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Evaluation of the role of *Chitrakadi Vati* in the management of *Bandhyatva* w.s.r to anovulation (as a consequence of unruptured follicle)

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ABSTRACT : *Bandhyatva* is a commonly increasing problem which any gynecologist has to face throughout his/her gynecological career. It affects the mental & physical health of a woman and disturbs her family as well as social life. In most of the Asian countries, it is treated as a stigma. Ovulatory factor is responsible for 30-40% cases of infertility. There are several ovarian factors responsible for this. Unruptured follicle is one of them. Here the follicle grows and matures up to a certain size, but doesn't rupture or if ruptures, not at the proper time. Thus, anovulation or improper ovulation takes place. In modern medical science, Inj. HCG (Human Chorionic Gonadotropin) is used to ovulate the mature follicle. In *Ayurveda*, there is no evidence of any database medicine for this purpose. So, an effort was made to find out some safer and cheaper Ayurvedic alternative of Inj. HCG to rupture the grown follicle at the required time. *Chitrakadi Vati* was selected for this purpose for its *Agnidipaka* and *Pachaka* properties, considering the ovulation, a result of physiological action of *Agni*. The study was carried out in 25 patients. *Chitrakadi vati (500mg)* 2 tabs t.i.d. from the day of matured follicle in at-least one ovary was administered in such patients till ovulation occurred. The maximum duration was 3 days. Ovulation study with USG was carried out from the 9th day of menstrual cycle till ovulation takes place. Highly significant results were found and considering the other effects of HCG and *Chitrakadi Vati*, it was proved as a better alternative of HCG to rupture the follicle. It also proved its efficacy for the purpose of Intra uterine insemination, when rupture of follicle is needed within certain required time limit.

Key words : Bandhyatva, Anovulation, Unruptured follicle, Chitrakadi Vati.

INTRODUCTION

Infertility is one of the most important problems before the gynaecologists and a mental stress for a woman. Ovarian factors are responsible for 30-40% causes of infertility.[1] There are several factors regarding ovaries which may be responsible for anovulation. The most important are the two - problem in the development of dominant follicle & the problem in the rupture of dominant follicle. It happens sometimes that there occurs growth of follicle, there matures a dominant follicle but it doesn't rupture and ovulation doesn't take place apart from growth of follicle.[2]

In *Ayurveda*, these all pathologies regarding anovulation can be compared with the stages of vitiation of different *Doshas* at different time of cycle. *Agni* as a function of *Pitta* can be considered as the responsible factor for ovulation of a mature follicle, which is nothing but the rupture of the mature follicle. And any hindrance in this function of *Agni* may cause the follicle not to rupture resulting in infertility. Hence, a clinical study was carried out in the patients of such type of infertility to evaluate the effect of *Chitrakadi Vati*[3] to rupture the follicle due to its *Agnivardhaka* property.

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Methodology

Selection of patients :

Inclusion criteria : Twenty five patients of infertility of reproductive age group due to ovulatory factor (unruptured follicle) were selected from the O.P.D. and I.P.D. of I.P.G.T. & R.A. hospital, Guj. Ayu. Uni., Jamnagar on the basis of Trans Vaginal Sonography (TVS), when there was found growing but unruptured follicle at least twice within two consecutive cycles.

Exclusion criteria : Patients suffering from chronic debilitating diseases, peptic ulcer, ovarian cysts etc. were excluded from the study.

Criteria of assessment :

Patients were assessed on the basis of trans vaginal sonology (TVS), if there was growth of follicle but it doesn't rupture on at least 2 occasions (in 2 consecutive cycles). First sonography was performed on the day 2nd of menstrual cycle for uterine & adnexal study to exclude

any pathology. After that regular sonological study of both the ovaries for growing follicle was performed on alternate days from the day 9th of menstrual cycle till the 20th day.

Selection of Drug :

The drug was selected that - i) it had *Agnivardhaka* property ii) it was not very costly because the objective was to find some cheaper Ayurvedic alternative of Inj. HCG, iii) drug available in institutional OPD & IPD dispensary and iv) on the basis of easy administration to increase the compliance of patients**.** On the basis of the above criteria, *Chitrakadi Vati* was selected for this purpose for its *Dipana & Pachana* property[3].

