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Dr. Surendra
Dept. of Obstetrics & Gynaecology,
SP Medical College, Bikaner,
Rajasthan, India

Dr. Vinu Choudhary
Dept. of Obstetrics & Gynaecology,
SMS Medical College, Jaipur,
Rajasthan, India

A prospective control study evaluating pregnancy outcome in PCOS patients: The bottom line truth of modern lifestyle

Dr. Surendra and Dr. Vinu Choudhary

Abstract

Introduction: PCOS are at the risk of pregnancy complications such as Gestational Diabetes Mellitus (GDM) Hypertensive complications. Medical interventions that improve insulin sensitivity appear to have a positive impact on both early and late pregnancy complications in women with PCOS. Thus, the objective of this study is to compare the pregnancy outcome in PCOS women with normal women and to study the incidence of pregnancy complications such as spontaneous abortions, preterm labour, gestational diabetes, gestational hypertension, preeclampsia, pregnancy and neonatal outcome in women with PCOS & to compare the mode of conception, need of reproductive assistance.

Methodology: This study was conducted in the department of Obstetrics and Gynecology, SMS Medical College in 80 pregnant women attending the antenatal clinic, satisfying the inclusion criteria. It was a prospective comparative study. The normal pregnant women, those who attended regular antenatal clinic during the same period and without medical illness such as diabetes mellitus, hypertension and thyroid disease were used as the control group.

Result: Present study conducted on a total of 80 pregnant women, 40 of who were among the women who had a history of PCOS (i.e. either in the form of scan or positive blood parameters). Age and parity of both the groups were comparable. We noted that 50% women needed help in conceiving in form of ovulation induction, *in vitro* fertilization & intrauterine insemination as compared to only 12% in normal women group which is statistically significant ($p < 0.05$). The maternal complications in the form of spontaneous abortion, GDM, Gestational hypertension, Pre eclampsia in our study was higher than the normal population which was found to be statistically significant. The rate of Caesarean Section Rate, we found statistically significant difference between PCOD women and normal women. The fetal outcome in terms of NICU admission was significantly higher in the babies born to the PCOS women with a p value of < 0.05 .

Conclusion: Pregnant women with PCOD may become a high risk pregnancy at any time. Hence proper antenatal care is mandatory to prevent and treat the complications.

Keywords: Evaluating pregnancy outcome PCOS patients, bottom line truth, modern lifestyle

Introduction

PCOS is a hyper androgenic disorder associated with chronic anovulation and polycystic ovarian morphology. It is often associated with health implementation in later life. It can affect females throughout their lifetime from puberty to menopause. It is not only a very prevalent cause of anovulatory infertility, menstrual disturbances and hirsutism, but it is also a major risk factor for the development of type 2 diabetes mellitus in later life^[1, 2]. Polycystic ovaries are the morphological ovarian phenotype in women with the PCOS. Major complaints and features of PCOS is different ages of affected women may help to plan individual. therapeutic strategies and prevent long-term chronic metabolic diseases. In 2003, a joint ESHRE/ASRM² consensus meeting produced a refined definition of PCOS, redefined it as ovary with 12 or more follicles measuring 2-9 mm in diameter and/or increased ovarian volume ($> 10 \text{ cm}^3$). The most recent criteria was defined by a task force of the Androgen Excess Society in 2006. The syndrome is diagnosed based on polycystic appearing ovaries, clinical or laboratory hyper androgenism and ovulatory dysfunction. PCOS is most often associated with infertility. On the basis of available information it appears that certain pregnancy complications are more prevalent in this group. Certain hormonal abnormalities are common among patients with PCOS such as elevated luteinizing hormone, hyperandrogenism and abnormal progesterone production which could explain higher loss rate. PCOS are at the risk of pregnancy complications such as Gestational Diabetes Mellitus (GDM) Hypertensive complications.

Correspondence
Dr. Vinu Choudhary
Dept. of Obstetrics & Gynaecology,
SMS Medical College, Jaipur,
Rajasthan, India

Medical interventions that improve insulin sensitivity appear to have a positive impact on both early and late pregnancy complications in women with PCOS.

