



To compare the maternal outcome in normal and women with polycystic ovary syndrome

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Citation this Article: Dr. Dinesh Sharma, Dr. Suneet Katoch, “To compare the maternal outcome in normal and women with polycystic ovary syndrome”, IJMSIR- January - 2022, Vol – 7, Issue - 1, P. No. 184 – 188.

Type of Publication: Original Research Article

Conflicts of Interest: Nil

Abstract

Background: Polycystic ovarian syndrome (PCOS) in the present generation is a very common reproductive disorder and the prevalence is on the rise. In this study we compare the maternal outcome in normal and women with PCOS.

Methods: This study was a case-control study on pregnant women with h/o PCOS from 5-28 weeks of pregnancy.

Results: 9.49% women developed GDM in cases as compared to 1.61% women in control group. The difference in the incidence of GDM in the two groups was statistically significant. When hypertensive disorders of pregnancy were considered, a statistically significant difference was observed as 11.2% cases and 2.42% controls showed HDP.

Conclusion: With a detailed comparative analysis of this case-control study, it can be concluded that many antenatal complications are per se increased in women with a history of PCOS.

Keywords: Diabetes, HDP, PCOS

Introduction

Polycystic ovary syndrome (PCOS) is a multisystem endocrinopathy in women of reproductive age with

various metabolic disturbances and a wide spectrum of clinical features like infertility, obesity, menstrual abnormalities and hyperandrogenism. The condition is relatively common and affects about 20% of women in reproductive age group. The diverse manifestations of PCOS start at puberty.¹

PCOS is characterized by chronic anovulation, oligomenorhea or amenorrhea, hyperandrogenism and polycystic ovary morphology on pelvic ultrasound.²

Globally, the prevalence of PCOS ranges from 2.2% to 26%. Women with PCOS are at higher risk for insulin resistance, type 2 diabetes mellitus, obesity, dyslipidemia, hypertension, atherosclerotic cardiovascular disease, endometrial hyperplasia and endometrial cancer, obstructive sleep apnoea and mood disorders.³

The pathophysiology of PCOS is multifactorial and it is believed that a genetic predisposition exists that is exacerbated by excess adiposity. The pathophysiology of PCOS involves the interaction between abnormal ovarian morphology, due to excess androgen production by the polycystic ovaries, hyperinsulinemia and elevated luteinizing hormone (LH) levels.⁴ It has been shown that ovarian androgen production in women with PCOS is

accelerated due to the increased ovarian theca cell androgenic enzymatic activity of 3 β -hydroxysteroid dehydrogenase (HSD) 17 α -hydroxylase/C17, 20 lyase, a product of CYP17.⁵PCOS has profound implications on a woman's reproductive health and the long-term health outcomes of her offspring.⁶

Material & methods

Study type: Case control study

Inclusion Criteria

1. Pregnant women with h/o PCOS from 5-28 weeks of pregnancy
2. Those following the Rotterdam criteria (out of 3, 2 should be present): -
 - Ovulatory dysfunction such as oligomenorrhea or amenorrhea.
 - Clinical or biochemical evidence of hyperandrogenism.
 - Polycystic ovarian morphology on USG scan defined as presence of 12 or more cyst in size in any one ovary or both ovaries with enlarged ovaries (volume >10 cc).
3. Proper written and informed consent was taken.

Exclusion criteria

Medical disorders which can affect maternal outcome:- Decompensated heart disease, severe liver disease, chronic renal failure, acute fatty liver of pregnancy, fulminant hepatitis, severe anaemia, chronic hypertension, thyrotoxicosis, diabetes mellitus type 1 & 2, acute attack of bronchial asthma.

Methodology

All pregnant women attending the antenatal clinic were inquired in detail about their present and past history regarding any illness, menstrual history and obstetric history. Women giving history of oligo/anovulation were identified and their previous records were scrutinized. Those fulfilling the inclusion and Rotterdam criteria were

taken as cases. Normal Pregnant women (without PCOS) between 5-28 weeks and fulfilling the exclusion criteria were treated as controls. Women in both the groups were subjected to a detailed general physical and systemic examination and few biochemical tests were done to exclude the conditions mentioned in the exclusion criteria.