Ayurvedic Pharmacological Properties of Chitrakadi vati[3, 4] :

Drug	Botanical name	Rasa	Guna	Veerya	Vipaka	Karma
Chitraka Rt.	*Plumbago zeylanica*	Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Shothahara, Dipana, Grahi, Pachana, Kaphavatahara, Shulahara
Pippali mula	*Piper longum*	Katu	Laghu, Ruksha	Ushna	Katu	Dipana, Pachana, Sangrahika, Kaphapittahara, Vatahara
Yavakshara	*Hordium vagarae*	Lavana	Tikshna, Laghu, Ruksha	Ushna	Katu	Vidarana, Dipana, Agnisannibham
Sarjakshara		Lavana		Ushna	Katu	Vidarana, Dipana, Agnisannibham
Sauvarchala lavana		Lavana	Sukshma	Ushna	Madhura	Pachana, Ruchikaraka, Vibandaghna, Hridya, Udgarahara
Saindhava lavana		Lavana		Anushna	Madhura	Dipana, Pachana, Vrishya, Chakshushya, Tridoshaghna
Vida lavana		Lavana	Tikshna, Vyavayi	Ushna	Madhura	Dipana, Shulahara, Vatanulomana
Samudra lavana		Lavana, Tikta Katu		Ushna	Madhura	Rochana, Dipana, Sansra, Vatahara
Audbhida lavana		Lavana, Tikta, Katu	Tikshna	Ushna	Madhura	Rochana, Dipana, Sansra, Vatahara
Shunthi Rz.	*Zingiber officinale*	Katu	Laghu, Snigdha	Ushna	Madhura	Anulomana, Dipana, Hridya, Pachana, Vatakaphahara
Maricha Fr.	*Piper nigrum*	Katu, Tikta	Laghu, Ruksha, Tikshna	Ushna	Katu	Shleshmahara, Dipana, Medohara, Pittakara, Ruchya
Pippali Fr.	*Piper longum*	Madhura, Katu, Tikta	Laghu, Snigdha	Anushna	Madhura	Dipana, Hridya, Kaphahara, Ruchya, Tridoshahara, Rasayana
Hingu	*Ferula foetida*	Katu	Tikshna	Ushna	Katu	Anulomana, Dipana, Hridya, Pachana, Vatakaphahara

Drug	Botanical name	Rasa	Guna	Veerya	Vipaka	Karma
Ajamoda	*Apium leptophyllum*	Katu, Tikta	Laghu, Ruksha	Ushna	Katu	Dipana, Vidahi, Kaphavatahara, Ruchikaraka
Chavya	*Piper retrofractum*	Katu	Laghu, Ruksha, Tikshna	Ushna	Katu	Bhedana, Dipana, Kaphahara, Pachana, Rechana, Vatahara
Matulunga rasa	*Citrus limon*	Amla	Laghu	Ushna	Amla	Dipana, Kaphahara, Pittakara, Vatahara, Pachana

Management protocol :

Chitrakadi Vati, (500 mg) 2 tabs, t.i.d. on the day when there was a dominant follicle of at least 20*20 mm on either or both side of ovaries. When it seems to grow up to the level of maturity, drug was administered, and was stopped when follicle was seen ruptured in TVS. The maximum course of the treatment was 3 days and drug was stopped, even if ovulation didn't take place on 3rd day. The endometrial thickness was measured on both the days, when drug was administered and again when it was stopped to get the idea whether the drug can interfere in the development of endometrium. The patient was instructed for intercourse and was assessed for pregnancy, if other factors were normal.

OBSERVATIONS & RESULTS

TABLE NO. 1 : PRIMARY OR SECONDARY INFERTILITY :

Type of infertility	No. of patients	%
Primary	17	68%
Secondary	8	32%

TABLE NO. 2 : FUNCTIONAL OVARY WISE DISTRIBUTION :

Functional Ovary		No. of patients	%
Unilateral	Right	2	8%
	Left	4	16%
Bilateral		19	76%

TABLE NO. 3 : PATIENTS HAVING POLY CYSTIC OVARIAN DISEASE (PCOD) LIKE PICTURE IN TVS :

PCOD		No. of patients	%
Unilateral	Right	9	36%
	Left	6	24%
Bilateral		5	20%
None		5	20%

TABLE NO. 4 : ENDOMETRIAL THICKNESS (MAX.) :

Patient no.	Endometrial thickness (ET) in mm.	
	B. T. The day when drug was started	A. T. The day when drug was stopped
1	9	9
2	8	8
3	9	9
4	7	7
5	7	8
6	7	7
7	6	6
8	9	9
9	10	9
10	11	11
11	14	15
12	9	8
13	8	9
14	7	8
15	7	8
16	8	8
17	9	9
18	9	9
19	8	8
20	10	9
21	9	9
22	8	8
23	9	9
24	7	8
25	9	9

B.T. : Before treatment A.T. : After treatment

TABLE NO. 5 : DISTRIBUTION OF PATIENTS ACCORDING TO RUPTURE OF FOLLICLE :

