In Vitro Fertilisation (IVF) Pregnancy: A Comparative Study With Endocrine Dysfunction Patients Having PCOS

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Abstract

Background: Polycystic ovarian syndrome is often accompanied by infertility that necessitates ovulation induction using clomiphene citrate, gonadotropins or even in vitro fertilization. These treatment methods are known to increase the incidence of multiple pregnancies as well as some negative consequences, including a rise in the risk for gestational diabetes mellitus & pre-eclampsia, etc.

Aim and Objectives: To study In vitro fertilisation pregnancy and its comparison with endocrine dysfunction patients having PCOS.

Material and Methods: Prospective comparative study was conducted on 108 pregnant women who conceived with IVF and ET, followed up till delivery during September 2020 to August 2021.

Results: Out of 108 IVF conceived pregnant women studied, 50% were PCOS and 50% non PCOS. 74(68.5%) women were primigravida and 34(31.39%) were multigravida. Pregnant women with PCOS had 21(38.9%) had GDM as compared to 10(18.2%) control group. Pregnant women with PCOS had 22 (40.7%) presented with mild to severe preeclampsia as compared to 10(18.5%) in the control group. Pregnant women with PCOS 5(9.3%) had spontaneous miscarriages as compared to 4(7.4%) in control group. At the time of delivery, 10(18.5%) IVF conceived pregnant women with PCOS had preterm delivery as compared to only 5 (9.3%) in the control group. IVF conceived pregnant women with PCOS had 4(7.4%) incidence of LGA, 14(25.9%) low birth weight babies, 12(22.2%) SGA babies and 13(24.1%) babies needed NICU admission.

Conclusion: Present study concluded that IVF conceived pregnant women with PCOS had the increased risk of developing pre-eclampsia and gestational diabetes mellitus. The risk for higher incidence of preterm deliveries is associated in IVF conceived pregnant women with PCOS. IVF conceived pregnant women with PCOS found to be at a higher chance of requiring LSCS. Present study also found that risk of low birth weight, small for gestational age babies born to IVF conceived women with PCOS is increased despite mothers being diabetic.

Keywords: Pregnancy, Outcome, IVF, PCOS

INTRODUCTION

In-vitro fertilization (IVF) has completely changed infertility treatment since last 4 decades and has been increasingly used worldwide. The risks of obstetric complications are much higher in IVF conceived pregnancy as compared to spontaneously conceived pregnancies.[1,2] The type of IVF procedure, for example fresh embryo transfer, may additionally affect maternal and perinatal outcomes when compared with frozen embryo transfer.[3] The supraphysiologic hormone milieu following ovarian stimulation, which causes alteration in endometrial development and interfere with embryo implantation which has been considered as a contributor to the adverse pregnancy outcomes after IVF.[4] PCOS is an important cause of infertility in women of reproductive age because of the associated anovulation. Polycystic ovary syndrome (PCOS) is one of the most common and complex hormonal disorders seen in women and is considered to be a significant public health issue according to Rotterdam, ESHRE/ASRM criteria. PCOS has a negative effect on women's health across the lifespan like anxiety, depression, insulin resistance, abdominal obesity, hypertension and dyslipidemia.[5] Depending on the particular criteria used for diagnosis and the population studied, the prevalence of PCOS has been reported to range from 8% to 13% in women of reproductive age. Amongst which 70% of affected women remaining undiagnosed.[6]

