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RELATIONSHIP BETWEEN HYPERVENTILATION SYNDROME AND ANXIETY DISORDERS IN WOMEN-INTERNALLY DISPLACED PERSONS WITH THREATENED MISCARRIAGE

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Abstract

The protracted armed conflicts create not only political, legal, socio-economic problems, form the migration flows of the population, but also affect the somatic and mental health of people. Pregnancy is a critical stage in the development of a woman's personality. According to recent studies, about 54% of women during pregnancy experience anxiety, the prevalence of hyperventilation syndrome (HVS) in population is 6-9.5%. **The aim of the study** was to determine the prevalence of hyperventilation syndrome and to establish its relationship with anxiety disorders in women - internally displaced persons with threatened miscarriage, living in the Luhansk region to improve treatment measures and prevent obstetric and perinatal complications. **Material and Methods.** The study included 35 pregnant women

- IDPs who were hospitalized regarding threatened miscarriage to the hospitals, located in the Luhansk region (group I). The control group consisted of 30 pregnant women with non-complicated obstetric anamnesis and physiological course of pregnancy with similar gestational period of pregnancy and place of residence. Spielberger State-Trait Anxiety Inventory was used to assess the level of anxiety, the Nijmegen questionnaire was used to identify the manifestations of HVS. **Results and discussion.** Manifestations of HVS were observed in 8.57 % of patients of group I, in group II were not recorded. Patients of group I had significantly higher levels of state and trait anxiety, HVS. In group I a positive correlations between the indicators of HVS and indicators of state and trait anxiety were found. **Conclusions.** Antenatal study of levels of anxiety, manifestations of HVS in pregnant women - IDPs with threatened miscarriage will allow to individualize the approach to the management of pregnancy and if needed to timely develop rehabilitating measures, that will contribute to a successful outcome of the pregnancy and affect the health of the mother and her offspring.

Keywords: pregnancy; threatened miscarriage; hyperventilation syndrome; anxiety.

The protracted armed conflicts create not only political, legal, socio-economic problems, form the migration flows of the population, but also affect the somatic and mental health of people [1, 2]

By definition, internally displaced persons (IDPs) are «Persons or groups of persons who have been forced or obliged to flee or to leave their homes or places of habitual residence, in particular as a result of or in order to avoid the effects of armed conflict, situations of generalized violence, violations of human rights or natural or human-made disasters, and who have not crossed an internationally recognized State border» [3]. At the end of 2019, 50.8 million people were living internally displaced by conflict, violence and catastrophes [4].

Chronic stress can affect the course of pregnancy, leading to an increase in the number of complications. During and after emergencies, people begin to face various mental health problems. Some of them have additional mental disorders, while others experience psychological distress [5, 6, 7, 8].

Displaced persons tend to have higher rates of depressive and post-traumatic symptoms than the population of their own ethnic groups, as well as the population of the host regions to which they relocate [1, 9]. Pregnancy is a state of increased vulnerability to the

development of anxiety and depression, which are the most common mental disorders during pregnancy and after childbirth. Their symptoms can range from mild to severe and are a serious public health problem worldwide [5, 10]. According to research by A.M. Lee et al., about 54% of women experience anxiety throughout pregnancy [11].

Hyperventilation syndrome (HVS) is a respiratory disorder associated with mental factors, characterized by periodic or chronic course. This syndrome is characterized by a feeling of shortness of breath with the inability to inhale or exhale air on the chest, poor tolerability of stuffy rooms, sighing, yawning; an appearance of a lump in the throat, cold hands and feet, palpitations, chest tightness are possible. According to recent studies, the prevalence of hyperventilation syndrome (HVS) in population is 6-9.5% [12, 13].

The threatened miscarriage is the most common pregnancy complication that occurs in 15-20% of cases of ongoing pregnancy. TIP has associated with preterm labor and low birth weight, pre-eclampsia, preterm prelabour rupture of membranes, placental abruption and intrauterine growth restriction [14]. Despite successes in the study of etiology, pathogenesis, and the development of various methods for diagnosing and treating the threatened miscarriage, the frequency of miscarriages remains stable [15, 16].

The aim of the study was to determine the prevalence of hyperventilation syndrome and to establish its relationship with anxiety disorders in women - internally displaced persons with threatened miscarriage, living in the Luhansk region to improve treatment measures and prevent obstetric and perinatal complications.

Material and Methods. The study included 35 pregnant women - IDPs who were hospitalized regarding threatened miscarriage to the hospitals, located in the Luhansk region (group I). The control group (group II). consisted of 30 pregnant women with non-complicated obstetric anamnesis and physiological course of pregnancy with similar gestational period of pregnancy and place of residence. Before the start of the examination, each woman signed an Informed Consent of the patient to conduct diagnostics, treatment and processing of personal data. The studies were conducted in compliance with the basic bioethical norms and the requirements of the Helsinki Declaration. The criteria for inclusion in the main group were the woman's voluntary informed consent, the presence of symptoms of threatened abortion, I and II trimester of pregnancy.

Comprehensive clinical and obstetric examination in accordance to the current orders of the Ministry of Health of Ukraine was carried out.

The Nijmegen questionnaire (NQ) was used to detect the manifestations of hyperventilation syndrome. The NQ consists of 16 items to be answered on a five-point

scale ranging from 'never' counted as zero to 'very often' counted as 4. The total score ranges from 0-64. A score of over 23 denotes the presence of HVS [17, 18].

