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Review Article

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Pregnancy Complications in Women with PCOS

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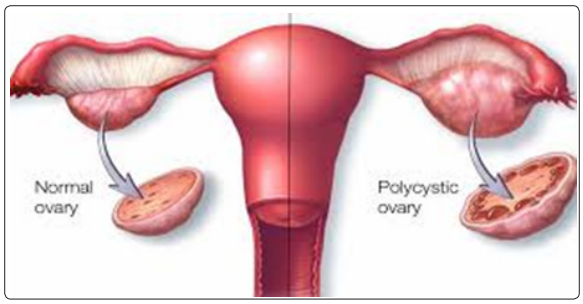
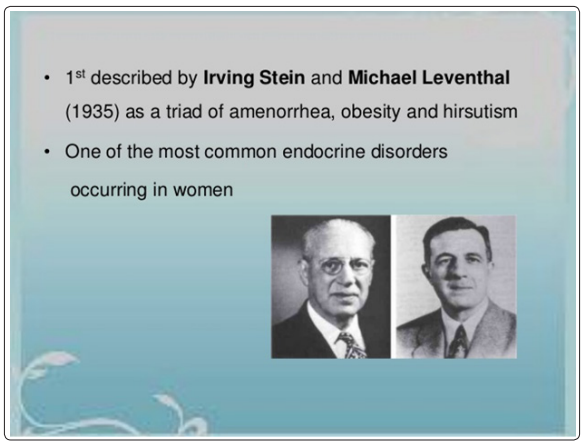
Introduction

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



Figure



Introduction

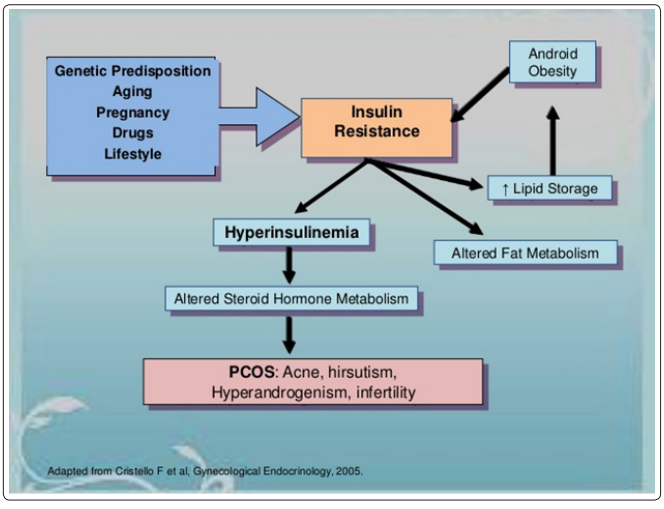
PCOS is characterized by

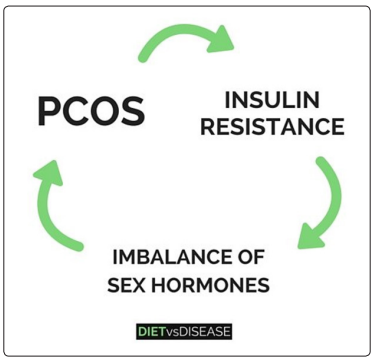
- Menstrual irregularities,
- Biochemical/ clinical hyperandronesium.
- Bilateral PCO ovaries
- Excluding thyroid & adrenal disorders…..
- Increased serum concentration of
  - androgens,
  - LH and
  - Insulin resistance

Are key factors for PCOS endocrine profile and metabolic dysfunction?

Figure

Pathogenesis

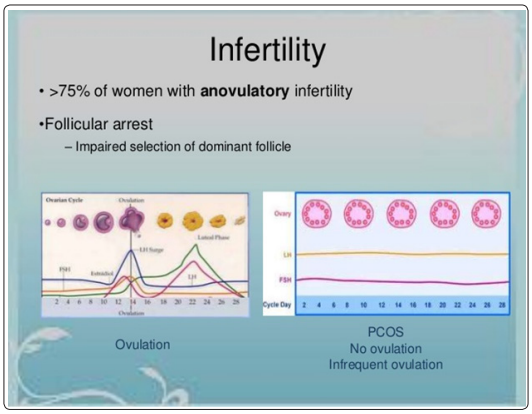




Introduction

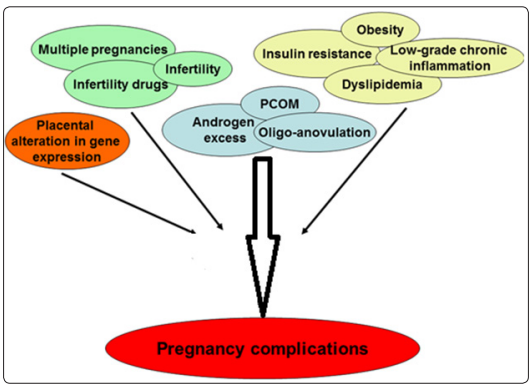
- Among PCOS patients anovulation is the main cause for infertility but conceive successfully following ovulation induction

