



ASSESSMENT OF PREGNANCY OUTCOMES IN WOMENS WITH POLYCYSTICOVARIAN SYNDROME (PCOS)

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ABSTRACT

PCOS is a multi factorial and polygenic condition. This heterogeneous disorder is characterized by excessive androgen production by the ovaries mainly, which interferes with the reproductive, endocrine and metabolic functions. The incidence varies between 0.5 – 4 % more common amongst infertile women. It is prevalent in young reproductive age group (20 – 30 %). The aim of the study is to compare the pregnancy outcome, especially the prevalence of gestational diabetes mellitus in a group of patients with PCOS, with a group of healthy weight matched women. Retrospectively we evaluated the pregnancies of 56 women with PCOS some of who had been treated for infertility. These were compared with a group of 56 age and weight matched controls. Incidence of Pregnancy induced hypertension in cases of PCOS was 14.2 % (8/56), gestational diabetes was 14.2% (8/56) IHCP 10.7% (6/56) as compared of age and weight matched controls is with the incidence of PIH was 7.10% (4/56), GDM 3.5% (2/56) IHCP 7% (4/56).The differences in the incidence of GDM &PIH in two groups was not significant. The outcome of pregnancy in controls & the test groups were not significant, though numerically found to be higher. Thereby, suggesting PCOS must be screened for co morbid conditions like PIH, GDM &IHCP.

Key words: Gestational Diabetes Mellitus, Polycystic Ovarian Syndrome, Pregnancy Induced Hypertension

INTRODUCTION:

Polycystic ovarian syndrome (PCOS) was originally described in 1935 by **Stein and Leventhal** a syndrome manifested by amenorrhoea, hirsutism and obesity associated with enlarged polycystic ovaries.¹

PCOS is a multifactorial and polygenic condition. This heterogeneous disorder is characterized by excessive androgen production by the ovaries mainly, which interferes with the reproductive, endocrine and metabolic functions. The incidence varies between 0.5 – 4 % more common amongst infertile women.

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It is prevalent in young reproductive age group (20 – 30 %).¹ PCOS is one of the most common endocrine disorders in women of reproductive age. It affects 4-12 % of women in reproductive age group.²It is the leading cause of an ovulatory infertility and hirsutism. PCOS is also associated with disorders of reproduction, metabolism and general health including increased risk of miscarriage, insulin resistance, hyperlipidaemia, cardiovascular disease and endometrial cancer, women with PCOS have high rate of type 2 diabetes mellitus.³ Exact pathophysiology of PCOS is not clearly understood.¹In India, nowadays the adolescents &teenagers are more attracted towards the western food habits. The intake exceeds the burning of calories, thus resulting in the accumulation of fats in the adipose tissue.³

Infertility affects 40% of women with PCOS.PCOS is the most common cause of an ovulatory infertility. Approximately 90%–95% of an ovulatory women presenting to infertility clinics have PCOS. In addition, spontaneous abortion occurs more frequently in PCOS with incidences ranging from 42%–73%.⁴ Overall data in our set is

scanty comparing outcome of pregnancy in PCOS and age & weight matched controls. Hence, the purpose of this study was to compare outcome of pregnancy in PCOS and age & weight matched controls and to predict the complications during antenatal period for a better peri natal outcome.

STUDY DESIGN:

A prospective observational study was carried out by random selection of 56 cases during Jan'2014 to Dec'2014 at Govt. General Hospital; RIMS, Kadapa, Andhra Pradesh. Criteria noted are age groups, marital life, menstrual history, socio economic status, consanguinity and surgical history including Obs. & gyn. surgeries, associated medical disorders noted. Required investigations & Interventions done. Causes of infertility identified, suitable interventions done by Medical and surgical methods. Cases followed up, and conception rates were noted.

MATERIALS AND METHODS:

We studied the outcome of pregnancy in the patients who were diagnosed and were having PCOS. The women met the following criteria for the diagnosis of PCOS.

- i) Oligomenorrhoea (menstrual cycle longer than 35 days)
- ii) Anovulatory infertility on follicular study
- iii) Typical morphology of polycystic ovaries on ultrasound scan.
- iv) Increase level of at least one androgen (reference values for normal concentrations). Testosterone 0.5 -2.63 nmol/l androstenedione 1.57 - 5.4 nmol/l, dehydroepiandrosterone 0.8 - 10.5 nmol/l & DHEA-S(2.4-14.5 micromol/L).³ We studied total of 56 patients who presented during the period Jan'2014 to Dec'2014. Some patients had conceived spontaneously (n=16 – 29%) and 71% (n=40) some had some kind of treatment in the form of clomiphene, metformin & Gonadotropins. All these women with their controls were followed during pregnancy in RIMS, KADAPA. All patients were interviewed personally to obtain the relevant information about their medical and family history. The diagnosis of Gestational diabetes mellitus was based on GTT performed twice in the second and third trimester. [100gm of glucose and cut off values in blood F105 mg%, 1hr.190mg%, 2hr.165mg % 3hr145mg%).⁴ PIH was defined as Gestational hypertension (B.P >140/90 mm of Hg) without proteinuria at 20wks of gestation on two or more occasions at least 6 hrs apart and Preeclampsia (B.P > 140/90 mm of Hg) in combination with

proteinuria > 0.3 gm/24 hrs of urine after 20 weeks of gestation.)⁴ In the family history we considered first and second degree relatives i.e., parents, siblings and grandparents family history of diabetes mellitus, hypertension, ischaemic heart disease (myocardial infarction) were considered positive if one or more first degree relative onset of disease before the age of 45 yrs. A case matched control group based on age and weight was obtained from selection of women who had undergone their first prenatal USG screening examination in pregnancy at our department during this time period. Information regarding the course of their pregnancies was also obtained. The controls were also interviewed personally to obtain relevant information in their medical & family histories. The prevalence of PCOS and age wise prevalence of PCOS was worked out and outcome in terms of PIH, GDM, and IHCP was worked out and compared among test and control arms.