The 'Barker hypothesis' explains that the fetal nutrition and endocrine environment affects the developing neuroendocrine systems leading to long term health hazards [4, 5]. The low fertility in these women make it a must for them to have reproduction assistance like ovulation induction or IVF, putting them at the risk of developing multiple gestation. Thus, the objective of this study is to compare the pregnancy outcome in PCOS women with normal women and to study the incidence of pregnancy complications such as spontaneous abortions, preterm labour, gestational diabetes, gestational hypertension, preeclampsia, pregnancy and neonatal outcome in women with PCOS & to compare the mode of conception, need of reproductive assistance.

Methodology

This study was conducted in the department of Obstetrics and Gynecology, SMS Medical College in 80 pregnant women attending the antenatal clinic, satisfying the inclusion criteria. It was a prospective comparative study. The normal pregnant women, those who attended regular antenatal clinic during the same period and without medical illness such as diabetes mellitus, hypertension and thyroid disease were used as the control group.

Inclusion criteria

1. Women with PCOS and
2. Age ranging from 18 to 40 years.

Exclusion criteria are

1. Women with anovulation not due to PCOS.
2. Women under 18 or over 40 years.
3. Women with obesity not due to PCOS.
4. Women with hirsutism due to adrenal or other causes and
5. Women with other medical illness.

Detailed history was taken of all the 200 women which including the age, parity, obstetric history, spontaneous or assisted conception, history of metformin intake, examination findings including BMI, facial hair, acne. To diagnose GDM, with 50 grams oral glucose challenge test (GCT). Blood sample were collected after one hour. If the value is equal or more than 140 milligrams per deciliter, the patient is subjected to oral glucose tolerance test (GTT) by hexokinase method. If 2 or more values were abnormal, then these patients were classified as GDM. Hypertensive disorders in pregnancy was diagnosed when the blood pressure was greater than 140/90 mm Hg after 20 weeks' period of gestation, on 2 or more occasions, and women with proteinuria were labeled as preeclampsia. Delivery prior to 37 weeks of gestation were labeled as preterm. When the birth weight was less than 2500 gms were termed low birth weight and birth weight of more than 4000 gms were macrosomia.

Result

It was evaluated by SPSS Computer software system, P value <0.05 was considered to be statistically significant.

Table 1: Demographic profile of patients

Demographic Parameters	PCO Women	Normal women	P value
Age (yrs)			>0.05
18-24	8	10	
25-29	20	21	
30-34	10	7	
35-40	02	02	
Parity			>0.05
Primi	26	23	
Multi	14	27	
BMI			<0.05
Normal weight	11	29	
Over weight	21	10	
Obese	8	01	
Mode Of Conception			<0.05
Spontaneous	20	35	
Ovulation induction	14	5	
<i>In vitro</i> fertilisation	2	0	
Intrauterine insemination	4	0	
Total	40	0	

Table 2: Comparison of pregnancy outcome in Normal and PCOD women

Pregnancy outcome	Normal women(N=40)	PCO Women (N=40)
Spontaneous abortion	2	6
Gestational diabetes	2	5
Gestational hypertension	3	8
Pre eclampsia	1	4
Preterm labour	1	2

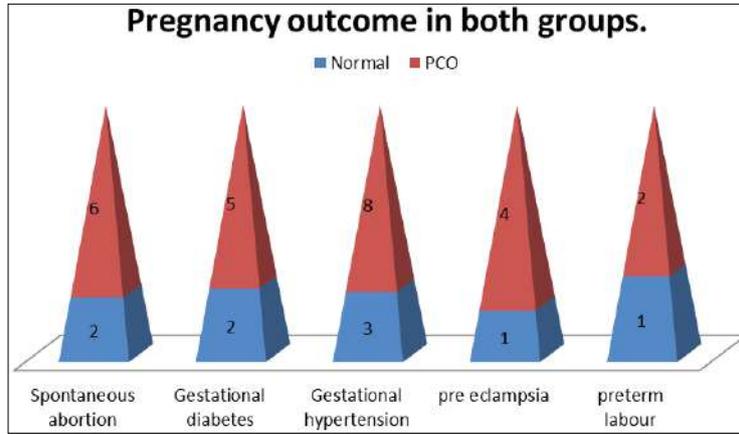


Fig 1

Table 3: Cesarean rate in normal and PCOD women.

