Genetic And Psychogenic Factors Of Reproductive Loss Of I And II Trimester Of Pregnancy

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***Abstract*— This study was aimed at studying genetic and psychogenic factors leading to reproductive losses of the first and second trimester of pregnancy. The abuse of women and domestic violence, which poses a threat not only to physical and psychological health, but also to the reproductive status of women, were considered a psychogenic factor. 192 cases of reproductive losses of the first and second trimester were examined, and 29% of the cases noted were domestic violence to women, both before conception and in the early stages of pregnancy. Among them, in 76% of cases, the study of abortion material of reproductive losses of the first trimester determined various chromosomal abnormalities, and in 24% of reproductive losses of the second trimester, various abnormalities of the fetal development were determined. This study suggests that psychogenic factors may play the role of a trigger for the occurrence of mutations of various aberrations. In this direction, it is necessary to conduct more in-depth studies, which in the future will make it possible to strengthen preventive measures to reduce the risk of reproductive losses.**

***Keywords*— Reproductive losses, genetic factors, domestic violence**

I. INTRODUCTION

The problem of reproductive loss is one of the most urgent problems of modern medicine. The complexity of the multiple causes of reproductive losses, their consequences on the somatic and psychological health of women presents certain challenges for studying this problem in the context of finding other poorly studied factors leading to fetal loss.

In most cases, early reproductive losses are determined by genetic factors, while reproductive losses of the second trimester are multifactorial.

The difficulties of today's world associated with various crises of a global and interpersonal nature contribute to an increase in psychogenic effects on a person, which affects the deterioration of his reproductive health and can also affect reproductive losses.

Family abuse of women (domestic violence) is common in almost every country in the world. Domestic violence is a system of behavior whose purpose is to achieve power and control over a woman, which can be expressed by physical, psychological and economic violence. The dynamics of domestic violence are cyclical and growing: these are phases of tension, an act of violence and reconciliation. These phases have the peculiarity of repetitive continuous actions that pose a real threat to the life of the physical, psychological and reproductive status of women.

In this context, the problem of abuse of women in the family, bearing the reproductive function, becomes not only a legal, but also a public health problem.

According to the WHO, the incidence of violence against women during pregnancy reaches 32% (and in some countries and above) [1], the consequence of which causes an increase in psychological problems (not to mention physical ones) and can cause reproductive losses.

According to statistics (2018) in Azerbaijan for 2013 y., 4722 cases of spontaneous abortion indicate that a comprehensive approach to reducing risk and preventing reproductive loss is relevant.

The purpose of this study is to assess the influence of psychogenic factors on reproductive losses of the first and second trimester, to study the structure of chromosomal abnormalities in reproductive losses, and to assess the effect of psychogenic factors on the occurrence of chromosomal aberrations.

MATERIALS AND METHODS

A. Inclusion criteria

- Women with reproductive losses of I, II trimester
- Pathological changes in abortion material, placenta, peripheral blood, ultrasound, abnormal biochemical markers of II and III trimesters

B. Methods

- Methods of cytological analysis of the karyotype are carried out using the CGH-array method (method of comparative genomic hybridization)
- Medical genetic counseling
- Method for identifying victims of abuse in the family [2, 3, 4, 5, 6,7, 9]

- Assessment of psychological stress on the scale of the PSM - 25 [8, 14]
- SPSS 22 statistis

RESULTS

In total, 109 cases of reproductive loss of the first and 83 - second trimesters of pregnancy were examined. The age of women varied from 18 to 33 years.

Reproductive losses: in 33 cases (30%) there was a non-developing pregnancy in terms of 5-6 weeks, in 50 (46%) non-developing in terms of 8-12 weeks and in 26 cases (24%) fetal malformations were found in 15-18 weeks by invasive methods of prenatal diagnosis. Among congenital malformations were observed defects of the central nervous system, multiple malformations of Down syndrome. It was determined that 27% of reproductive losses were primary (Fig. 1).

Studies of abortion material showed that autosome trisomy 13, 16, 18, 21 and 22, mosaicism on the sex chromosome of monosomy and structural anomalies of chromosomes (Robertson translocation and deletions) were most common, the mother karyotype in five cases (4.5%) had a balanced translocation that increases the risk of reproductive loss.

Family abuse in relation to women with reproductive losses of the first and second trimesters was revealed on the basis of clinical symptoms of domestic violence, objective examination (bruises, bruises of various kinds of trauma) and specific questions according to the WHO modules for identifying violence in medical institutions [2, 8, 9, 10, 11, 12, 13].

Thus, 24 women (22%) with reproductive losses of the first trimester and 32 (39%) of the second trimester were abused and had problems associated with fetal loss (Fig. 2).

Thus, among 192 women with I and II trimester reproductive losses, 56 pregnant women (29%) were abused in the family.

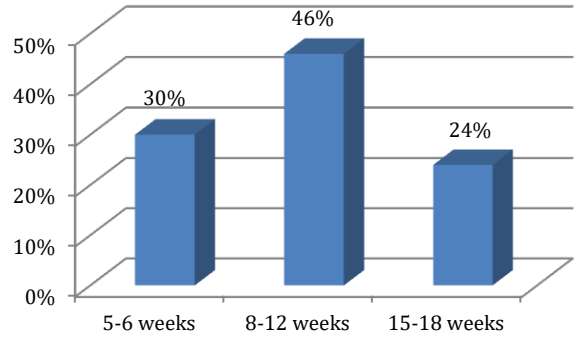

Fig. 1. Terms of reproductive losses.