STATISTICAL ANALYSIS: The data was analysed with the help of computer software SPSS 12.0 for windows. The data represented as percentage. Statistically significant difference was evaluated using Chi square test. A p value of <.05 was considered as statistically significant.

RESULTS: In our study conducted over a period of 2 yrs the prevalence of PCOS was found to be 6% (56/920). The prevalence of PCOS was found separately in different age groups included in our study. Age wise prevalence of PCOS has been depicted in *table-1* with maximum prevalence (42.8%) seen in age group of 25-29 years and with minimum prevalence (1.7%) in 35-39 years. The statistical significance cannot be commented as it was not studied in the present study. The *table-2* indicates the outcome of the pregnancy of PCOS patients. 67.8% were primigravida, 29% of them conceived spontaneously whereas 71% of them received treatment for conception. 21.4% had previous history of abortion, 8.9% had previous history of previous delivery and 1.7% had previous history of ectopic pregnancy. 42% had a normal vaginal delivery and 57% had LSCS. A comparison of the two groups (*Table-3*) revealed numerically high percentage in PIH, GDM & IHCP in PCOS comparison to control but the difference was non-significant statistically. There were no significant differences in birth weight & frequency of neonatal complications between the two groups.

Table.1 Age Wise Prevalance of PCOS

SL.NO.	Age Groups	Prevalance rate	Prevalance Percentage
1.	20 – 24 yrs	5/56	26.7%
2.	25 – 29 yrs	24/56	42.8%
3.	30 – 34 yrs	11/56	19.6%
4.	35 – 39 yrs	1/56	1.7%

Table.2- Outcome of Pregnancy in PCOS Patients (n=56)

SL.NO.	Parameters	No. of Cases	Percentage (%)
1.	Total Primigravida	38	67.8 %
2.	Conceived Spontaneously	16	29%
3.	Received Treatment for Conception	40	71%
4.	With H/O Previous Abortion	12	21.4%
5.	With H/O Previous Delivery	5	8.9 %
6.	With H/O Ectopic Pregnancy	1	1.7%
7.	Normal Vaginal Delivery	24	42%
8.	LSCS	32	57 %

Table. 3- Outcome of Pregnancy in PCOS VS Control

SL.NO.	Parameters	PCOS	Control	Chi square test
1.	PIH	14.2 % (8/56)	7.14%(4/56)	Chi21.49 p=0.22 NS
2.	GDM	14.2 % (8/56)	3.57% (2/56)	Chi22.75p=.09 NS
3.	IHCP	10.7% (6/56)	7.14% (4/56)	Chi20.49 p=.50 NS

DISCUSSION:

The incidence of PCOD in our study is comparable to the incidence worldwide. In our study we found a non-significant difference in the prevalence of GDM & PIH in the PCOS patients and the controls matched by age and weight. It is well known that hyperinsulinaemia, insulin resistance and obesity are common findings in women with PCOS. There is an increase in insulin levels due to an induced state of peripheral insulin resistance, it would seem that pregnant women with PCOS would be at an increased risk of impairment of carbohydrate metabolism.

In our case control study we do not find a significant difference in pregnancy outcome between the PCOS patients and the controls matched by age and weight as noticed by Haakoova *et al*⁵ & Setji.⁶

Insulin resistance has also been shown to play a significant role in the development of essential hypertension leading to the suggestion that there might be an association between hyperinsulinaemia and hypertension in pregnancy. Two studies have been performed to evaluate the association of PCOS and PIH, where higher incidence of PIH was found in patients with PCOS.⁶ He also noticed that the increased incidence didn't reach statistical significance. Another small case controlled retrospective study of 22 women by Fridstrom *et al* found the increased incidence of PIH in PCOS patients.⁷ In our study the difference was significant. Matching with age and weight Kashyap *et al* found an increase in rate of glucose intolerance and preeclampsia in women with PCO during pregnancy.⁸ So far, in the largest retrospective study of 99 PCOS pregnancies Holte *et al*⁹ found only a slight increase risk of GDM, but no important difference in the rate of preeclampsia, they found the most increased risk factor for GDM is the body mass index. Although the author concluded that PCOS is a significant predictor of GDM, when obese and lean

women were considered separately. No increased risk for GDM found in PCOS women when compared with controls, moreover, early parity rather than PCOS was the significant risk factor for preeclampsia.¹⁰ In study by Boomsma¹¹ the relevant information was obtained & GTT performed in all the patients. When comparing PCOS patients and control matched by weight no significant difference was found in the prevalence of complications such as GDM, PIH and premature delivery in his study. We found an increased risk of GDM which is comparable of Lo *et al*.¹² There are few limitations of the present study like retrospective nature of the trial and less number of the patient studied. Thus larger, prospective comparative trials are required in future to establish the facts in this direction.

CONCLUSION:

The prevalence of PCOS present study was found to be 6%. Prevalence of pregnancy induced hypertension in cases of PCOS was 14.2 % (8/56), gestational diabetes was 14.2 % (8/56) IHCP 10.7% (6/56) as compared of age and weight matched controls the differences in two groups was not significant, though numerically found to be higher. There by, suggesting PCOS must be screened for comorbid conditions like PIH, GDM & IHCP.

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