Parameter	Normal women (N=40)	PCO Women (N=40)
Caesarean rate	6	13

P value <0.05

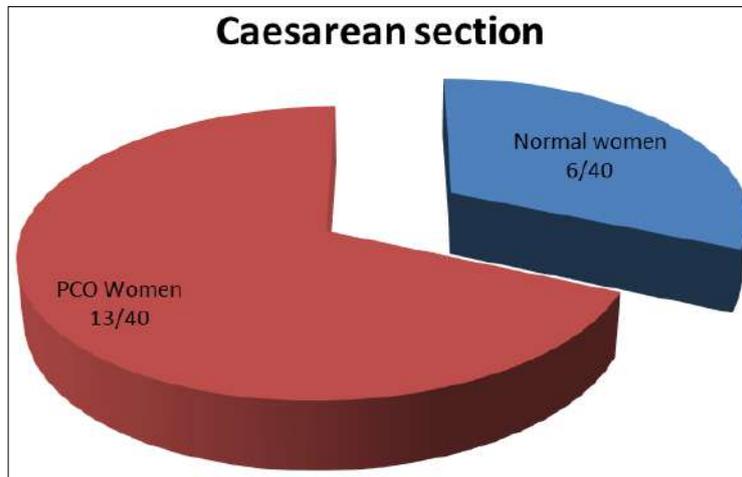


Fig 2

Table 4: NICU Admission

Parameter	Normal women (N=40)	PCO Women (N=40)
NICU Admission	3	8

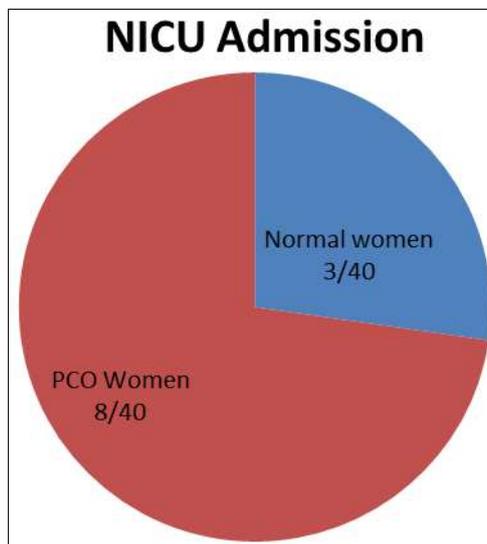


Fig 3

Table 5: Result of pregnancy outcome in PCOD women compared with normal women gp.

Parameter	P Value	Conclusion
Spontaneous abortion	<0.05	Statistically significant difference in PCO Women
GDM	<0.05	Statistically significant difference in PCO Women
GHTN	<0.05	Statistically significant difference in PCO Women
Pre Eclampsia	<0.05	Statistically significant difference in PCO Women
Preterm labour	>0.05	No statistically significant difference found in both gps.
NICU Admission	<0.05	Statistically significant difference in PCO Women

Table 6: Fetal outcome in Normal & PCO Women.

Fetal outcome	Normal women	PCO Women	P value
Low birth weight	2	3	>0.05
Macrosomia	2	4	>0.05
NICU Admission	3	8	<0.05

P value>0.05 with respect to low birth weight & Macrosomia.