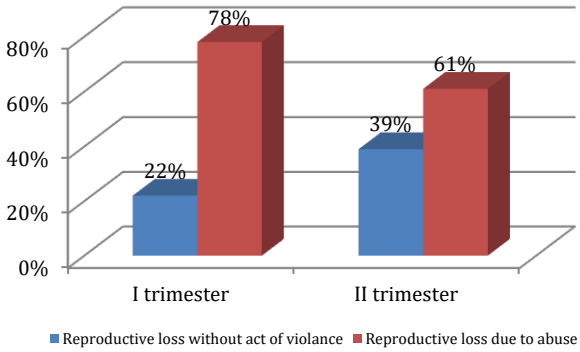

Fig. 2. Identification of cases of reproductive loss

The Fig. 3 indicates the frequency of acts of violence experienced by pregnant women. The intensity of acts of violence has a depressing effect on the psychological status of women and affects the gestation of pregnancy, which determines the importance of identifying violence in women when planning pregnancy to reduce risks and provide necessary assistance to victims.

By type of violence, women were most often subjected to psychological violence, however, it should be noted that psychological violence always accompanies all types of violence, depressing the nervous and emotional system of the victims (Fig. 4).

In most cases, women with reproductive loss of I trimester noted that the conception occurred during the period of trying on, after the next act of violence, and also noted that the consequences of violence affected their psychological state (they noted fear, resentment, helplessness and depression).

Assessment of psychological stress in women with reproductive losses was carried out according to a survey on the psychological stress scale PSM -25 [14]. Given the focus of this study on identifying acts of violence in reproductive losses, the study did not pay deep attention to studying the psychological profile of victims, their adaptive ability to stress, level of reactivity and personal anxiety.

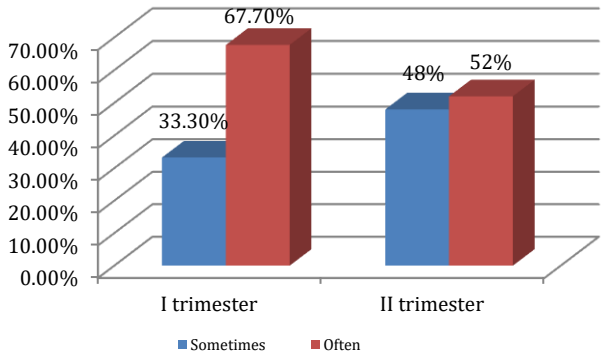

Fig. 3. Frequency of violence

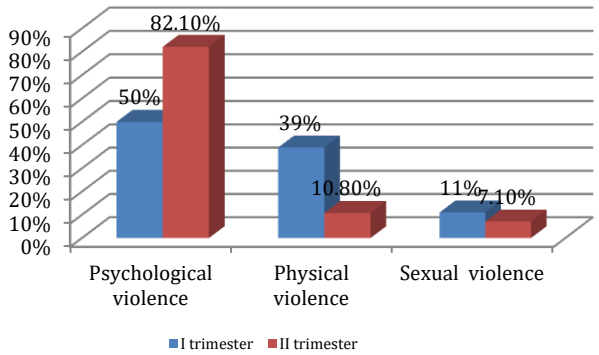

Fig. 4. Types of violence

Analysis of the questionnaire on the psychological stress scale PSM -25 showed a high level of stress - 175 points in women with reproductive losses of I trimester, 135 points - II trimester. It is also noteworthy that 7.6% of women with reproductive losses had a ban on visiting a doctor during pregnancy by their husband and mother-in-law (explanation that a healthy woman does not need medical services during pregnancy) and, naturally, the absence of antenatal services increased the risk of reproductive loss.

DISCUSSION

The originality of this study is the effect of psychogenic stress associated with family abuse on reproductive losses.

The purpose of this study is not to determine all factors (hormonal, infectious, etc.) including gene polymorphism. The study focused only on the identification of chromosomal aberration and the relationship of their occurrence with stressful situations, as well as on the influence of these stresses on reproductive losses of the second trimester, especially when there is an unclear etiology and neurohumoral factors caused by stress. Already many scientists have proved that fear, stress, depression, insecurity, can lead to psychological or so-called idiopathic infertility.

Psycho-traumatic factors act as a trigger mechanism for the violation of many body functions at the level of regulation of the central nervous system. The concept of systemic (neuroendocrine) regulation of genetic processes and the implementation of genetic information is that the nervous system allows and regulates them [15]. Experimental work on animals (rats, mice) showed that stressful effects induce the formation of chromosomal aberrations in bone marrow cells, in reproductive and somatic cells of mice [16]. However, there is little research on the mutagenic effects of prolonged stress on chromosome nondisjunction and on the occurrence of structural changes during reproductive losses, but this study allows us to determine this relationship.

The results of the study indicate the importance of more in-depth research in this direction. When planning pregnancy and if there is a history of reproductive losses, it is necessary to diagnose possible domestic violence and determine ways to reduce risks in subsequent pregnancies. It is also important to strengthen the role of health workers in the elimination of violence against women.

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