

EFFECT OF AYURVEDIC TREATMENT ON DIMINISHING OVARIAN RESERVE – A PROJECT REPORT

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ABSTRACT

Infertility is defined as the inability of a sexually active non contracepting couple to achieve pregnancy in a year. Infertility is alarmingly increasing world-wide. WHO estimates the incidence of primary infertility in India to be 3.9-16.8%. One of the leading causes of female infertility is Diminishing Ovarian Reserve (DOR). Nowadays 10-30% of female infertility is due to DOR. It is a complex phenomenon in which ovary loses its normal reproductive potential compromising fertility in which there is reduction in the number of oocytes. DOR subjects are often at a risk for poor success outcome of conception even with Assisted Reproductive Technologies (ART) In Ayurveda the most appropriate correlation of DOR can be done with *DathukshayaVandya* explained in Haritha samhita. It is due to depletion of *Dhatus* or due to inadequate formation of *Dhatus*, especially *Arthava* and *Sukradhatu* leading to *Anapathyatha* (infertility). **Objectives and Methods:** The main objective of the study was to

evaluate the effect of Āyurvedic treatment protocol on Diminishing Ovarian Reserve. The study was a single group interventional study with a sample size of 60 patients. Females who were diagnosed with DOR in the age group of 20-35 years attending the OPD of Govt. Ayurveda college hospital for Women and children, Poojappura, Thiruvananthapuram were selected for study. Their data was collected using case proforma and investigations including AMH, AFC (Antral follicular count) was done on the 2nd and 3rd day of menstrual cycle before and after treatment. **Result & Conclusion** The Āyurvedic treatment protocol was found to be effective in managing diminishing ovarian reserve by effectively increasing the AMH and AFC values. It is also observed that 26% of subjects achieved pregnancy naturally even though most of the subjects were advised to do IVF with donor egg.

Keywords: DOR, *Dhathukshaya vandhya*, AMH, AFC, *sukumāra ghritam*

INTRODUCTION

Population of the world is increasing day by day yet 20-30% of world population are suffering from infertility. Infertility is defined as the inability of a sexually active non contracepting couple to achieve pregnancy in one year. Infertility is alarmingly increasing world-wide. WHO estimates the incidence of primary infertility in India to be 3.9-16.8%¹. Certain studies also state that in India 1 in 8 population are suffering from infertility. The common causes of infertility female infertility are ovulatory disorders (20-30%), sperm dysfunction (14-25%), tubal damage (15-30%), unexplained infertility (15-30%), endometriosis (6-11%), azoospermia (3-9%), and cervical mucus disorders (3-5%). As far as female's are concerned ovulatory disorders plays a major part which includes PCOS, DOR etc. One of the leading causes of female infertility is Diminishing Ovarian Reserve. Nowadays 10-30% of female infertility is due to DOR. It occurs approximately 1% of women worldwide. DOR is a complex phenomenon in which ovary loses its normal reproductive potential compromising fertility in which there is reduction in oocyte². It is often used to characterize women at risk for poor performance with Assisted Reproductive Technologies (ART) due to the ovarian factor³. DOR is a common term refers to 3 related but three different parameters like a) reduction of oocyte quantity b) reduction of oocyte quality c) reduction in oocyte reproductive potential. As per ESHRE & Bologna's criteria for DOR at least any two of the following should be present. a) Age >38 years b) Abnormal ovarian reserve test. c) Poor ovarian re-

sponse in a previous stimulated cycle are the diagnostic criteria for diagnosis of DOR.

