

Original Research Article

Fetal and Maternal Effects of Pregnancy after Using IVF / ICSI in Women Comprehensive Hospital in Tehran in 5 Years

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Abstract: Success in In Vitro Fertilization (IVF)- a technique of Assisted Reproductive Technology (ART) for treatment of infertility -has increased day by day. According to several studies, pregnancies following IVF / ICSI were associated with a series of complications such as an increase in obstetric complications. So identification of the problems, their causes and possible solutions is essential to improve the method. In this descriptive study, 100 pregnancies after IVF / Intracytoplasmic sperm injection (ICSI) in the IVF Women's Comprehensive Hospital in terms of maternal and fetal adverse effects including ectopic pregnancy, placenta previa, placental abruption, gestational diabetes, multiple pregnancy, bleeding after delivery, Intra Uterine Growth Retardation (IUGR) and delivery method have studied. According to the results, 3% of patients found with Ovarian Hyper Stimulation Syndrome (OHSS), 25% of all pregnancies resulted in abortion, 7% Ectopic Pregnancy (EP), 2% fetal abnormalities, 19% of all pregnancies were twins, triplets were 3% of all pregnancies and rate of cesarean delivery showed significantly increase (98%). Current study shows obstetric and perinatal complications in IVF / ICSI pregnancies. Maternal and fetal complications like increased EP, congenital malformation and cesarean rate can be seen after IVF / ICSI fertilization. But the relationships between the phenomenon and the various stages of IVF / ICSI are not clear.

Keywords: In *vitro* fertilization, Assisted Reproductive Technology, pregnancy, Outcomes, obstetric complications, Women's Comprehensive Hospital.

INTRODUCTION

In *Vitro* Fertilization (IVF) / Intracytoplasmic sperm injection (ICSI) is one of the most common advanced methods of Assisted Reproductive Technology (ART) [1, 2]. This approach reveals new aspects in the reproductive technology and infertility [3]. 15-10% of couples are infertile and during the last few decades, ART techniques have provided the possibility of reproduction through the new ways and have improved the prognosis in infertile couples [4, 5]. There are doubts about the safety of ART procedures for mothers and babies [2, 6]. Mother under ART is exposed to large quantities of hormonal drugs and taking an ovule from the mother is aggressive methods [4]. Embryo growth is in vitro with involvement in the fertilization process, so the impact of these procedures on the health of the fetus are not unexpected [1, 7, 8]. On the other hand the maternal complications in

patients undergoing ART are more commonly reported [4, 9, 10]. The risk of abortion, EP, prolificacy and OHSS is higher than normal pregnancies [3, 7, 8, 11-14]. Several studies showed that conditions resulting from pregnancies through ART are associated with several side effects to the fetus and infants [15-19]. According to the CDC report in 2010, about 16% of ART pregnancies are ends in spontaneously abortion [20]. Now a day, evaluation of the short-term and long-term outcomes of these pregnancies is one of the most controversial issues in Reproductive Medicine. So, we decided that study maternal and fetal complications of ART pregnancies in Women's Comprehensive Hospital.

MATERIALS AND METHODS:

A retrospective descriptive study was designed in IVF sector of comprehensive women's hospital during 2010 to 2015. 100 women that conceived

through IVF/ICSI were examined to several factors such as: Infertile couple's age, type of infertility, duration of infertility, cause of infertility, male factor(including azospermia, oligospermia and varicocele), female factor included (ovulation problems, tubal factor, ureteral factor, endometriosis, infertility due to unknown ...) obstetric complications such as ectopic pregnancy , placenta previa, placental abruption, gestational diabetes, multiple pregnancy, bleeding after delivery, IUGR and delivery method (normal, cesarean section). A check list prepared and on the basis of information from the file reviews were completed. Patients with recorded file information and access were enrolled to the study. Data entered in the questionnaire was analyzed using SPSS software. To express quantitative descriptive variables, the mean and to test the qualitative data and prevalence, standard deviation were used.

RESULTS:

Our data showed that the average age of infertility in males was 34.4 years and 30.55 years for women. Also infertility duration was between 1 to 20 years with an average of 5.74 years. In this study causes of infertility were, Premature Ovarian Failure (POF) 10%, Polycystic Ovarian Disease (PCOD) 8%, hypo gonadotropic hypogonadism 5%, 10% the tubal factors , 10% had endometriosis, 23% ovarian reasons, 13% unknown causes, 2% uterine factor and 42% male factors (table 1).