Recommendations from the international evidence-based guideline for the management of PCOS stated that letrozole is the first-line pharmacological therapy for infertility, with clomiphene and metformin also play a role both alone and in combination. Gonadotrophins are commonly used as a second-line intervention for women with PCOS and an ovulatory infertility. With the rapid innovations in infertility treatments day by day, IVF has become a viable alternative third-line choice for women with PCOS if ovulation induction treatment has failed or there is coexisting tubal or male infertility factors resulted in improved pregnancy outcomes. However, pregnancies conceived via IVF are associated with increased risks of obstetric and neonatal complications compared to spontaneous conceived pregnancies. Therefore, careful strategies for PCOS patients undergoing IVF are required to minimize the risks. Previous studies have concentrated on the conventional outcomes of IVF, comparing PCOS with other causes of infertility.[7] PCOS is associated with approximately 75% of women suffering from infertility due to anovulation.[8] Although anovulation is to be the primary defect responsible for failure to achieve the pregnancy in this disorder other potential consideration may hamper fertility including insulin resistance, hyper and rogenism and obesity, which requires ovulation induction using clomiphene citrate, gonadotropins or even in vitro fertilization (IVF). These treatment methods are known to increase the incidence of multiple pregnancies, gestational diabetes mellitus, pre-eclampsia, etc., Furthermore, pregnancies established after IVF carry an increased risk for maternal complications. However, the increased risk of developing adverse obstetric complications has been suggested to occur independently of obesity as well as in populations without assisted reproductive techniques.

In this study, an attempt has been made to compare obstetric complications like spontaneous miscarriage, gestational diabetes mellitus, pregnancy induced hypertension, antepartum haemorrhage, preterm delivery, multiple pregnancies, low birth weight babies, small for gestational age babies, large for gestational age babies and admission rate in NICU, in PCOS women who have undergone IVF-ET with patient undergoing IVF -ET due to causes other than PCOS.

Keeping in view the above mentioned facts, the present study was conducted to study In vitro fertilisation pregnancy and its comparison with endocrine dysfunction patients having PCOS.

MATERIAL AND METHODS

After approval from institutional ethical and scientific research committee the present study was conducted to compare pregnancy outcome in IVF conceived pregnant women in which GnRH antagonist protocol was used for ovarian stimulation followed by Frozen Embryo Transfer. A total of 108 IVF conceived pregnant women studied out of which 50% were PCOS (n=54) and 50% non PCOS (n=54) who attended private consultant OPD clinics, Dr. D.Y. Patil Vidyapeeth, Pune, Maharashtra from September 2020 to August 2021.

INCLUSION CRITERIA

1. Study group 1(IVF conceived pregnant women with PCOS) PCOS in these women was defined by 2003 Rotterdam criteria:

*****Evidence of Oligo or anovulation

*****Clinical and/or biochemical signs of hyper androgenism

***** Polycystic ovaries on Ultrasound: one ovary fitting the description is sufficient to define PCO (more than 12 follicles in each ovary measuring 2-9mm in diameter, and/or increased ovarian volume > 10ml0

2**.** Study group 2(IVF conceived pregnant women without PCOS)

3. Age group 18-40years

EXCLUSION CRITERIA

1. Spontaneously conceived pregnant women
2. Pre-existing medical illness like DM/HTN
3. Women with anovulation not due to PCOS
4. Women < 18yrs and > 40yrs
5. Women with obesity not due to PCOS
6. Women with hirsutism due to adrenal or other causes

METHODOLOGY

This prospective comparative study that was conducted on 108 IVF conceived pregnant women who attended private consultant OPD clinics, Dr. D.Y. Patil Vidyapeeth, Pune, Maharashtra over a period of one year. Study population women successfully conceived after undergoing In Vitro Fertilization and Frozen Embryo transfer after giving GnRH antagonist protocol for ovarian stimulation. Among 108 pregnant women 50% i.e. 54 women had PCOS and 50% women were without PCOS. Patients with PCOS aged between 18-40 years were included in test group and patients without PCOS of same age group were included in control group fulfilling both inclusion and exclusion criteria. After confirming clinical pregnancy by documenting presence of intrauterine gestational sac between 5-6 weeks of pregnancy, they were followed up regularly during course of their pregnancy up to immediate postpartum for any adverse maternal and fetal outcome. Consent from all the participants was obtained and they were subjected to their detailed history considering their age, gravida status, socioeconomic status, menstrual, marital, past medical, family and personal history. In general examination height, weight and blood pressure was measured. BMI (body mass index) was