Unlike men, a woman's lifetime supply of eggs is present in her ovary at the time of her birth. With increasing chronological age female fertility declines in both natural and stimulated ovarian cycles and it is difficult to determine the pace of decline in an individual woman. Female reproductive capacity declines by the age of 31 years and the decline accelerates after the age of 37 years and leading to sterility by the age of 41 years⁴. Approximately 10% of women deviate from age-specific standards. This age-related decline of female fecundity is frequently associated with reduced pregnancy rates and an increase rate of miscarriage, which is associated with an age-related increase in aneuploidy due to non-disjunction⁵. In most of the cases the exact cause is unknown. It is unclear whether DOR represents a pathological condition resulting from abnormally rapid atresia in a normal pool of oocytes from normal atresia of an abnormally small pool of oocytes⁶. The exact cause of DOR is unknown. The causes can be principally divided into two main categories-chromosome and non-chromosome anomalies. The Non-chromosomal causes of POF can be divided in three different groups: iatrogenic (surgery, chemotherapy and radiations), infective (herpes virus, cytomegalovirus, Mumps), autoimmune (susceptibility mediated by AIRE gene mutation) and idiopathic. The symptoms of DOR can vary considerably from patient to patient and these symptoms may occur abruptly or it may develop gradually over several years. The most common clinical features include menstrual irregularity

ty such as shortening of menstrual cycle length (MSL), primary or secondary infertility, hot flushes, excessive sweating, osteoporotic changes, vaginal dryness or dyspareunia, sleep disturbances and insomnia and mood swings etc. The ovarian reserve can be assessed by clinical parameters such as Age [less than 38 years], menstrual cycle characters [Reduced cycle length] etc as well as by Biochemical assessment such as Basal FSH, Basal Estradiol, AMH, Inhibin B or by Dynamic test includes – CCT, EFFORT, GAST etc. An ideal ovarian reserve test is considered as a combined evaluation with both AMH and AFC. In current conservative management the treatment options are limited, some of the Most adopted stimulation protocols for infertility management are high doses of gonadotropins with the addition of various dosages and timing of GnRH analogues or antagonists, adjuvant therapy with LH, DHEA and Growth hormones shows some benefit in oocyte yield in some subjects but these Hormone intake has its own side effects on long term use, it may affects the hormone sensitive areas and may increase the risk of breast cancer, ovarian cancer, and fibroid uterus etc. while others were advised to do IVF management with donor egg. The chance of pregnancy with own egg even with IVF is low as there is decline of quantity and quality of oocyte. In Ayurveda the most appropriate correlation of DOR can be done with *Dhātukshaya-Vandya*, one among 6 type of *Vandya* explained in Haritha Samhita. It is due to depletion of *dhātus* due to inadequate formation of *Dhātus*, especially *Shukradhatu* which in turn leads to reduction in fertility potential and ultimately *Anapathyatha*. In early stages

Dhātukshayavandhya is manifested as *Rasakshaya* which inturn leads to *Artavakshaya* which is evident from the clinical presentation like shortening of cycles *alpatha* (scanty menstruation) etc surgical procedures may result in *vedha* of *arthavavahasrothas* resulting in *arthavanasha* (absence of menstruation/ destruction of follicles) and results in *vandhyatwa* (infertility).

Materials and Methods

The main objective of the study was to evaluate the effect of Āyurvedic treatment protocol on Diminishing Ovarian Reserve. The study is a Single group Inter-ventional study. 60 subjects who were diagnosed with DOR in the age group of 20-35 years attending the OPD of Govt. Ayurveda college hospital for Women and children, Poojappura, Thiruvananthapuram were selected for study after assessing the inclusion and exclusion criteria. ie the subjects with AMH & AFC values below optimal level were included (AMH value < 1.5 ng/ml and AFC value < 5 per ovary were included in the study). Females of Peri- menopausal age and DOR due to administration of chemotherapy, after radiation therapy and also women suffering from Auto immune diseases were excluded. Informed consent is also obtained before enrolling into the study.

Study Tools: The preliminary data was recorded in a predesigned case proforma. Investigations including serum AMH & AFC were done on 2nd or 3rd day of menstruation were recorded before and after treatment (i.e. on 2nd or 3rd day of 1st and 4th menstrual cycle)

Intervention: Patients after obtaining consent were admitted in IP on 6th day of menstruation cycle and followed the study protocol.