Statistical Analysis

Continuous variables were summarized as mean and was analyzed by using unpaired t test. Nominal / categorical variables were summarized as proportions and was analyzed by using chi-square/ Fischer exact test. p-value <0.05 considered as significant.

Observations & Discussion

Out of 125 cases, 82 (65.60%) women were from 21-25 yrs. of age group, 30 (24.00%) women were from 26-30 yrs. age group, 10 (8.00%) women were more than 30 yrs. of age and only 3 (2.40%) women were below 20 yrs. of age. In Control group, out of 125 women, 66 (52.80%) women were between 21-25 yrs., 47 (37.60%) women from 26-30 yrs. and 12 (9.60%) women from >30 yrs. of age. Both groups were comparable. All the women in cases and control group were primigravida.

Table 1: Distribution of Women According to Gestational Diabetes Mellitus.

Gestational Diabetes Mellitus	Cases		Controls	
	No.	%	No.	%
Present	11	9.49	2	1.61
Absent	105	90.51	122	98.39
Total	116	100.00	124	100.00

p = 0.001

Above table shows that out of 116 women with PCOS, 11 (9.49%) women developed GDM as compared to 2 (1.61%) women in control group. This can also be

attributed to the fact that few women in both groups had higher BMI.

Urman B et al (1997)⁷ reported that women with PCOS had a significantly higher BMI as compared to the control group and risk of abnormal glucose challenge test and GDM was significantly increased in pregnant women with PCOS ($p < 0.5$). When lean PCOS subjects were compared with lean control subjects the difference in the incidence of the abnormal GCT and GDM complications were more and statistically significant ($p < 0.5$).

Mikola M et al et al (2001)⁸ showed BMI $>25 \text{ kg/m}^2$ to be the greatest predictor for GDM in women with PCOS.

Haakova L et al (2003)⁹ demonstrated that hyperinsulinemia and insulin resistance were common findings in women with PCOS. Since there is an increase in insulin levels due to an inducted state of peripheral insulin resistance in normal pregnancy, it would seem that pregnant women with PCOS would be at increased risk of impairment of carbohydrate metabolism.

Toulis KA et al (2009)¹⁰ reported that women with PCOS demonstrated a significantly higher risk for the development of GDM compared with women without PCOS.

Veltman-Verhulst SM et al (2010)¹¹ demonstrated that women with PCOS have a 3-fold risk of developing GDM compared with women without PCOS. The increase risk for GDM in PCOS has been related to insulin resistance in PCOS women.

Li GH et al (2011)¹² demonstrated that PCOS women with BMI $<24 \text{ kg/m}^2$ has significantly higher rates of GDM (27.9%) compared with the control group (15.6%) (p -value < 0.05). It showed an increased risk of GDM in non-overweight / obese PCOS women, this risk seemed to be due to PCOS itself rather than obesity.

Ashrafi M et al (2014)¹³ reported a high incidence of GDM (44.4%) in PCOS group as compared to control group without PCOS (29.9%).

Table 2: Distribution of Women According to Hypertensive Disorder of Pregnancy (HDP) and Pre-eclampsia

HDP&Preeclampsia	Cases		Controls	
	No.	%	No.	%
Present	13	11.20	3	2.42
Absent	103	88.80	121	97.58
Total	116	100.00	124	100.00

$p = 0.001$

Above table shows that 13 (11.20%) women develop HDP in PCOS group as compared to 3 (2.42%) in control group.

Diamat YZ et al (1982)¹⁴ demonstrated that the incidence of pre-eclampsia was much higher in women with PCOS as compared to women without PCOS was not BMI matched.

De Vries MJ et al (1998)¹⁵ reported that the incidence of pre-eclampsia was significantly higher in pregnant women with PCOS than in control group ($p=0.02$).

Radon PA et al (1999)¹⁶ found that women with PCOS were more likely to develop HDP when compared with age and weight matched controls (OR-15.0; 95% CI-1.9 to 121.5).

Haakova L et al (2013)⁹ and Mikola M et al (2001)⁸ documented comparable prevalence of pre-eclampsia between PCOS and non- PCOS women. The results of this study differ from those found in my study.

Conclusion

With a detailed comparative analysis of this case-control study, it can be concluded that many antenatal complications are per se increased in women with a history of PCOS.

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