calculated. All antenatal investigations were done as a part of general antenatal investigations. All pregnant women were followed up until delivery. Their maternal and foetal outcome were studied and analysed statistically. Patients were studied for following parameters:
(1) Upto 20 weeks of gestation -Spontaneous Miscarriage and after 20 weeks:
(i) Gestational Diabetes mellitus, (ii) Pre-eclampsia (iii) Antepartum Haemorrhage (iv) Preterm Labour (v) Multiple gestation. Neonatal outcome includes Low Birth weight babies, Small for gestational age babies, Large for gestational age babies, NICU admission of babies

Statistical Analysis:

The categorical variables were shown as number and percentages and continuous variables presented as mean and standard deviation. The inter-group statistical comparison of distribution of categorical variables was tested by using Chi-Square test or Fisher's exact probability test. The inter-group statistical comparison of means of normally distributed continuous variables was done using independent sample t-test. A p-value of less than 0.05 was considered to be statistically significant. The entire data was statistically analyzed using Statistical Package for Social Sciences (SPSS ver 22.0).

RESULTS

Of 54 cases studied in PCOS Group, 17 (31.5%) had age between 21–30 years and 37 (68.5%) had age between 31–40 years. Of 54 cases studied in Non PCOS Group, 9 (16.7%) had age between 21 – 30 years and 45 (83.3%) had age between 31 – 40 years (P-value >0.05). 23(42.6%) women belonged to upper middle class, 28(51.9%) had middle class and 3 (5.6%) had lower middle class. In Non PCOS group, 20 (37.0%) had upper middle class, 32 (59.3%) had middle class and 2 (3.7%) had lower middle class (P-value>0.05). In PCOS Group, 14 (25.9%) had BMI in normal range, 25 (46.3%) had BMI in overweight range and 15 (27.8%) had BMI in obese range. In Non PCOS group, 34 (63.0%) had BMI in normal range, 13 (24.1%) had BMI in overweight range and 7 (12.9%) had BMI in obese range (P-value <0.05). Significantly higher proportion of cases in PCOS group were overweight or obese compared to Non PCOS group (P-value<0.05).

In PCOS Group, 21(38.9%) had irregular menstrual history and 33 (61.1%) had regular menstrual history. Of 54 cases studied in Non PCOS Group, 8 (14.8%) had irregular menstrual history and 46 (85.2%) had regular menstrual history (P-value<0.05). Significantly higher proportion of cases in PCOS group had irregular menstrual history compared to Non PCOS group (P-value<0.05). In PCOS Group, 37 (68.5%) were primigravida, 12 (22.2%) were multigravida with previous abortion, 3 (5.5%) were multigravida with previous ectopic and 2 (3.7%) were multigravida with previous IUFD. Of 54 cases studied in Non PCOS group, 37 (68.5%) were primigravida, 14 (25.9%) were multigravida with previous abortion, 2 (3.7%) were multigravida with previous ectopic and 1 (1.8%) were multigravida with previous IUFD (P-value>0.05). In PCOS Group, 2 (3.7%) had first trimester loss, 3 (5.6%) had second trimester loss. In Non PCOS group, 2 (3.7%) had first trimester loss, 2 (3.7%) had second trimester loss (P-value>0.05). In PCOS Group, 21 (38.9%) had GDM. Of 54 cases studied in Non PCOS group, 10 (18.5%) had GDM. Distribution of incidence of gestational diabetes mellitus (GDM) is significantly higher in PCOS group compared to Non PCOS group (P-value<0.05). Of 54 cases studied in PCOS Group, 32 (59.2%) had no pre eclampsia (PE), 17 (31.5%) had mild PE and 5 (9.3%) had severe PE. Of 54 cases studied in Non PCOS group, 44 (81.5%) had no pre eclampsia (PE), 8 (14.8%) had mild PE and 2 (3.7%) had severe PE Distribution of incidence and severity of pre eclampsia (PE) is significantly higher in PCOS group compared to Non PCOS group (P-value<0.05). Of 54 cases studied in PCOS Group, 4 (7.4%) had antepartum hemorrhage (APH). Of 54 cases studied in Non PCOS group, 1 (1.9%) had antepartum hemorrhage (APH) (P-value>0.05).

