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KSHETRA DUSHTI IN POLYCYSTIC OVARIAN SYNDROME: AN OBSERVATIONAL STUDY

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ABSTRACT

Background: Polycystic ovarian syndrome (PCOS) affects 6-18% of women with metabolic, inflammatory, and endocrine abnormalities on ovulatory function, oocyte quality, and endometrial receptivity. Even when ovulation is restored, there is altered cellular endometrium affecting the endometrial receptivity at the time of implantation which is likely to be associated with subfertility and increased miscarriage rates. Recent studies have also showed increased risks of pregnancy-induced hypertension, preeclampsia, and premature delivery that may be related to altered decidualization/placentation in PCOS affected women. endometrial factor (kshetra) comes under the four essential factors for conception i.e. ritu, kshetra, ambu, beeja. Endometrium plays a major role in proper conception and obstetrical outcomes. **Objective:** Here we aimed to examined endometrial receptivity status in patients of PCOS and to assess the association between PCOS and endometrial defects. **Design and method:** The present study was set in the department of Prasuti tantra, IMS BHU. Participants were women diagnosed with PCOS and healthy females of reproductive age group. Criteria for assessment was USSR (Uterine scoring system of reproduction) score of uterine biophysical profile which was done on 22nd to 24th day of LMP. **Conclusion:** The study shows that PCOS patients had endometrial defects also with ovulatory defects. Here we conclude that there must be prior consideration to nurture and correct kshetra (endometrial factor) before the patient with PCOS get conceived either by assisted reproductive techniques or natural methods to improve the obstetrical outcomes.

KEYWORDS: Endometrial receptivity, Uterine biophysical profile, Kshetra dushti.

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a mysterious reproductive syndrome with the involvement of other systematic dysfunctions. Its prevalence rate is 15% and infertility found in approximately 40% of women with PCOS.[1] Altered endometrial function and ovulation defects both are important causes of infertility caused due to PCOS. However, change in endometrium has not get the same attention as ovulatory disorders.[2] It is observed that after restoration of ovulation pharmacologically conception rate is not as expected which may be caused due to altered endometrial receptivity.[3]

Among four essential factors of conception i.e. *Ritu, kshetra, ambu, beeja*, endometrial disorders included in *kshetra dushti*.[4] Acharya Sushruta mentioned *Kshetra* as *Garbhashaya*.[5] As *Garbha* resides in the *Garbhashaya* so it is necessary that the Stree should possess a healthy *Garbhashaya* for *Garbhadharana*(conception).[6] Acharya Charaka has also mentioned that *Apradustha Yoni, Garbhashaya* and *Marga* of reproductive system are considered as *Kshetra* if these get vitiated it will leads to *Vandhyatwa*.[7] Polycystic ovarian syndrome (PCOS) affects 3.7%-22.5% of women with metabolic, inflammatory, and endocrine abnormalities which affects ovulatory function, oocyte quality, and endometrial receptivity. Even when ovulation is restored, there is altered cellular endometrium affecting the endometrial receptivity at the time of implantation which is likely to be associated with subfertility and increased miscarriage rates.[8] In women of childbearing age, endometrium receptivity is present only for a very short time in one menstrual cycle, called as "windows of implantation (WOI**)** i.e. 22nd to 24th day of LMP".[9] Evidence has proved that hormonal disturbances, as well as metabolic changes in PCOS patients, can both influence the endometrial receptivity.[10]

Focus on endometrial function may frame the basis of PCOS-related infertility or poor obstetrical outcomes. The present study framed mainly for disorders of endometrial receptivity in patients with PCOS, where we planned to examined endometrial receptivity status in patients of PCOS and to assess the association between PCOS and endometrial defects.

MATERIAL AND METHODS

Diagnosed married female patients of PCOS desiring conception with no obvious other reproductive tract lesions were selected as study group and fertile female patients with previous two live births were selected as control.

Inclusion criteria

Diagnosed cases of PCOS giving consent for investigations.

