ART OF MEDICINE

ASSESSMENT OF THE RISK OF REPRODUCTIVE ASSISTIVE TECHNOLOGIES IN WOMEN WITH A HISTORY OF SPONTANEOUS MISCARRIAGE

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Abstract. Assisted reproductive technology (ART) has been an important therapy and the go-to option for many infertile couples who want to have children. Although the pregnancy rate with ART in several fertility centers is stable at around 40%, the rate of carrying a child home is still 20–30%, one of the important reasons is the high rate of early spontaneous abortions [1,2,10]. First trimester miscarriages occur in 10-15% of all clinically confirmed pregnancies, with fetal chromosomal abnormalities being the most common cause of spontaneous miscarriages, accounting for approximately 60% of these pregnancy losses [3,4,5]. However, the frequency of early spontaneous abortions in patients after ART ranges from 22% to 63%. Failure of ART treatment is associated with many factors, genetic defects, especially embryonic chromosomal abnormalities, are one of the main causes of spontaneous miscarriage in the first trimester [6,7,8,9].

Relevance. Infertility is defined as the inability to conceive a child after one year of proper intercourse in terms of timeliness, technique and without the use of contraceptive methods. About 10-15% of married couples suffer from this problem [1], [2]. Many infertile couples, especially in some tribal communities, have faced serious personal, family, social and economic problems, having lost the opportunity to have a child [3]. In recent years, there have been many scientific and technical advances in the treatment of infertility. Some people who previously struggled with infertility now have a better therapeutic chance [4]. However, the success rate of such methods has not shown significant progress, despite their dual use over the past decade [5].

Although numerous and few studies have been conducted so far to identify factors associated with miscarriage, comprehensive and more accurate studies are required to identify all suspected risk factors. Therefore, the present study aims to evaluate the effect of 19 risk factors associated with miscarriage in pregnant women receiving ART.

Keywords: pregnancy loss, risk factors, assisted reproductive technologies.

The purpose of this study is to assess the impact of risk factors associated with miscarriage on pregnancy outcomes in pregnant women who have undergone ART.

Materials and research methods. An analytical case-control study was conducted with the participation of 108 women referred to two perinatal centers in the city of Bukhara and Karshi in the period from 2021 to 2022. They were pregnant with RT. A total of 69 women had successful pregnancies and 39 women had pregnancy failures. The effect of 19 risk factors was assessed on both groups of

women with successful and unfavorable pregnancies. These factors include maternal age, body mass index, ART type, abortions, recurrent abortions, thyroid stimulating hormone (TSH) and thyroid peroxidase antibodies (TPO-AT), uterine leiomyoma, endometrioma, PCOS, maternal smoking, male sex, infertility factor, failure history of in vitro fertilization, uterine anomalies, cervical insufficiency, maternal diagnosis of diabetes mellitus and other diseases, multiple pregnancy, number and quality of embryos. All data were analyzed using SPSS version 22. Chi-square test and independent t-test were used. For all other outcomes, a nominal p <0.05 was considered significant.

Research results. There was a significant statistical correlation between miscarriage in ART patients and risk factors for re-abortion, TPO-Ab, and uterine leiomyoma (P-value <0.001). At the same time, there was no significant correlation between pregnancy outcomes during ART and other studied risk factors (P-value > 0.05).A total of 19 risk factors were studied, including maternal age, BMI, ART type {ICSI/IVF/FET, abortion, re-abortion, thyroid stimulating hormone (TSH) and thyroid peroxidase antibodies (TPO-Ab), uterine leiomyoma or uterine fibroids, endometrioma, PCOS, maternal smoking, male infertility, history of failed IVF, uterine anomalies, cervical incompetence, maternal diagnosis of diabetes mellitus (pre-pregnancy weight, BMI, weight gain during pregnancy, BMI at birth, Diabetes mellitus during pregnancy [GDM], pre-pregnancy diabetes mellitus [DM]) and other diseases (blood pressure, autoimmune diseases), multiple pregnancies and the quantity and quality of embryo transfer compared to two groups: those with a successful pregnancy (live birth) and those without a successful pregnancy.