Women with PCOS require ovulation induction or assisted reproductive technology (ART) - this treatment for infertility often results in higher rate of multiple births.
This too effect obstetric outcome in PCOS



Introduction

- There is growing evidence pointing towards high prevalence of pregnancy complications in PCOS women.
- PCOS is not only related to metabolic abnormalities, menstrual irregularity or infertility but also with increased adverse obstetric outcome mainly
- GDM,
- pregnancy-induced hypertension & preeclampsia
- premature delivery rate,
- neo natal birth weight,
- caesarean section rate and admission rate to NICU,



Literature Reviews

- Pregnancy complications in women with polycystic ovary syndrome.(Palomba S[1], de Wilde MA[2], Falbo A[3], Koster MP[2], La Sala GB[4], Fauser BC[2].)

Conclusions

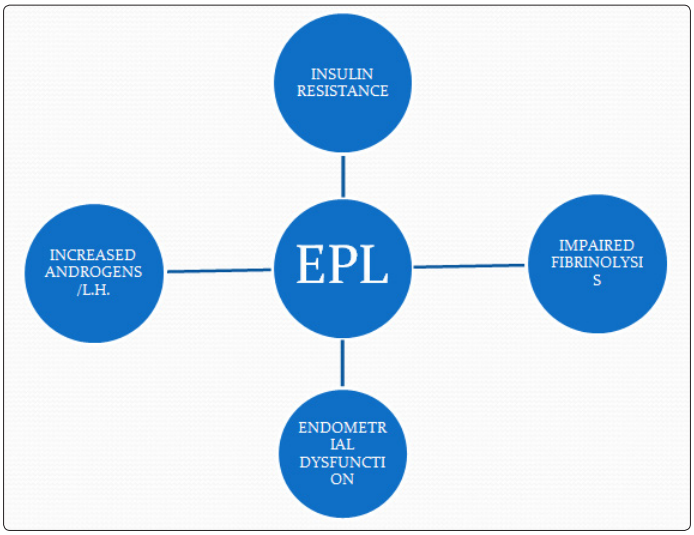
Women with PCOS show an increased risk of pregnancy complications. Heterogeneous etiological factors involved in PCOS and associated co-morbidities may all be involved in compromised pregnancy and child outcomes. In women with PCOS, a possible relationship with genetic, environmental, clinical and biochemical factors involved in this complex condition, as well as with pregnancy complications and long-term health for both mother and child, remains to be established.

- Association between polycystic ovary syndrome and the risk of pregnancy complications(A PRISMA-compliant systematic review and meta-analysis) Hai-Feng Yu, MS,[a] Hong-Su Chen, MS,[b] Da-Pang Rao, MS,[a] and Jian Gong, MS[c*],
- The results of this study suggested that PCOS in pregnancy might impact the risk of GDM, preeclampsia, PIH, preterm delivery, cesarean delivery, miscarriage, hypoglycemia, and perinatal death. Subgroup analysis suggested that study design and pre-BMI might affect these associations, which should be evaluated in a future study. Furthermore, future studies should focus on specific populations, including human assisted reproductive technologies and pregnancies with particular characteristics.

EPL

- EPL occurs in 30 -50 % of pcos women compared with 10 – 15 % of normal women. (Gray RH, Wu LY. Subfertility and risk of spontaneous abortion. Am J Public health 2000.)
- Incidence of spontaneous EPL is higher in patients conceiving with OI agents as compared to normally ovulating patients (Homburg R. Pregnancy complications in pcos in 2006)

Pathogenesis of Epl



Material & Methods

- It is a retrospective study.
- Medical records were retrospectively reviewed for each patient and assessed in relation to adverse outcomes in pregnancy

- Total 180 patients conceived and delivered between 1st jan.2016 to 31st dec.2017 at our hospital.

Exclusion criteria

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

Material & Methods

- 155 patients remained and were included in study.
- They were further divided into PCOS and non PCOS group.
- 20 pregnancies had PCOS as per Rotterdam's criteria and rest 135 non PCO were taken as control.
- 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.