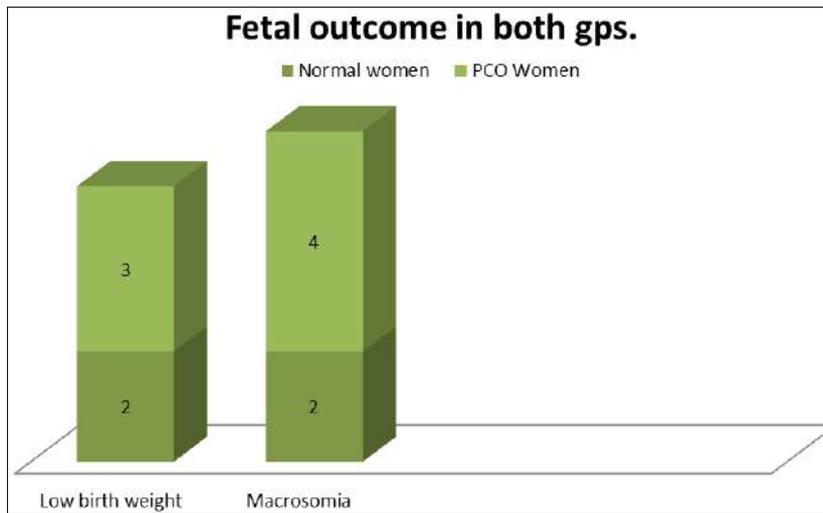


Fig 4

Discussion

Present study conducted on a total of 80 pregnant women, 40 of who were among the women who had a history of PCOS (i.e. either in the form of scan or positive blood parameters). Age and parity of both the groups were comparable. Out of 40 normal women, 22% landed with complications were as unto 62% of women with PCOS landed with antenatal complications. Infertility was common among the PCOS patients, in our study. We noted that 50% women needed help in conceiving in form of ovulation induction, *in vitro* fertilization & intrauterine insemination as compared to only 12% in normal women group which is statistically significant ($p<0.05$).

Insulin resistance, hyperinsulinaemia and obesity are the common clinical features with women in PCOS [9, 10]. Women with PCOS were found to have an increased risk of carbohydrate metabolism impairment. The age of the patients in our case control study had no significant difference unlike in consensus with a study conducted by Haakoova *et al.* [6] and Setji *et al.* [7] whereas the weight difference were significantly different among both the groups.

The maternal complications in the form of spontaneous abortion in our study was higher than the normal population which was found to be statistically significant, p value <0.05 which was apposed by the results obtained in a study conducted by Nivedhitha *et al.* [8] There was a considerable difference in the prevalence of the hypertensive disorder in pregnancy in PCO Women as compared to normal population which was statistically significant, in contrast to results obtained by Setji *et al.* [7] Prevalence of Gestational diabetes is not only high among

the women with PCOS but also statistically significant, of whom majority were diagnosed between 24-28 weeks period of gestation, which was the same results found in a large number of study conducted by Haakoova *et al.* [6] Setji *et al.* [7] and Lo JC *et al.* [12] Holter *et al.* [11] who conducted a large retrospective study found only a marginal increase in the risk of GDM, but no important difference in the rate of preeclampsia, but found that it had a direct relation to the body mass index of the patients. In contrast to above mentioned study pre eclampsia was higher in PCO Women which showed statistically significant difference in present study (p value<0.05).

The preterm prevalence was higher in the PCOS women but not significant which was the same results obtained by Nivedhitha *et al.* [8] and Boomsma *et al.* [13] The rate of Caesarean Section Rate, we found statistically significant difference between PCOD women and normal women, also supported by Bjercke S *et al.* [13]

The fetal outcome in terms of NICU admission was significantly higher in the babies born to the PCOS women with a p value of <0.05. The most common reason for admission to NICU was low birth weight & neonatan hypoglycaemia supported by study performed by Shivananjaiah C *et al.* [14]

Conclusion

The complication associated with PCOS is not just confined to reduced fertility but also pregnancy complications like spontaneous abortions, gestational diabetes, hypertensive disorders of pregnancy, fetal complication like low birth weight, increase need of NICU care, lower Apgar. Hence routine

screening for blood sugar abnormalities, obesity, oligo menorrhoea is to be managed enthusiastically in adulthood.

Pregnant women with PCOD may become a high risk pregnancy at any time. Hence proper antenatal care is mandatory to prevent and treat the complications.

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