Table 1: Inter-group distribution of incidence of preterm labour among the cases studied.

Gestational age	PCOS Group (n=54)		Non PCOS Group (n=54)		P-value
	n	%	n	%	
Preterm (<37 weeks)	10	18.5	5	9.3	0.164 (>0.05 NS)
Fullterm (≥37 weeks)	44	81.5	49	90.7	
Total	54	100.0	54	100.0	

Of 54 cases studied in PCOS Group, 10 (18.5%) had preterm gestation and 44 (81.5%) had full term gestation. Of 54 cases studied in Non PCOS group, 5 (9.3%) had preterm gestation and 49 (90.7%) had full term gestation (P-value>0.05). Of 54 cases studied in PCOS Group, 9 (16.7%) had multiple gestation. Of 54 cases studied in Non PCOS group, 8 (14.8%) had multiple gestation (P-value>0.05)

Table 2: Inter-group distribution of incidence of NICU admission.

NICU admission	PCOS Group (n=54)		Non PCOS Group (n=54)		P-value
	n	%	n	%	
Required	13	24.07	2	3.7	0.001^{***} (Significant)
Not required	41	75.93	52	96.3	
Total	54	100.0	54	100.0	

Of 54 cases studied in PCOS Group, 15 (27.8%) required NICU admission and 39 (72.2%) did not require NICU admission. Of 54 cases studied in Non PCOS group, 2 (3.7%) required NICU admission and 52 (96.3%) did not require NICU admission (P-value<0.05).

Table 3: Inter-group distribution of perinatal outcome (Low birthweight).

Perinatal outcome	PCOS Group (n=54)		Non PCOS Group (n=54)		P-value
Low birth weight	n	%	n	%	
Yes	14	25.9	4	7.4	0.018* (Significant)
No	40	74.1	50	92.6	
Total	54	100.0	54	100.0	

Of 54 cases studied in PCOS Group, 14 (25.9%) had low birthweight. Of 54 cases studied in Non PCOS group, 4 (7.4%) had low birth weight. Distribution of incidence of Low birthweight is significantly higher in PCOS group compared to Non PCOS group (P-value <0.05).

Table 4: Inter-group distribution of perinatal outcome (SGA).

Perinatal outcome	PCOS Group (n=54)		Non PCOS Group (n=54)		P-value
SGA	n	%	n	%	
Yes	12	22.2	1	1.9	0.002** (Significant)
No	42	77.8	53	98.1	
Total	54	100.0	54	100.0	

Of 54 cases studied in PCOS Group, 12 (22.2%) had SGA. Of 54 cases studied in Non PCOS group, 1 (1.9%) had SGA. Distribution of incidence of SGA is significantly higher in PCOS group compared to Non PCOS group (P-value <0.05).

Table 5: Inter-group distribution of perinatal outcome (LGA).

Perinatal outcome	PCOS Group (n=54)		Non PCOS Group (n=54)		P-value
LGA	n	%	n	%	
Yes	4	7.4	0	0.0	0.118 (Not significant)
No	50	92.6	54	100.0	
Total	54	100.0	54	100.0	

Of 54 cases studied in PCOS Group, 4 (7.4%) had LGA. Of 54 cases studied in Non PCOS group, none had LGA. Distribution of incidence of LGA did not differ significantly between PCOS group and Non PCOS group (P-value>0.05).

Table 6: Multivariate logistic regression analysis (MLRA) to obtain the independent factors associated with PCOS.