Fertile female patients who have given previous two live birth.

Exclusion criteria

- < 21 years and > 40 years of age patient.
- Unmarried PCOS patients
- Patients with huge myoma and adenomyosis.
- Extensive cervical erosion and vaginal infection.

Table 1: Grouping of patients.

Groups	No. of patients	Investigation
PCOS group	20	Uterine biophysical profile (TVS)
Control group	10	Uterine biophysical profile (TVS)

Criteria of assessment

7 parameters were measured and assessed for Uterine scoring system of reproduction (USSR)[11]

Table 2: Showing prediction of fertility based on score.

Sr. No.	USSR Score	Inference
1	20	Perfect score and conception in all
2	17-19	70% conception
3	14-16	60% conception
4	<13	No conception

Parameters

Table 3: Showing USG parameters used to evaluate USSR Score.

PARAMETER	POST LMP DAY 22nd TO 24th
ENDOMETRIAL THICKNESS(E.T.)	<7mm=0,7-9mm=2,10-14mm=3,>14mm=1
ENDOMETRIAL LAYERING (E. Layer)	None=0, hazy 5=1, distinct 5=3
MYOMETRIAL CONTRACTIONS(M.C.)	<3/2 min.=0, >3/2min=3

MYOMETRIAL ECHOGENECITY (M. Echo.)	Coarse/inhomogeneous=1 homogenous=2
UTERINE ARTERY DOPPLER FLOW(PI)	>3.0=0, 2.5-2.9=0, 2.2-2.49= 1, <2.19=2
ENDOMETRIAL BLOOD FLOW WITHIN ZONE 3	Absent=0, Present sparse=2, Present multifocally=5
MYOMETRIAL BLOOD FLOW (GRAY SCALE)	Absent=0, Present=2
TOTAL SCORE	