The Spielberger State-Trait Anxiety Inventory (STAI) is a 40-item self-completed questionnaire that aims to assess separately state anxiety (SA) (a temporary state influenced by the current situation where the respondent notes how he/she feels right now at this moment) and trait anxiety (TA) (a general propensity to be anxious where the respondent notes how he/she feels "generally") with 20 items each. According to the STAI, scores of 20–30, 31–44, and 45–80 indicate low, moderate, and high anxiety, respectively [19, 20].

Statistical data processing was performed using SPSS 17.0 and Microsoft Excel for Windows (2013). To assess the normal distribution the Shapiro-Wilk test was used. Non-parametric Mann Whitney U test for independent samples was used. Analysis of rank correlations using Spearman's test was performed.

Results and discussion. The average age of women in group I was Me (Q1-Q3) = 26.00 (22.00-32.50), in group II – 24.50 (20.75-30.00) years. The largest number of patients was observed at the age of 20-30 years (24 (68.57%) and 22 (73.33%), respectively), that is, among the active and employable part of the population.

Group I women had complaints of periodic feeling of internal tension (in 3 (8.57 %) cases), shortness of breath with inability to breathe air to the full chest (3 (8.57 %), palpitations (2 (5.71%), a feeling of tightness in the chest (1 (2.86%)). 6 (17.14%) women of group I and 3 (10.00%) person of group II complained of poor tolerability of suffocating premises, periodic yawning – 7 (20.00%) and 5 (16.67%), cold hands and feet – 5 (14.29%) and 2 (6.67%) patients, respectively. A score of over 23 was noted in 3 (8.57%) patients of group I, in group II – no such cases were registered.

Patients of group I had significantly higher levels of state and trait anxiety, HVS (table 1).

Table 1. Psychometric profile of the examined patients, Me (Q1–Q3)

Indicators	Group I, n = 35	Group II, n = 30
SA, score	47,00 (35,00–49,00)*	45,50 (36,00–50,00)
TA, score	42,50 (32,00–48,00)*	27,50 (24,00–30,00)
NQ, score	8,00 (6,00–12,00)*	5,00 (3,00–5,00)

Note: *– $p<0.05$ (Mann-Whitney test)

In group I a positive correlations between the NQ score and TA score ($r = 0.412$, $p = 0.014$) and between the NQ score and SA score ($r = 0.556$, $p = 0.001$) were found (fig. 1).

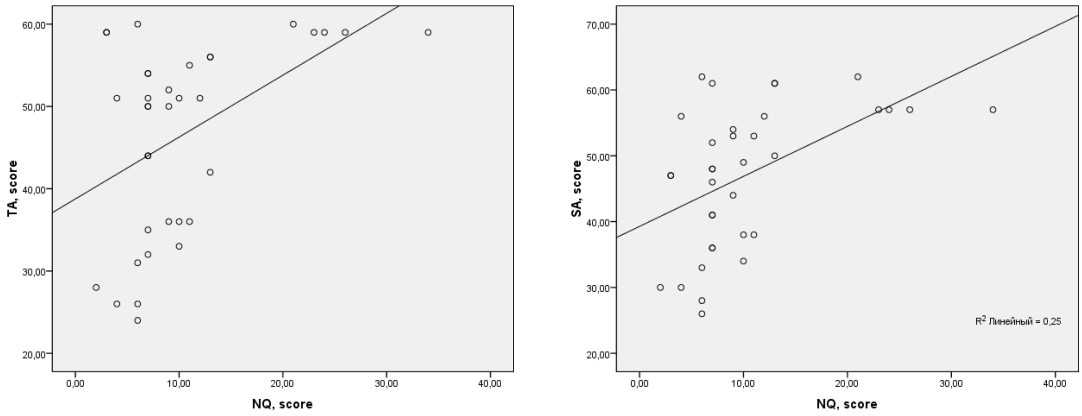

Fig. 1. Direct correlation between the NQ score and the TA and the SA score in group I

We found that 3 (8.57%) women in group I had manifestations of HVS, in group II it was not registered. However, some complaints, including intolerance to stuffy rooms, periodic yawning and cold hands and feet, were noted in patients of both groups.

Our data are consistent with the data provided by LoMauro A et al. [21], slightly higher than the data given by Kern B et al. regarding the prevalence of GVS in the population - 6% [22], but below the data given by Jones M et al. - 9.5% [23].

According to our data, patients of group I were characterized by significantly higher rates of SA and TA compared with women of group II, which can be regarded as mental manifestations of stress. The obtained results are comparable with the data of the study Faisal-Cury A et al., King NM et al. [6, 24].

High levels of anxiety and HVS indicate that pregnant women are the most vulnerable group affected by the armed conflict in Eastern Ukraine.

Our data showed the need to include women with anxiety disorders and HVS in the risk group for mental and physical health. This approach will make it possible to timely adjust the physical and psycho-emotional sphere of pregnant women with TIR and IDP status.

Conclusions. Antenatal study of levels of anxiety, manifestations of HVS in pregnant women - IDPs with threatened miscarriage will allow to individualize the approach to the management of pregnancy and if needed to timely develop rehabilitating measures, that will contribute to a successful outcome of the pregnancy and affect the health of the mother and her offspring.

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