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 Coustan 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 mmhg during third trimester of pregnancy & proteinuria (urine albumin >1 +) after excluding other conditions.

Premature Deliveries

- Defined as deiveries <37 weeks of gestation.

IUGR

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

Limitations of study

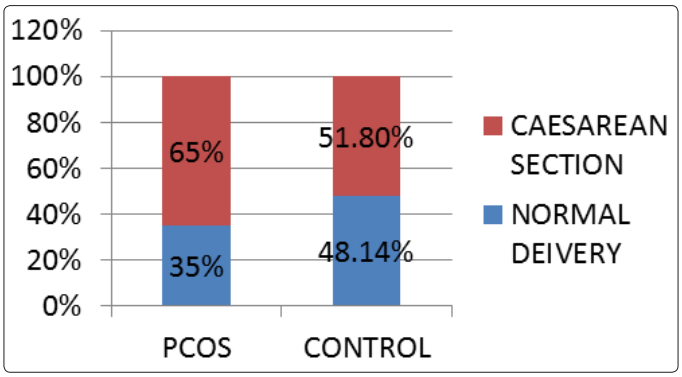
- Small sample size is the limitation of this study.

Results

- 15% (3/20) multiple pregnancies occurred in the PCOS group, out of which two were twins and one was a triplet pregnancy.
- In comparison to this 0.74 % (1/135) multiple pregnancy 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).
- 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 like fetal asphyxia, abnormal presentation and prolonged labour, previous lscs.
- The rate of Caesarean section was significantly higher in PCOS group (P VALUE<0.001)

Table

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



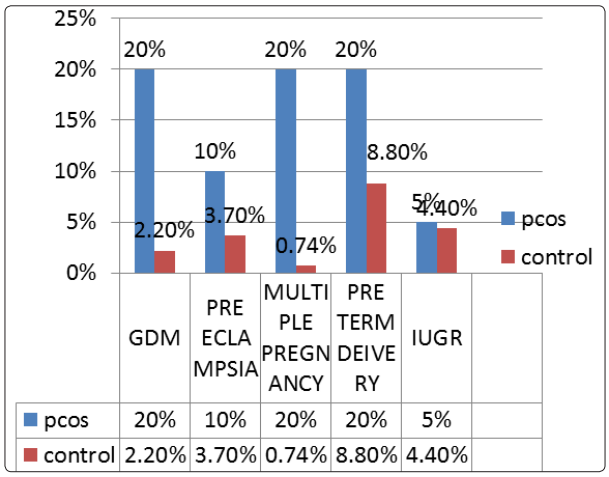
Graph

Results

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

Table

	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



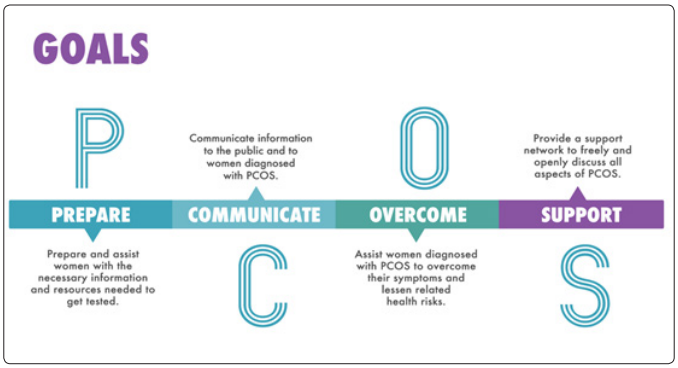
Graph

Discussion

- In our study, there was increased risk of GDM in PCOS group. Similar findings have earlier been reported by others also (Gjonnaess, 1989), but the results were explained by obesity rather than PCOS [1]. In our study we excluded patients with high BMI
- Increased risk of GDM was also 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.
- We also found an increased risk of pre eclampsia in PCOS during pregnancy.
- There are reports concluding same by Gjonnaess, 1989 & Radon et al, 1999, but parity has not been accounted for [1,2].
- Thus the confounding effect of nulliparity cannot be excluded.
- Another study (de Vries et al, 1998) using matching for age and parity, found an increased incidence of pre eclampsia in PCOS [3].
- Multiple pregnancy rates were significantly higher in our study which was similar with other studies also. (M. Mikola et al, 2001 and Balen et al 1994) [4,5].
- Ovulation induction explains the increased incidence of multiple pregnancies in PCOS women.
- 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 [6].
- 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 be related 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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