The risk factors studied for maternal diabetes were physical activity and dietary factors prior to pregnancy (high intake of red meat, processed meat, fried foods, and high-fat foods).

In the studied pregnant women of all three groups, the outcome of pregnancies was assessed.

Figure 1. Number and outcomes of previous pregnancies in women of selected   groups.
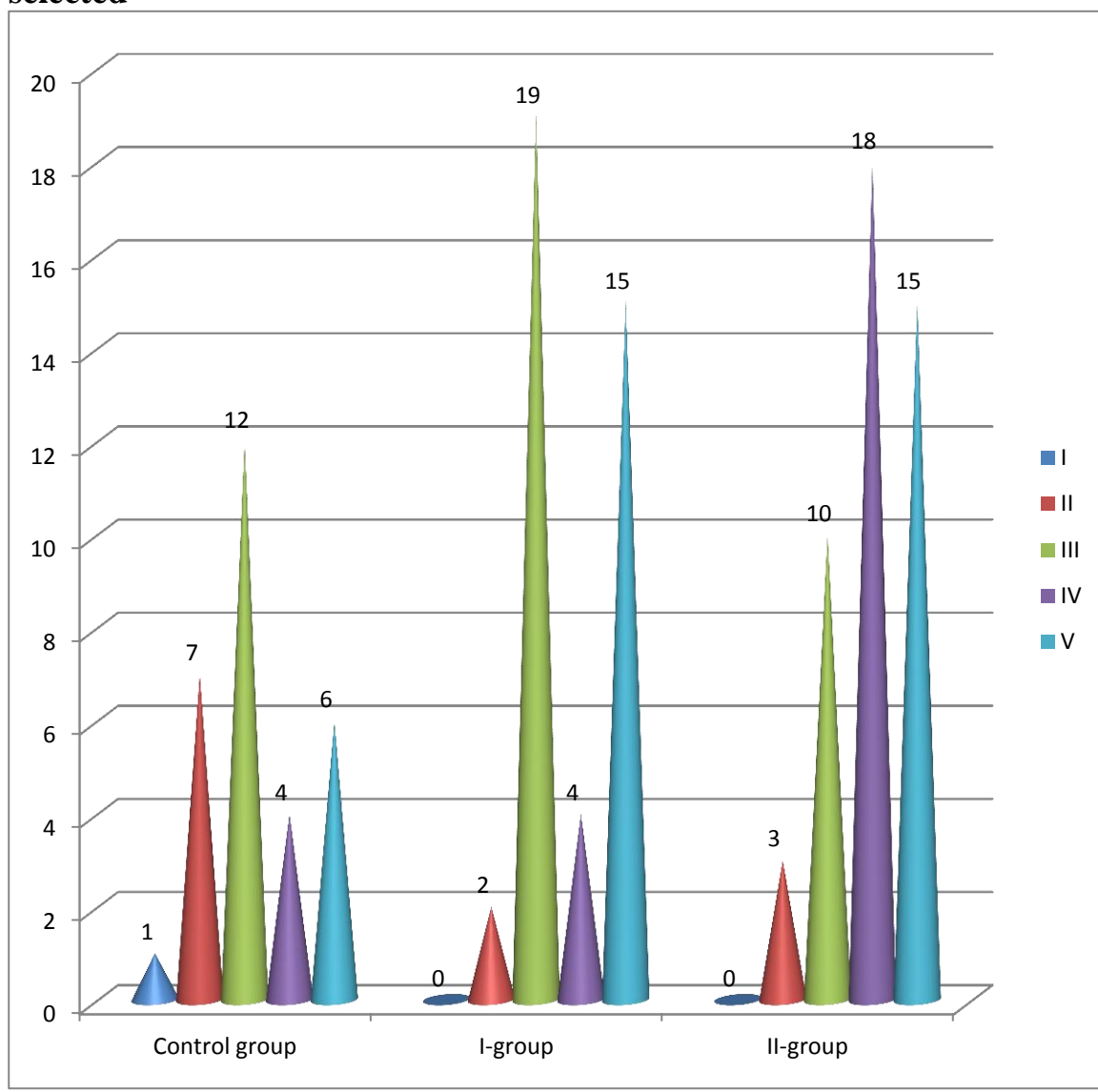
In the study groups, when analyzing the obstetric history, the following was determined. There were 95 live births, 120 first trimester miscarriages, 62 second trimester miscarriages and 53 third trimester miscarriages. In total, habitual miscarriages were 158 cases, most of which occurred in the first trimester. There were 67 live births in the control group. The above data is given in Figure 1.