Factors in the model		**Adjusted Odds Ratio (OR)**	**95% CI for Odds Ratio**	**P-value**
Age Group (years)	≤30years	1.00	--	--
	>30years	2.11	1.15 – 3.87	0.039*
BMI (kg/m^2)	Normal [18.50 – 24.99]	1.00	--	--
	Overweight [25.00 – 29.99] or Obese [≥30.00]	3.79	1.67 – 5.80	0.007**
Gestational age	Fullterm (≥37 weeks)	1.00	--	--
	Preterm (<37 weeks)	2.19	1.14 – 4.02	0.008**
NICU admission	Not required	1.00	--	--
	Required	4.86	2.43 – 8.24	0.001***

[Odds Ratio = 1: Reference Category]. Dependent variable: PCOS Status [1: Present, 0: Absent].
*P-value<0.05, **P-value<0.01, ***P-value<0.001.

On multivariate logistic regression analysis, older age, BMI in overweight or obese range, preterm gestation, assisted mode of delivery and incidence of requirement of NICU independently and significantly associated with PCOS compared to non PCOS group (p-value<0.05 for all).

DISCUSSION

Pregnancies established after IVF carry an increased risk for maternal complications. However, the increased risk of developing adverse obstetric complications has been suggested to occur independently of obesity as well as in populations without assisted reproductive techniques. Many studies have been performed to study the effect of PCOS on pregnancy and the effect of pregnancy on PCOS. The hormonal milieu that is exaggerated in PCOS women is quite well understood at the biochemical and genetic levels. The comparison of maternal and neonatal outcomes of PCOS

women who have undergone in vitro fertilization-embryo transfer (IVF-ET) with women undergoing IVF due to causes other than PCOS have not been widely studied till date.

In the present study we observed that IVF conceived pregnant women with PCOS, 17 (31.5%) were in the age group of 21-30 years and 37(68.5%) were in the age group 31-40 years, while in the control group 9(16.7%) were in age group 21-30 years and 45(83.3%) were 31-40 years of age. Though women with polycystic ovary syndrome can conceive spontaneously there is a delayed fertile window as there is a tendency for menstrual cycles to regularize with advancing age and an increased incidence of treatment for infertility in women with PCOS. There was a strong association with advanced maternal age at conception and adverse pregnancy outcomes. As present study sample was IVF conceived women, it included elderly women in both the groups PCOS as well non PCOS group. Similar results were seen in a study done by Roos et al. They concluded that giving birth at an advanced maternal age (>35 years) was more common in women with PCOS than non PCOS women.[9]

In the present study 15(27.8%) of IVF conceived pregnant women with PCOS were obese, 25(46.3%) were overweight and 14(25.9%) having normal weight as compared to control group where 7(12.9%) were obese, 13(24.1%) were overweight and 34(63.0%) having normal weight. There was statistically significant association noted between study group and control group in the present study. In the present study ovulation induction is given only after decreasing weight of women either by lifestyle modification or medical nutrition therapy or using pre-pregnancy metformin.

In the present study 50% IVF conceived pregnant women are with PCOS, prior to their conception had been treated with metformin, OCP, micronutrients for the purpose of regularizing their menstrual cycle, weight loss and to improve insulin resistance. Qin et al in a meta-analysis stated that metformin treatment prior to and during pregnancy, in women with PCOS, decreased spontaneous abortion rate and gestational diabetes.[10] PCOS is the most common cause of ovulatory disorder and oligo anovulation and is related to an increased risk for infertility. Primary infertility was reported in 50% of women, while secondary infertility was reported in 25% of women affected by PCOS. Palomba et al stated in their study that in >2/3rd of PCOS women, pregnancy occurred spontaneously.[11] In this study 50% women with PCOS required ovulation induction, IUI, ICSI which ultimately lands up in IVF-ET, and 50% women without PCOS undergone IVF-ET due to other causes of infertility as tubal factor associated, uterine factor associated, endometriosis, male factor infertility and unexplained infertility.