Table 1: Study Protocol

Day	Treatment Protocol	Medicine
1 – 3	<i>Udwarthanam</i>	<i>Kolakulathadichoorna</i>
4-11	<i>Snehapanam</i>	<i>Sukumagritham.</i>
12 -14	<i>Abhyanga and dravaswedam</i>	<i>Dhanwantharamthailam.</i>
15 th	<i>Virechanam.</i>	<i>Hingutrigunatailam-25ml</i>
16 th	Rest	
	<i>Yoga Basthi</i>	
17 th	<i>Snehabasthi.</i>	<i>Dhanwantharamthailam.(Mezhukupakam)- 100ml</i>
18 th	<i>Snehabasthi</i>	<i>Dhanwantharamthailam(Mezhukupakam)-100ml</i>

19 th	Kashayabasthi.	Sapthasaramkashayam-450ml dhanwantharamthailam (mezhlukupakam)-240ml sathapushpakalkam -30 gm Saindavam-, 10gm madhu.- 240ml
20 th	Snehabasthi	Dhanwantharamthailam (Mezhukupakam- 100ml.
21 st	Kashayabasthi	Sapthasaramkashayam-450ml dhanwantharamthailam (mezhlukupakam)-240ml sathapushpakalkam -30 gm Saindavam-,10gm, madhu.- 240ml
22 nd	Snehabasthi	Dhanwantharamthailam-100ml
23 th	Kashayabasthi	Sapthasaramkashayam-450ml dhanwantharamthailam (mezhlukupakam)-240ml sathapushpakalkam -30 gm Saindavam-,10gm, madhu.- 240ml
24 th	Snehabasthi	Dhanwantharamthailam-100ml
25 th	Utharabasthi.	Sukumaramghrita.
26 th	Utharabasthi.	Sukumaramghrita
27 ^h	Utharabasthi.	Sukumaramghrita
Follow up period	Rasayana	Sukumaramghrita

Observation and Results

A) Comparison of AMH and AFC before and after treatment

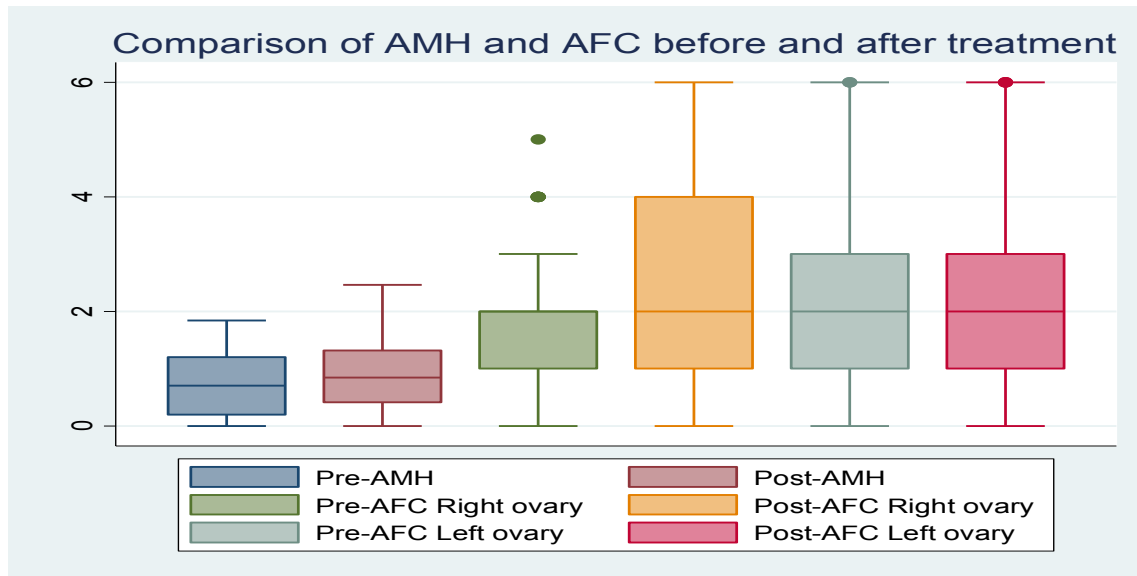
The mean (SD) pre AMH was 0.76 (0.5) increased to 0.9 (0.6) after the treatment. The change in AMH was found to be significant and the treatment was effective in increasing the AMH values.