There was a significant statistical correlation between miscarriage in ART patients and risk factors for re-abortion, TPO-Ab, and uterine leiomyoma (P-value <0.001). There is no statistical correlation between pregnancy success rate and type of ART [IUI, IVF, and ICSI] (P-value > 0.005).

Discussion. A miscarriage, also known as miscarriage, is the natural death of a fetus before it can survive on its own. Risk factors for miscarriage are an elderly parent, diabetes, previous miscarriages, smoking, obesity, alcoholism or drug addiction. Pregnancy loss is about 45% in people over 40 and about 10% in people under 35. Our study showed that female age, elevated basal estradiol, elevated basal

FSH, thin endometrium are significantly associated with an increased risk of preclinical pregnancy loss after ART.

In contrast, our study did not show any significant correlation between miscarriage and a woman's age, diabetes, smoking, and obesity, indicating a non-random effect of these variables and not implying their effectiveness for pregnancy success. Based on our study, the three variables of re-abortion, anti-TPO antibodies, and uterine leiomyoma showed a significant correlation with pregnancy outcomes (successful or unsuccessful) with ART [P value <0.001]. In addition, a statistical comparison of pregnancy prevalence across all variables showed that the largest difference in frequency between the two groups was found for three variables: habitual abortion, anti-TPO antibodies, and uterine leiomyoma.

Multiple pregnancies increased the risk of miscarriage, which is associated with an increase in the number of fetuses. The risk of miscarriage is increased in patients with poorly controlled insulin-dependent diabetes mellitus, while no significant increase in risk was found among patients with well-controlled diabetes. Moreover, other intercurrent diseases can significantly increase the risk of miscarriage, including polycystic ovary syndrome, hypothyroidism, certain infectious and autoimmune diseases.

A study evaluating some potential risk factors in ART pregnancies and early miscarriage (EPL) demonstrated that smoking and poor quality embryo transfer increased EPL, while age, obesity, and other risk factors had no significant effect. In contrast, our study did not find any significant correlation between maternal measures of diabetes, body mass index (BMI > 30), male factor infertility, PCOS, and pregnancy outcomes [P-value > 0.05]; In addition, there was no correlation with other risk factors, including maternal age, type of ART (ICSI/IVF/PET), endometrioma, maternal smoking, history of IVF failure, uterine anomalies, cervical incompetence, multiple pregnancies, and quantity or quality of transfer embryos [P-value > 0.05]; The lack of association between pregnancy success and type of ART means that the use of different types of ART (IUI or IVF and ICSI) had little effect on pregnancy outcomes. In addition, since a minimal difference in the frequency of pregnant women between the two groups of successful and unsuccessful pregnancies was found, there was almost no correlation between IVF failure variables, cervical anomalies, number of transferred embryos or quality of embryos, and the frequency of successful or unsuccessful pregnancies. pregnancy.

Conclusion. The results of this study showed that the risk factors for recurrent abortion, TPO-AT and uterine leiomyoma are of great importance for pregnant women receiving ART.

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