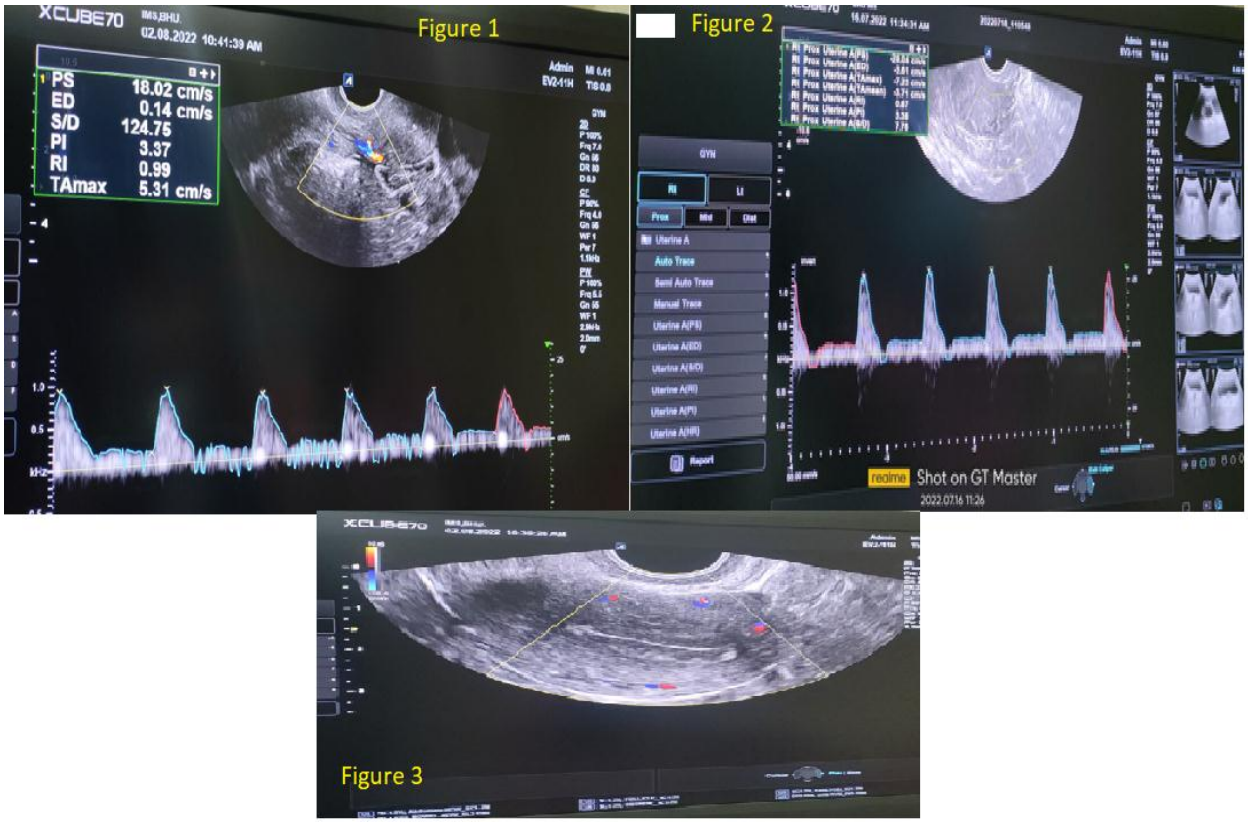


Figure: Where figure 1 and 2 showing high PI in PCOS patients and figure 3 showing absent blood flow in endometrial zone 3.

RESULTS

Table 4: Score of different parameters of PCOS Patients on TVS based on USSR score.

Sr.no.	E.T.	E. L.	M.C.	M. Echo	PI	Blood flow zone 3	M. Blood flow	Total score
PCOS 1	0	3	0	2	0	0	2	7
PCOS 2	2	3	0	1	0	0	2	8
PCOS 3	0	1	0	1	0	0	2	4
PCOS 4	2	1	3	2	0	0	2	10
PCOS 5	0	3	0	1	1	0	2	7
PCOS 6	2	3	0	2	0	5	0	12

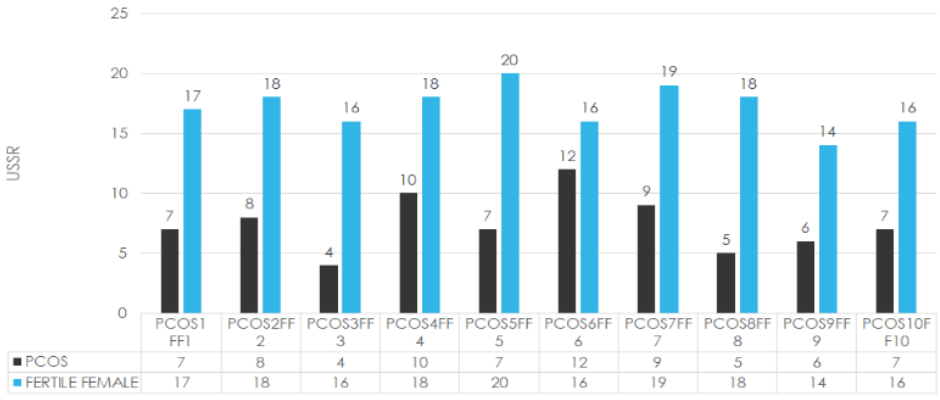
PCOS 7	2	1	0	2	0	2	2	9
PCOS 8	0	1	0	2	0	0	2	5
PCOS 9	2	1	0	1	0	0	2	6
PCOS 10	2	3	0	1	1	0	0	7
PCOS 11	0	1	0	1	0	0	2	4
PCOS 12	2	1	0	1	0	0	2	6
PCOS 13	3	1	0	1	1	0	2	8
PCOS 14	3	1	0	2	2	0	2	10
PCOS 15	3	3	0	2	1	0	2	11
PCOS 16	1	3	0	1	0	0	2	7
PCOS 17	2	1	3	1	0	0	0	7
PCOS 18	3	3	3	1	1	0	2	13
PCOS 19	3	1	0	1	1	0	0	6
PCOS 20	0	1	0	1	0	0	2	4

