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Research Article

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Pregnancy Complications in Women with PCOS

Reema Jain

Director, Vaishnavi Nursing Home

***Corresponding author**
Dr. Reema Jain (Goel), MBBS, DGO, CIMP, Fellowship Infertility, Director, Vaishnavi Nursing Home. Sect 33, AT Exit 11 NH, 8 Gurugram 122001, Haryana, India; E-mail: rimu_jain@yahoo.co.in

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Abstract

The Polycystic ovarian syndrome affects 6-15 % of reproductive age women worldwide. And recently the changing life styles and rising obesity worldwide have contributed to a rise in the incidence of PCOS.

Though there are many issues with PCOS post conception. PCOS women are at increased risk of early pregnancy loss which is approx. three fold as compared to the women without PCOS.

After successfully crossing the first trimester, they are at risk of developing pre- eclampsia, GDM, preterm birth and birth of small for gestational age infant.

Also higher incidence of multiple pregnancies is there and the risks associated with them. All these leading to higher rate of c -section delivery.

So, proper understanding of these risks, informing and counseling the patients regarding them facilitate closer maternal and fetal surveillance and help improving the outcome of pregnancy.

Introduction

PCOS is characterized by menstrual irregularities, hirsutism, persistent acne, obesity. Increased serum concentration of androgens, LH and insulin are key factors of its endocrine profile [1].

PCOS is a common and complicated female endocrinopathy that estimated prevalence varies from 6-15 % of reproductive age women worldwide [2].

Among PCOS patients anovulation is the main cause for infertility, however they conceive successfully following ovulation induction.

It is commonly believed that insulin resistance, hyperandrogenism and obesity play a significant role in the pathophysiologic process of PCOS [3,4].

Insulin resistance is universally accepted as one of the key biochemical features of PCOS supported by complementary hyperinsulinemia, and is associated with ovarian secretion disorder increasing the androgen production by theca cells that lead to hyperandrogenism [5,6]. Obesity, a characteristic of 60-80% of PCOS patients, has a malignant additive effect on features of PCOS such as insulin resistance, hyperandrogenism, infertility, hirsutism and pregnancy complications [7].

Nowadays a growing body of evidence points to a high prevalence of pregnancy complications in PCOS women. As a result, PCOS is not only related to metabolic abnormalities, menstrual irregularity or infertility as previously reported, but becoming increasingly recognized due to the problems of GDM, pregnancy-induced hypertension, preeclampsia, premature delivery rate, neo natal birth weight, caesarean section rate and admission rate to NICU, which are all considered to be adverse pregnancy outcomes of PCOS during pregnancy [8,9].

Women with PCOS require ovulation induction or assisted reproductive technology (ART) in order to become pregnant due to oligo-ovulation or anovulation, this treatment for infertility often results in an elevated rate of multiple births [10,11].

There are, however, few reports concerning other obstetric complications, and the numbers of pregnancies per study have been small. A higher than expected risk of pre eclampsia has been reported in some studies [12].

Since pregnancy induces insulin resistance, PCOS patients may also be at risk for developing GDM. No increase in the prevalence of GDM was observed in one study, whereas polycystic ovaries were common among women with previous GDM in two other studies [13,14]. A recent study showed an increased risk for GDM in PCOS

pregnancies [15]. The scanty and partly conflicting information on PCOS pregnancies prompted this study to evaluate the obstetric outcome of PCOS pregnancies.

Material & Methods

It is retrospective study

Total 180 patients conceived and delivered between 1st jan.2016 to 31st dec.2017 at our hospital. After excluding patients with BMI> 27kg/m^2 and other exclusion criteria's, 155 patients remained and were included in study. They were further divided into PCOS and non PCOS group. It was found 20 pregnancies had PCOS as per Rotterdam's criteria and rest 135 non PCO were taken as control.

Medical records were retrospectively reviewed for each patient and assessed in relation to adverse outcomes in pregnancy.

Patients were classified as PCOS according to Rotterdam's criteria 2003.

After exclusion of related disorders, the diagnostic criteria for PCOS should include two of the following three criteria [6,7].

a) Chronic anovulation/oligoovulatory cycle
b) Hyperandrogenism (clinical/biological)
c) One or both polycystic ovaries on USG (AFC >12 or ovarian volume > 10 cc).

Gestational Diabetes Mellitus

Diagnostic criteria - 100 grams OGTT using Carpenter and Constant criteria

If 2 or more plasma glucose values meet or exceed the following thresholds-

Fasting level- 95 mg/dl
One hour -180mg/dl
Two hours-155 mg/dl
Three hours-140 mg/dl

Pre-Eclampsia

Patients with SYSTOLIC B.P ->140 mm hg &diastolic B.P ->90 mm hg during third trimester of pregnancy & proteinuria (urine albumin >1 +) after excluding other conditions.

Premature Deliveries

Defined as deliveries <37 weeks of gestation.

IUGR

EFW at or below 10th percentile is used to identify fetuses at risk.

Exclusion Criteria

1. Patients with chronic medical disorders like diabetes mellitus and hypertension.
2. Patients with GDM or pre -eclampsia in previous pregnancy.
3. Patients with BMI > 27 kg/m^2

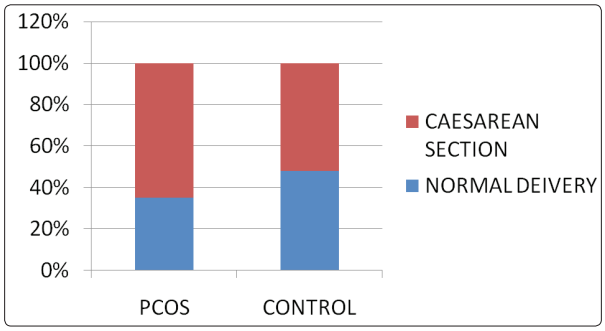
Limitations of Study

Small sample size is the limitation of this study.