In the present study spontaneous abortions were in 5(9.3%) among pregnant women with PCOS in which 2(3.7%) had first trimester pregnancy loss and 3(5.6%) had second trimester pregnancy loss as compared to non PCOS 4(7.4%) in which 2(3.7%) had first trimester loss and 2(3.7%) had second trimester pregnancy loss, but there was no statistically significant association between the study group and the control group. Wang et al in their study of women with PCOS and their risk of spontaneous miscarriage following assisted reproduction concluded that there was a high risk of spontaneous miscarriage in these women mainly due to high prevalence of obesity in them. Their study suggested that effect of obesity on the miscarriage rate was independent of the PCOS status.[12] Bagegni et al concluded in their study on early and late obstetric complication in IVF conceived pregnancies and PCOS, that the high miscarriage rate is related to the obesity in those women rather than PCOS itself.[13] A similar study conducted by Han et al (2011) in their study concluded that the miscarriage rate was not elevated in women with PCOS and was regardless of BMI.[14]

In the present study among 54 cases studied in PCOS group, 21(38.9 %) had GDM and in non PCOS group 10(18.5%) had GDM which shows statistically significant association between the study group and control group. A study done by Haakova et al (2003) using a smaller sample, found no increased risk of glucose intolerance and in women with PCOS during pregnancy.[15] Boomsma et al (2006) in their meta-analysis of pregnancy outcome in women with PCOS, concluded that these women are at a higher risk of developing GDM even after excluding studies in which higher BMI was reported.[16]

We observed a strong association between PCOS and pre-eclampsia. In the present study, pregnant women with PCOS 22(40.7%) had presented with mild to severe PE as compared to 10(18.5%) in the control group. Severe pre-eclampsia and imminent eclampsia was higher among the pregnant women with PCOS groups. Women with PCOS have increased levels of androgens, which have been associated with the development of pre-eclampsia. It is well stated that women undergoing assisted reproductive technology are at an increased risk of hypertensive disease during pregnancy, which has been attributed to the underlying cause of infertility.[9] Bjercke et al in his study on 29 PCOS women and 355 normal women, found that pre-eclampsia was higher in the PCOS group than in the normal group (11.5% vs. 0.3%).[17] Study conducted by Mikola et al did not show any association of PCOS and development of hypertensive disease of pregnancy.[18]

Azizia et al has reported in a study that Antepartum haemorrhage is more common in women with PCOS although the sequence of events leading up to this is unclear. These women also have a higher rate of interventions due to complicated IVF conceived pregnancies.[19] In the present study we noted that APH was higher among pregnant women with PCOS 4(7.4%) as compared with controls 1(1.9%). But there was no statistically significant association between the study groups.

It was found in this study that 10 (18.5%) of IVF conceived pregnant women with PCOS had preterm labour and underwent preterm delivery (< 37 weeks of gestational age) as compared to only 5(9.3%) in the non PCOS category. According to the study performed by Roos et al. there was a higher chance of preterm delivery among women with PCOS due to the increased need for assisted reproductive technology or ovulation induction to become pregnant, and the increased risk of multiple births, which predisposes PCOS women to preterm birth.[9] There are multiple other risk factors which predispose PCOS women to preterm delivery, such as extremes of maternal age, smoking and low maternal weight, obesity, diabetes mellites, chronic hypertension, fertility treatment, and multiple gestation. Meta-analysis by Boomsma et al in 2006 demonstrated a higher chance of premature deliveries in women with PCOS. However due to the unequal incidence of multiple gestation in the included studies, statistical homogenicity could not be achieved. Another limitation was that the cause for premature delivery could not be stratified i.e preterm labour, preterm premature rupture of membranes, cervical insufficiency etc. and neither was any differentiation made between spontaneous versus induced preterm deliveries.[16]