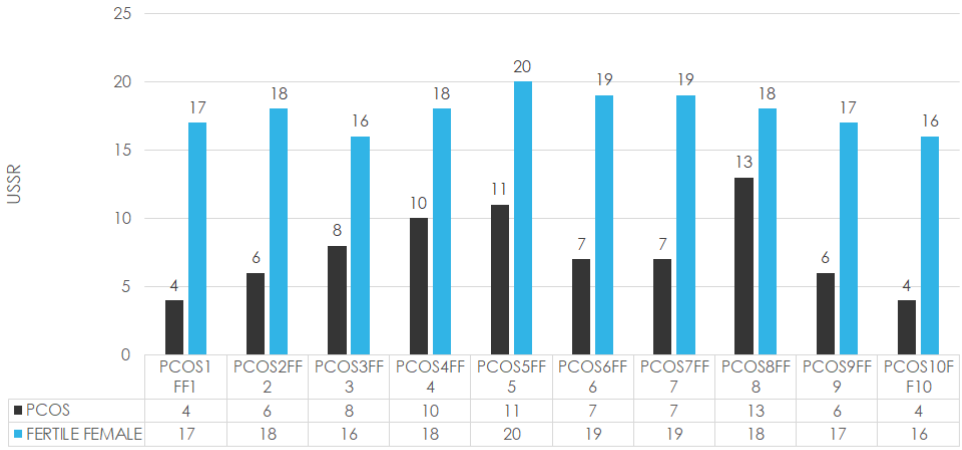
Table 5: Score of different parameters of Fertile female on TVS based on USSR score pattern.

Sr. No.	E.T.	E. L.	M.C.	M. Echo.	PI	Blood flow zone 3	M. Blood flow	Total score
FF 1	3	3	0	2	2	5	2	17
FF2	3	1	3	2	2	5	2	18
FF3	3	3	3	2	1	2	2	16
FF4	3	3	3	1	1	5	2	18
FF5	3	3	3	2	2	5	2	20
FF6	2	3	0	2	2	5	2	16
FF7	3	3	3	2	2	5	2	19
FF8	3	1	3	2	2	5	2	18
FF9	2	3	0	2	2	5	0	14
FF10	2	3	3	2	2	2	2	16

Where E.T.-Endometrial thickness, E.L.- Endometrial layering, M.C.- Myometrial contractions, M. Echo- Myometrium echo, P.I.-Uterine artery doppler flow pulsatility index.

Comparative assessment





DISCUSSION

- Out of 20 patients of PCOS, 100% patients showed the values in no conception range i.e. <13%.
- On which none of patient had blood flow in endometrial zone 3 and neither normal range of pulsatility index of uterine artery (P.I.)
- On comparing with fertile female where 40% patients showed score in the range of 14-16 while 50% patient had the range of 17-19 and 10% patient had score 20.

In PCOS patients Hyperandrogenism, Insulin resistance, chronic anovulation (insufficient oestrogen and progesterone) and inflammation leads to hampered endometrial receptivity. Uterine artery pulsatile index is associated with early onset preeclampsia. Better endometrial and sub endometrial vascularity can lead to better placentation which is associated with lower risk of miscarriages and higher chances of live births which was also hampered in PCOS group patients. So the Endometrial receptivity is the predeterminant in predicting the outcome of pregnancy, so that we can planned pregnancy according to score of patient. If found low score the measures to increase receptivity should adopted prior to conception.

CONCLUSION

The study shows that PCOS patients had endometrial defects along with ovulatory defects. An implantation failure could be responsible for the infertility in patients with PCOS. However, these findings should be supported with clinical pregnancy rates and live birth rates. Therefore, large prospective and randomized clinical trials are required. So that there must be prior consideration to nurture and correct kshetra (endometrial factor) via Shodhana

therapy, Uttarabasti etc. before the patient with PCOS get conceived either by assisted reproductive techniques or natural methods to improve the obstetrical outcomes.

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