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Original Research Article

To evaluate the B-Mode changes in uterine environment and in endometrial morphology in different phases of menstrual cycle.

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Abstract:
Background & Method: The aim of this study is to evaluate the B-Mode changes in uterine environment and in endometrial morphology in different phases of menstrual cycle. Examination techniques- once the transducer is positioned in the vagina; it must be manipulated to obtain the appropriate image.
Result: 70% cases showed myometrial blood flow internal to arcuate vessels on gray scale and almost all of them were fertile. Maximum numbers of cases (76%) have endometrial contractions 3 or more per 2 minute and almost all of them are fertile and almost all cases whom having endometrial contractions 2 or less, belongs to infertile group.
Conclusion: The advent of color flow imaging has enabled the detection of neovascularization and change in blood flow in endometrium and myometrium. The absent or poor endometrial vascularity in luteal phase is almost always predictive of unfruitful pregnancy outcome while good endometrial vascularity and low resistance and pulsatility index in luteal phase is associated with fruitful pregnancy outcome. So the success of assisted reproduction program is depends on uterine perfusion and its accurate evaluation.

Keywords: uterine, endometrial, morphology & menstrual.

Study Designed: Observational Study.

1. INTRODUCTION

During Doppler's lifetime, it was well known that the pitch of a sound would vary if the object was moving relative to a listener[1]. Mainly, this was noticed with train whistles when they would increase in pitch when they got closer, and decrease as the train went away. In order to measure this effect, Doppler created a strange experiment. He hired a group of trumpeters to play from a moving train car[2]. He then had musicians with nearly perfect pitch recognition listen to the trumpets as the train traveled towards and away from them. The changes in pitch were noted for the different conditions, and this experiment paved the way for the physics of what is now known as the Doppler effect. Although the Doppler effect was

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originally observed for sound, it eventually was found to hold true for light and all forms of electromagnetic radiation as well[3].

2. MATERIAL & METHOD

The study was carried out from Oct 2021to November 22 in the Department of Radio diagnosis, in close association of Department of Obstetrics & Gynecology, at Shyam Shah Medical College, Rewa, M.P.

Criteria for selection of 100 case:

1. Patient must not be pregnant.
2. Pt should be married because route of examination is transvaginal.
3. The pt should have regular menstrual cycle
4. Pt should be well aware about date of last menstrual cycle.
5. Pt should be cooperative & well informed consent is necessary.

Examination techniques- once the transducer is positioned in the vagina; it must be manipulated to obtain the appropriate image. The three basic maneuver possible with transvaginal scanning include the following:

1. Advancement or withdrawal of the transducer along the axis of vagina.
2. Angling the transducer by positioning the tip from side to side or anterior to posterior.
3. Rotating the transducer along its axis.

3. RESULTS

Table no. 1: Age wise distribution of cases

S. No.	Age in Years	No. of cases	Percentage
1	<20	6	6%
2	20-30	68	68%
3	31-40	22	22%
4	>40	4	4%
Total		100	100

Maximum cases were between 20 to 30 yrs (68%) and least number of cases was above 40 yrs (4%).

Table No. 2: Distribution of cases according to myometrial blood flow internal to arcuate vessels

Myometrial blood flow internal to the arcuate vessels seen on gray scale	No. of cases	Percentage
Absent	30	30%
Present	70	70%
Total	100	100

In this study 70% cases showed myometrial blood flow internal to arcuate vessels on gray scale and almost all of them were fertile.

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Table No. 3: Distribution of cases according to Myometrial contraction in mid cycle

Myometrial contractions ---/2min	**No. Of cases**	**Percentage**
1-2	24	24%
3-4	66	66%
>4	10	10%
Total	100	100

The study shows maximum numbers of cases (76%) have endometrial contractions 3 or more per 2 minute and almost all of them are fertile and almost all cases whom having endometrial contractions 2 or less, belongs to infertile group.

4. DISCUSSION

In this study, maximum patients (90%), belongs to 20-40 yrs age group and 84% have Anteverted anteflexed uterus which is most common position in general. In our study primary infertility is more than twice of secondary infertility. Data of various previous studies and records of hospitals also states that primary infertility is much more common than secondary[6].

In our study 70% patients showed homogeneous myometrial echogenicity and almost all of them were belongs to fertile group while rest 30% patients, those showed coarse or inhomogeneous echotexture, maximum of them were infertile.

Applebaum (1996)[7] in his study for uterine biophysical profile and uterine scoring system for reproduction, gave 2 points for homogeneous and 1 point for coarse or inhomogeneous echopattern, out of total 20 points. So it shows that homogeneous echopattern of myometrium is more favorable for conception.

In this study 70% patients showed good myometrial vascularity internal to arcuate vessels on gray scale during mid-cycle and almost all of them were fertile, it shows that good myometrial perfusion is associated with successful pregnancy outcome. Similar type of study carried out by chien et al (2004)[8] to investigate changes in utero-ovarian blood flow during peri-implantation period in 317 women and found that myometrial and endometrial perfusion was better in women who got conception than those who don't get[9].

5. CONCLUSION

The patients were selected from fertile and sexually active age group, usually of 18-45 yr age group. After transabdominal scan, transvaginal approach applied to get better morphological details and then color flow and pulsed Doppler mode used to assess the uterine perfusion. The advent of color flow imaging has enabled the detection of neovascularization and change in blood flow in endometrium and myometrium. The absent or poor endometrial vascularity in luteal phase is almost always predictive of unfruitful pregnancy outcome while good endometrial vascularity and low resistance and pulsatility index in luteal phase is associated with fruitful pregnancy outcome. So the success of assisted reproduction program is depends on uterine perfusion and its accurate evaluation.

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