The mean (SD) pre right ovary AFC was 1.79 (1.2) increased to 2.34 (1.8) after the treatment. The change in right ovary AFC was found to be significant and the treatment was effective in increasing the AFC values. The mean (SD) pre left ovary AFC was 2.03 (1.5) increased to 2.25 (1.7) after the treatment. The change in left ovary AFC was found to be significant and the treatment was effective in increasing the AFC values.

Table 2: (pre and post AMH & AFC)

Variable	Mean (SD)	Median (IQR)	P value
Pre-AMH	0.76 (0.5)	0.7 (0.2-1.2)	0.006
Post-AMH	0.9 (0.6)	0.8 (0.4-1.3)	
Pre- AFC Right ovary	1.79 (1.2)	2 (1-2)	0.01
Post-AFC Right Ovary	2.34 (1.8)	2 (1-4)	
Pre- AFC Left ovary	2.03 (1.5)	2 (1-3)	0.24
Post-AFC Left Ovary	2.25 (1.7)	2 (1-3)	

Figure 1 (pre and post AMH & AFC)



B) Distribution of successful outcome (Conceived)

Out of 60 patients 2 patients were drop out during the follow up due to personal issues so out of 58 patients,

15 (26%) got conceived at the end of treatment with 95% confidence interval of 16.3%-38.5%.

Table 3 (No: of patients conceived after treatment)

Conceived	Number	Percentage	95% CI
Yes	15	25.9	16.3-38.5
No	43	74.1	
Total	58	100	

Figure 2: (no of patients conceived after treatment)



DISCUSSION

The *agneya guna* of *arthava* plays an inevitable role in conception. All the endocrine activities including maturation of graafian follicles, ovulation, formation

of corpus luteum and associated changes in uterus, and menstruation are all under the influence on Estrogen, progesterone at different phases of the cycle can be attributed to normal functions of *pitta*. From the

clinical presentations it is clear that there is *kshaya* in the *agneya guna* of *pitta*. The *pitta kshaya* as well as the *vataavridhi* may be due to either *sannikrishtanidana* or *viprakrishtanidana*. (Abnormalities in diet such as excessive, inadequate, unwholesome, incompatible etc, suppression of natural urges, excessive intake of rough, bitter, astringent, salty, sour, hot foods and psychological stress like fear, anxiety, anger etc.) So, the treatment principle should be adopted to normalise the vitiated *Vata* and *Pitta*. Age is also considered as an important factor as age advances there is *Ksheena* of *Shukradhatu* as a result of *Sarvadhātuksheena* including the *Streesukradhātu*. Certain surgical procedures like ovarian surgery including cystectomy, ovarian drilling, uterine artery ligation etc may causes damage to *Ārtavavahasrotas* which leads to *Artavanasha* (due to destruction of follicular reserve), *Vandhyathwam* (infertility) and *Maithunaasahishnutha* (dyspareunia arising due to hypoestrogenic phase) After doing a literary search and with the clinical experience of the investigators, a study protocol was formulated which includes *Udwarthana*, *Snehapana*, *Virechana*, *Vasthi* and *uttaravasti*, this protocol mainly aims in *Vātapittasamana* and *Rasāyana*. The markers of ovarian reserve are considered as the most important parameter for assessing the effect of the study treatment protocol. Markers of ovarian reserve i.e. basal values of serum AMH, and AFC were assessed before and after treatment. Among the 58 subjects, 15 patients conceived naturally, as most of them were advised to do IVF with donor egg. The conception rate of the present study is 26% there is statistically significant increase in both the markers (AMH & AFC) after the treatment.

CONCLUSION

The Āyurvedic treatment protocol in managing diminishing ovarian reserve was found to be effective in increasing the AMH values. The mean SD of right ovary and left ovary was found to be statistically significant and the treatment was effective in increasing the AFC values. It was also observed that 26% of the subjects conceived naturally after the treatment who were advised to do IVF (with donor egg).

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