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

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## 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 fetal 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:** Mean birth weight of neonate in cases was 2.43 ± 0.31 kg and in control group was 2.71 ± 0.29 kg. The difference was statistically significant. Mean APGAR score at 1 minute in cases was 6.21 ± 1.23 and in controls was 7.21 ± 0.24. APGAR score at 5 minute in PCOS group was 7.89 ± 1.40 and in control group was 8.21 ± 0.21. The difference was statistically significant when compared. 12 neonates from the cases group were admitted in NICU.

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

**Keywords:** NICU, APGAR, Birth Weight, 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]

Many studies have shown that PCOS is independently associated with an increased risk for short for gestational age (SGA) infants was observed in non-obese infertile women with PCOS who had undergone ART. Neonates born to women with PCOS also showed an increased risk for admission to the NICU. An APGAR score lower than seven at 5 min was more frequent in neonates born to women with PCOS.[2]

This study was undertaken to assess the fetal outcome in pregnant women with history of PCOS so that preventive measures can be instituted beforehand in these women and complications may be avoided.

## Material & methods

**Study type:** Case control study

**Study design:** Prospective 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 Mean Birth Weight of Neonate

| Birth Weight (in kg) | Cases | Controls | p-value |
|---|---|---|---|
| Mean ± SD | 2.43 ± 0.31 | 2.71 ± 0.29 | 0.01 |

Above table shows that mean birth weight in PCOS women was 2.43 ± 0.31 kg and in control group was 2.71 ± 0.29 kg. The difference was statistically significant.

Kjerulff LE et al (2011)[3] reported that women adjusting for gestational age, no difference in birth weight was seen between the groups, indicating that finding of low birth weight in PCOS group is specially due to preterm birth.

Lovvik TS et al (2015)[4] reported that women with twin pregnancies and PCOS diagnosis to have a higher risk of preterm birth, especially very preterm birth and spontaneous preterm birth, compared with women without PCOS. These neonates had low birth weight (47.7% in PCOS group v/s 39.3% in Control group).

Study conducted by Naver KV et al (2014)[5] reported that infants born to women with PCOS had low birth weight as compared to control group women.

Table 2: Distribution of Women According to Mean APGAR Score in Neonates

| APGAR Score | Cases | Controls | p-value |
|---|---|---|---|
| At 1 Min | 6.21 ± 1.23 | 7.21 ± 0.024 | 0.01 |
| At 5 Min | 7.89 ± 1.40 | 8.12 ± 0.021 | 0.01 |

Above table shows mean APGAR score at 1 minute in PCOS group was 6.21 ± 1.23 and in control group was 7.21 ± 0.024. APGAR score at 5 minute in PCOS group was 7.89 ± 1.40 and in control group was 8.21 ± 0.21. The difference was statistically significant.

Study conducted by McDonnel R et al (2017)[6] found that perinatal outcomes of infants born to women with PCOS is significantly worse than those born to women without PCOS when meconium aspiration syndrome, low APGAR score at 1 and 5 minute and admission in NICU is taken into consideration.

Roos N et al (2011)[7] in their study found that infants born to mothers with previous diagnosis of PCOS were more often large for gestational age and also an increased risk of low APGAR score at 5 minute (OR -1.41, CI - 1.09 to 1.83).

Table 3: Distribution According to Admission in NICU

| Admission in NICU | Cases | | Controls | |
|---|---|---|---|---|
| | No. | % | No. | % |
| Present | 12 | 10.34 | 2 | 1.61 |
| Absent | 104 | 89.66 | 122 | 98.39 |
| Total | 116 | 100.00 | 124 | 100.00 |

p = 0.001

In present study it was observed that 12 neonates from the cases group were admitted in NICU. Among these 7 had meconium aspiration syndrome and birth asphyxia, 3 were preterm births and 2 had IUGR. Among the control group, out of 2, 1 had birth asphyxia and IUGR and 1 had MAS. Roos N et al (2011)[7] found that PCOS was strongly associated with very preterm birth and risk of MAS was doubled. Neonates born to mothers with PCOS were likely to be large for gestational age and had a higher probability of birth asphyxia during labour than those born to unaffected mothers.

Similar observation was found by study Løvvik TS et al (2015)[8] and Mikola M et al (2001)[9]

Higher NICU admission in the present study may be reflected by the routine policy of managing these infants at referral hospital.

**Conclusion**

With a detailed comparative analysis of this case-control study, it can be concluded that many fetal complications are per se increased in women with a history of PCOS. Thus it is essential that this group of women should be identified preconceptional or early in the antenatal period so that by increased vigilance, nutritional support and proper treatment, these complications can be taken care of.

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