In the present study, It was found that 9 (16.7%) of IVF conceived pregnant women with PCOS had multiple gestation as compared to 8(14.8%) in the non PCOS category. In the present study it was found that IVF conceived pregnant women had more perinatal complications as, 13(24.1%) babies had low birth weight, 12(22.2%) babies are SGA, 4(7.4%) babies are LGA, 15(27.8%) babies required NICU admission as compared to pregnant women in control group who had 4(7.4%) babies with low birth weight, 1(1.9%) babies are SGA, 2(3.7%) babies admitted in NICU. Pregnancy in a woman with PCOS does not give smaller babies, but they may result secondary to pre-eclampsia. On the contrary, even in the absence of GDM, pregnancy in a PCOS woman is more likely to give a large for gestation baby as compared with the non-PCOS cohort. In one study, the risk of being born small for gestational age in the offspring of women with PCOS was increased, whereas this could not be confirmed in other studies.[15] Maternal glucose levels correlate with fetal birth weight, development of fetal macrosomia, fetal hyperinsulinemia and fetal body-fat percentage.[17] Caesarean section is performed more frequently in women with GDM, as the diagnosis “large for gestational age” due to elevated maternal glucose levels is associated with a higher incidence of adverse pregnancy outcomes in spontaneous delivery (e.g., shoulder dystocia). PCOS also seems to correlate with a lower rate of vaginal delivery compared with healthy controls,[17] although the higher incidence of caesarean sections correlates with the occurrence of obesity, as women with a normal body mass index (BMI) and PCOS have an incidence of caesarean section equal to that of age-matched controls.[16] A lot of focus has been given on the antenatal complications of women who have PCOS. Relatively lower attention has been given on the intra-partum and post-natal complications. Recently, the first study was conducted to analyse the effect of PCOS on perinatal and neonatal outcomes. Infants born to mothers with PCOS were more likely to have low Apgar scores at 5 min and to experience meconium aspiration. These infants may be more susceptible to fetal distress during labour. However, there was no association with stillbirth, and the increased risk for neonatal death was not statistically significant. These findings need to be confirmed in future studies.[9] Study reported by Han et al., 2011 and Wang et al., 2012 reported data on SGA which found no significant difference in baby born to IVF conceived mother with PCOS and without PCOS.[14,20] Sha et al (2019) in their metanalysis of pregnancy related outcomes and complications in women with polycystic ovarian syndrome undergoing IVF found that, there were no differences in the prevalence of SGA comparing the PCOS and non-PCOS groups (OR 1.50, 95% CI 0.98–2.30, I 2 = 22.5%;) in same study reported data on LGA, including 780 PCOS patients and 2600 control patients , there is significantly increased risk of LGA was shown in women with PCOS in comparison to women without (OR 2.10, 95% CI 1.01–4.37, I 2 = 65.7%, P = 0.02) [7]

CONCLUSION

In the present study we found that women coming to IVF clinic for In Vitro Fertilisation are usually of advanced age, which may be the associated risk factor for pregnancy complication in these women. The study population in the present study had been advised weight reduction, lifestyle modification during the course of their infertility treatment, to regularise their menstrual cycle, most of them were still overweight at the time of conception based on their BMI. Based on the findings of this study, IVF conceived pregnant women with PCOS have the increased risk of developing Pre-eclampsia. Therefore we recommend stringent blood pressure monitoring in pre pregnancy period and during pregnancy with screening of the patient in first trimester. In the present study IVF conceived women with PCOS have increased risk of Gestational diabetes mellitus. We have also found that IVF conceived pregnant women with PCOS are at a higher chance of requiring LSCS, The need for the same could be included in routine antenatal counselling in addition to counselling regarding a healthy lifestyle which could reduce the need for the same by controlling antenatal risk factors that predispose to the increased need for LSCS. In the present study we have found that risk of low birth weight, small for gestational age babies born to IVF conceived women with PCOS is increased despite mothers being diabetic. All the above information may be vital in a clinical practice for the management of IVF conceived pregnant women with PCOS. In order to manage IVF conceived pregnant woman with PCOS more effectively, the importance of hormonal status regulation prior to pregnancy, lifestyle modification and medical therapy among women with PCOS during pregnancy should addressed.

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