Rupture of Follicle	No. of Patients	Percentage
Day 01	06	24%
Day 02	12	48%
Day 03	04	16%
Unruptured	03	12%

TABLE NO. 6 : PATIENTS WHO OVULATED ALONG WITH PCOD LIKE PICTURE IN TVS

Condition	Ovulated patients		Non-ovulated patients		Total	
	No.	%	No.	%	No.	%
PCOD like picture	18	72%	02	8%	20	80%
Normal ovary scan	04	16%	01	4%	05	20%
Total	22	88%	03	12%	25	100%

DISCUSSION

Most of the authors of Ayurvedic gynaecology consider the ovulation as a result of physiological action of aggravated *Pitta*, while the growth of the follicle as a function of *Kapha*. *Kapha* is considered responsible for follicular growth, while *Pitta* for the rupture of matured follicle[6]. When growth of the follicle occurs normally but it doesn't rupture, it seems to be the abnormal function of *Agni*, because *Agni* is the integral part of *Pitta*. As it is already mentioned in Ayurvedic texts that all the *Agnis* are the same and are only the different aspects of the same physiological phenomenon, *Agni* as a whole was considered as the responsible factor for such type of anovulation. The drug, *Chitrakadi Vati* was selected for its effect in enhancing the *Agni* or the physiological action of *Pitta*. It is one of those medicines which possess a number of efficient *Dipaka, Pachaka and Agnivardhaka* drugs. All the catabolic phenomenon of body are taken as the result of *Agni*, so it was one the most suitable drugs to evaluate its effect for rupturing follicle.

Analyzing the results, it was found that 22 out of 25 patients (88%) got the ovulation within 3 days after administration of *Chitrakadi Vati* (Table 5), which shows its significance as a reliable alternative to Inj. HCG. The 48% patients ovulated within 48 hours, while 24% patients ovulated within 24 hours of administration of drug, which again proves the drug very significant for the ovulation. On this basis, *Chitrakadi Vati* was also used for Intra uterine insemination (IUI), where ovulation is needed within a certain time limit. The variation in the day of ovulation among the patients after administration of *Chitrakadi Vati* seems to be because of the difference in their *Prakriti*, e.g., a *Pitta Prakriti* person may respond to the drug very soon as compare to *Kapha Prakriti* person. Hence, further study is needed to evaluate this aspect.

Moreover, this study provides enough scope for further studies to evaluate the role of *Chitrakadi Vati* as a better option for the conditions like Ovarian Hyper Stimulation Syndrome (OHSS), where Inj. HCG is contraindicated for its adverse effect on the electrolyte balance[5]. The data is suggestive that no significant change ($t = 1.45$, $p>0.05$) in the Endometrial thickness was found after administration of *Chitrakadi Vati* (Table 4). It means, short term administration of this drug does not have any unwanted effect on endometrium. Hence, it can't hamper the implantation, if fertilization occurs.

Results were found in both, primarily as well as secondarily infertile patients. It shows the effect of *Chitrakadi vati* on ovulation irrespective of the nature of infertility. The ovulation took place in patients who showed the features like Poly cystic ovarian disease (PCOD) also on administration of *Chitrakadi Vati* after follicle matured (Table 6). Poly cystic ovarian syndrome (PCOS) includes not only the features of PCOD on TVS, but along with this, it also includes the hyperprolactinemia, increased male hormone and hypercholeserolinemia etc. Though by this study which is carried out as a primary step, PCOS can not be taken under much consideration, but the patients who have PCOD like picture in TVS only with out much complications can be taken certainly. As PCOD is increasing day by day and is being considered as epidemic in today's era, several patients are seen with developing follicles along with PCOD like features on TVS. Such type of patients were the subject of this study. But the patients who become the established cases of PCOS, it occurs rare for the follicles to mature. For such type of cases, serious research is still needed. As the point of consideration was the rupture of matured graffian follicle only for the present study, luteal phase defect was not evaluated in the patients as this is the defect of corpus luteum, which shortens the luteal phase and many times leads to infertility and early abortions because of the deficiency of progesterone. But it can also be taken for study in further researches with some other drugs to cope up the problem of infertility.

CONCLUSION

Chitrakadi Vati can be established as a safer Ayurvedic alternative for Inj. HCG to rupture the grown follicle for achieving the ovulation at the required and proper time. Though the present study was not oriented on its effect on PCOD but it is suggested to evaluate its effect further for the management of PCOD on long term administration, because its follicle rupturing action may also help to resolve the multiple small follicles in the patients of PCOD. As it was just a pilot study to find out some alternative of Inj. HCG, further study is needed taking control group in consideration to establish the drug for the same.

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