Results

1. 15 % (3/20) multiple pregnancies occurred in the PCOS group .Out of which two were twins and one was triplet pregnancy.
   - In comparison to this 0.74 % (1/135) multiple pregnancies occurred in control group and it was a twin pregnancy (P value < 0.001).
   - Multiple pregnancy rates were significantly higher in the PCOS group (P value < 0.001).
2. Caesarian Section rates for PCOS patients were 65% (13/20) and for control group was 51.8% (70/135). Indications for C.S. were same amongst the control and PCOS group were - fetal asphyxia, abnormal presentation, and prolonged labour. The rate of Caesarean section was significantly higher in PCOS group (P VALUE<0.001).

	PCOS (n=20)	CONTROL (n=135)	P VALUE
Normal delivery	7 (35%)	65(48.14%)	
Caesarean section	13 (65%)	70(51.8%)	<0.001



(CS Rates Were Significantly Higher In PCOS Patients.)

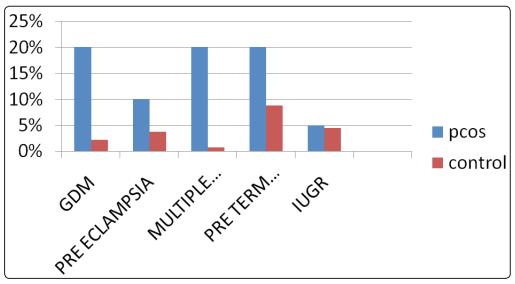
3. Total of 20% (4/20) of patients with PCOS developed GDM during pregnancy in comparison to 2.2 % (3/135) of the control population (P VALUE <0.001).
   The rate of developing GDM during pregnancy was found significantly higher in the PCOS group (P VALUE <0.001).
4. Only 2/20 (10%) patients developed pre-eclampsia in PCOS group as compared to 5/135 (3.7%) patients in control group. (P VALUE<0.001). The rate of developing pre-eclampsia during pregnancy was found significantly higher in the PCOS group (P VALUE <0.001).
5. Pre mature delivery occurred in 4/20 PCOS patients (20 %) and in 12/135 (8.8%) patients in control group. (P VALUE<0.001). The rate of prematurity was significantly higher in the PCOS group (P VALUE <0.001).
6. Only 1/20 pregnancy (5%) had a growth restricted baby as compared to 6/135 patients (4.4 %) in the control group (P VALUE<0.001).

The rate of delivering growth restricted babies at term was significantly higher in PCOS group. (P VALUE <0.001).

Pregnancy Complications in PCOS and Control Patients

	PCOS (n=20)	CONTROL (n=135)	P VALUE
GDM	4 (20%)	3 (2.2%)	< 0.001
PRE ECLAMPSIA	2 (10%)	5 (3.7%)	< 0.001
MULTIPLE PREGNANCY	3 (15%)	1 (0.74%)	< 0.001
PRE TERM DELIVERY	4 (20 %)	12 (8.8 %)	< 0.001
I.U.G.R.	1 (5 %)	6 (4.4 %)	< 0.001

Graphical Representation of Results



Discussion

- Increased risk of GDM in PCOS pregnancies was found in our study. Similar findings have earlier been reported by others also, but the results were explained by obesity rather than PCOS [16].
- Increased risk of GDM has been reported in a smaller study by Radon et al, 1999, in which women were matched for age and weight but not for parity.
- A possible explanation for the increased risk of GDM in PCOS pregnancies is the altered insulin metabolism, which is partly independent of body weight.
- Early alteration of insulin sensitivity and the compensatory insulin hyper secretion constitute specific risk factors in PCOS patients for the development of abnormalities of glucose tolerance.
- There are reports on an increased risk of pre eclampsia in PCOS, but parity has not been accounted for [15,16].
- Thus the confounding effect of null parity cannot be excluded.
- Another study, using matching for age and parity, found an increased incidence of pre eclampsia in PCOS [17].
- In our study also similar results found.
- Ovulation induction explains the increased incidence of multiple pregnancies in PCOS women.
- Multiple pregnancy rate was significantly higher in our study which was similar with other studies also [18,19].
- Premature deliveries in PCOS pregnancies were significantly higher than the control group in our study.
- And the similar results was found in a recent study done by Miya Yamamoto 2012,which showed pre term delivery rate in PCOS patients to be 12.9 % ,substantially higher than non PCOS women.
- In this series the rate of Caesarean sections in term single ton pregnancy was significantly higher (65 %) in PCOS group as compared to 51.8% in control. This difference, however, could not be explained by corresponding increase in the maternal and fetal complication.

Conclusion

- PCOS patients are at increased risk of developing pre eclampsia, GDM, pre term birth and birth of small for gestational age infant.
- Also there is higher incidence of multiple pregnancies and their associated risks.
- And there is higher rate of caesarean section delivery.

So, proper understanding of these risks, informing and counseling the patients regarding them facilitate closer maternal and fetal surveillance thus helping in improving the outcome of pregnancy.

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