questionnaires: TWEAK, CAGE, T-ACE on alcohol consumption and one Fagerström questionnaire about smoking.

Results: In the group of 149 examined patients, on the basis of the survey, it was found that 84,6% of women drank alcohol before pregnancy, and 26,2% continued drinking during pregnancy. Among the respondents who drank alcohol before pregnancy, only 57,2% gave up alcohol consumption during pregnancy. None of the subjects started drinking during pregnancy. Pregnant women who used to drink were characterized by a lower level of education

only (p <0,001; V = 0,34) and were more often unmarried (p = 0,001; V = 0,32) compared to non-drinkers. Pregnant women who consumed alcohol during pregnancy more often had fathers who drink (82,10%) and siblings (48,70%).

When assessing the markers of alcohol consumption, it was found that out of 39 pregnant women who admitted drinking alcohol during pregnancy, a significantly (p <0,05) elevated MCV level was found in 64% of the respondents. MCV values were elevated in 95% of nonsmokers and 46% of alcohol drinkers. Increased levels of MCV and the presence of cotinine in the blood were found in 53,85% of pregnant women. Among 106 patients declaring that they did not consume alcohol during pregnancy, an increased level of MCV was found in 11,82% of the respondents, and in 5,45% the TWEAK test test confirming drinking alcohol was positive. Among all those who denied drinking alcohol, 31,32% had a positive TWEAK test result, which proves that they are addicted to alcohol. On the other hand, in the group of women who admitted drinking during pregnancy, a statistically significant positive (p <0,05) result of the TWEAK test was recorded in 74,36% of the respondents. Among women who deny drinking alcohol during pregnancy, a study using the CAGE test showed that 35,9% of the respondents stated that it was not true, according to 25,64% in the TWEAK test, and 11,32% in the T-ACE test. Comparing alcohol dependence tests, the CAGE and TWEAK tests were found to be more sensitive than T-ACE. And the T-ACE test is the most, and CAGE the least specific (specific) and accurate.

In addition, the T-ACE test also has the highest and CAGE the lowest predictive value - PPV. In contrast, the TWEAK test has a negative predictive value - NPV slightly better than CAGE and T-ACE.

We cannot state unequivocally that the TWEAK test is the best test for assessing any alcohol problem in the group of pregnant women. The TWEAK test needs to be supplemented with other standardized tests for the assessment of alcohol abuse by a pregnant woman.

When assessing nicotine addiction, it was found that 42,28% of patients smoked before pregnancy. 26,85% of pregnant women admitted smoking cigarettes during pregnancy. 39,6% of pregnant women were exposed to tobacco smoke in their place of residence. Cotinine in the blood was found in 95% of smokers, and also in 22,86% in the group of non-smokers. Statistically more often (p <0,05) women who smoke also drink alcohol. Cotinine was also found in the blood of 37,1% of pregnant women who admitted drinking. When assessing cotinine in blood and urine, it was found that by examining its concentration in both these media, cotinine is present in smokers, regardless of the number of cigarettes smoked.

The study shows that the vast majority of 75,17% of patients were not informed during pregnancy about the harmful effects of smoking. Only about half of the respondents (48,99%) answered nicotine addiction using the Fagerström test. While 22,15% of pregnant women answered some of the questions. Analyzing the collected material, it was found that 22,82% of the respondents were slightly dependent on nicotine and it is a biological addiction, while 4,03% of the respondents were dependent on the biological and physical level.

Conclusions: 1. Pregnant women conceal the fact that pregnant women smoke cigarettes and every third pregnant woman (31%) from the province. Świętokrzyskie still smokes before pregnancy, moreover, every fourth (26%) pregnant woman drinks alcohol during pregnancy, despite the prohibition of medical staff.

2. Pregnant women who drink significantly more often have a lower level of education and are 5 times more likely to be unmarried compared to pregnant ones who do not drink.

3. Increased MCV level in morphological examination occurs in 64% of pregnant women who admit to drinking alcohol during pregnancy. MCV may be the first marker of alcohol abuse also in this group of women.

4. In the behavioral assessment using standardized alcohol consumption tests, it was found that all the tests used confirmed suppression of alcohol consumption during pregnancy when answering the questionnaire.

5. The CAGE test and the TWEAK test, due to their greater sensitivity than the T-ACE test, enable the identification of pregnant drinkers who require minimally invasive therapy. Therapy that can be used in pregnant women who test positive will not harm the pregnant nondrinkers. On the other hand, the T-ACE test, due to its greatest sensitivity, should be used to identify pregnant women who do not drink. Positive results of these tests make it possible to distinguish women who should and do not need to implement educational activities related to drinking alcohol.

6. Pregnancy is the reason why most pregnant women stop drinking alcohol (69%), and pregnant women who drink are still unaware that they are alcohol dependent.

7. Testing cotinine in blood and urine is a very easy, cheap and quick method used to assess the exposure of a pregnant woman to nicotine smoke (100%). Determining this exposure during pregnancy would enable the implementation of education focused on the effects of smoking and would motivate the pregnant woman and her environment to change their lifestyle, which would improve the welfare of the fetus.