Table 1: Demographic information of enrolled cases

Variable	Average Years
Male Age	34.4
Female Age	30.55
Duration of Infertility	5.74
Variable	Numbers in 100 patient(percent)
POF	10.0
PCOD	8.0
Hypo gonadotropic Hypogonadism	5.0
Tubal factor	10.0
Endometriosis	10.0
Unexplained Infertility	13.0
Uterine Factor	2.0
Male Factor	42.0

Fetal complications included 25% abortion and 7% uterine EP, 5% preterm birth, 2% IUGR, 63% singleton, 16% twin, and 3% triple. 2% of all pregnancies associated with fetal anomalies. 63% of pregnancies ended in term deliveries that 98% with cesarean section and 2% had normal delivery (table 2).

Table 2: Fetal complications in IVF/ICSI fertilization

Fetal Findings	Numbers in 100 pregnancy(percent)
Abortion	25
Uterine EP	7
Preterm Birth	5
IUGR	2
Singleton	63
Twin	16
Triple	3
Fetal Anomaly	2
Term Delivery	63
Cesarean Section	98

In this study complications in pregnancy included, 7 cases of EP, 6 cases of Gestational Diabetes Mellitus (GDM), 4 Placenta previa, 3 cases of OHSS, 2 of the Preeclampsia, two Placenta abruption and one Postpartum hemorrhage(table 3).

Table 3: Complications in IVF/ICSI pregnancies

Pregnancy complication	Numbers in 100 patient(percent)
EP	7
GDM	6
Placenta Previa	4
OHSS	3
Preeclampsia	2
Placenta Abruption	2
Postpartum Hemorrhage	1

DISCUSSION:

Using IVF significantly progressed in recent decades and has associated with reduction in adverse effects at the same time [21], but some of complications still remain [22]. Identification of the prevalence and incidence of these complications helps to control pregnancy difficulties through this technique.

In this study, 100 infertile patients conceived through IVF / ICSI were studied from 2010 to 2015 in Women Comprehensive Hospital. The average infertility age of males was 34.4 years and a mean age of 30.55 years for infertile women. Duration of infertility was between 1 to 20 years with an average of 5.6 years.

We showed that in patient that were examined, causes of infertility were 42 patients with male factor, 23 of ovarian factor (POF 10 people who used an egg donor, 8 cases of PCOD and 5 people with hypogonadotropic hypogonadism), 13 patients with unknown cause, 10 of tubal factor, 2 uterine factor and 10 patients with uterine endometriosis. In line with the results of studies on the causes of couples attraction to use this treatment [23-25]. In the present survey, patients were observed for the effects of ovulation induction and ART of which only three cases were OHSS (severe case, two with moderate intensity) that these three components were PCOD patients.

We found, 6 patients with GDM, 4 cases of placenta Previa, 2 cases of preeclampsia, two cases of placental abruption, and one case with postpartum hemorrhage. According to several studies there is an increased risk of placenta previa in pregnancies following IVF/ICS [26] as we revealed that prevalence of placenta previa is higher in IVF-ICSI pregnancies. In this study, 25% of pregnancies ended in abortion (23.61% Chemical pregnancy, 1.39% below 8 weeks, 8% up to 12 weeks, 2.87% 8 to 12 weeks, 6.94% 16 to 20 weeks) and 7% out of uterine EP, 5% of preterm birth, 2% IUGR, 63% singleton, 16% twin, and 3% triple that multiple pregnancies had no relation with the causes of infertility. 2% of all pregnancies associated with fetal anomalies that the cause of infertility in both patients was azospermia. 63% of pregnancies ended in term deliveries that 98% with cesarean section and 2% had normal delivery. So In line with some of other studies [21, 27-30], our founding represents a sharp increase in cesarean rates in pregnancies resulting from ART.

Many studies suggest that ART can be completed without complication [31-33]. At the same regard, in our patient most of the pregnancies are terminated without any complications. In this study, patients with GDM were in the group of patients with PCOD and this confirm previous studies.

There is lots of studies that show adverse effects of IVF/ICSI fetal and neonatal health [6, 8, 34] but Gissler *et al.* stated that there is no difference in health between IVF newborn and other babies [35].

CONCLUSION:

Pregnancies through ART are often terminated without any significant side effect; an increase in the prolificacy can cause increased complications of pregnancy period, patients with tubal factor infertility were found with increased EP and congenital malformation in patients with male factor infertility - particularly due to azoospermia - are increased. Increasing cesarean rate is significantly observed in this study.

Nevertheless, extensive and prospective studies require to probing pregnancy, fetal and neonatal complications with full recorded information and accurate follow-up performed with various experts.

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