AYURVED APPROACH TO DIMINISHING OVARIAN RESERVE (DOR) IN FEMALE INFERTILITY - CASE STUDY

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ABSTRACT
According to Ayurveda Having no Baby is described as Vandhyatva and Infertility in Modern science. Infertility is a main issue in today’s era. Many couples go for IVF, Surrogacy and many more with very little benefits. Nearly 10-14% of individuals are belonging to the reproductive age group are affected by Infertility. Infertility caused by Diminished Ovarian Reserve (DOR) results from an endocrinological imbalance. The rise in follicle stimulating hormone (FSH), decrease in Anti Mullerian hormone (AMH) and Antral follicle count (AFC) etc. for women age more than 35 years can lower pregnancy rates to less than 5 % and increases miscarriage rates to more than 75%. Ayurveda explained wide range of protocols and medicines for the management of Vandhyatva. In Ayurveda its appropriate correlation can be done with Dhatukshaya Vandhya explained in Harita Samhita. Ayurveda states four factors are mentioned Rutu, Kshetra, Ambu, Beeja should be in proper state in order to achieve conception and complete the pregnancy successfully.

Aim & Objectives: To evaluate the efficacy of Shamana Aushadhi, Yog Basti, Uttarbasti in the management of Diminishing Ovarian Reserve (DOR) induced Female Infertility.

Materials & Methods: It is the single arm, open labelled case study of the subject of 35 yrs age with primary infertility of Diminishing Ovarian Reserve (DOR) from Ayurveda College who has been treated with Shodhana Chikitsa as Yog Basti, Uttarbasti and Shamana Chikitsa simultaneously.
Results & Discussion: There was improvement in hormonal assay with increase in Anti Mullerian hormone (AMH) and Antral follicle count (AFC) followed by conception later on. The Patient delivered with full term normal healthy female baby. Samshodhana and Shamana Aushadha helped to pacify Vata Dosha by Dhatukshaya Vandhya Chikitsa thus restored the fertility.

Conclusion: The selected treatment protocol i.e. Samshodhana and Shamana Aushadha is very effective in the management of Diminishing Ovarian Reserve (DOR) induced Female Infertility.

Keywords: Diminishing Ovarian Reserve (DOR), Dhatukshaya Vandhya, Yog Basti, Uttarabasti, Shamana Aushadhi etc.

INTRODUCTION

Infertility is a condition in women’s life which indicates inability to procreate. Infertility is generally defined as one year of unprotected intercourse without conception. Sub-infertility is described as Women or Couples who are not sterile but exhibit decreased reproductive efficiency[1] Decreased ovarian reserve (DOR) refers to the size of the non-growing or resting primordial follicle population which presumably determines the number of growing follicles and the quality which presumably determines the number of growing follicles and the quality or the reproductive potential of their oocyte. The oocyte related decline in fertility is known as “Decreased ovarian reserve (DOR)” [2] Conception depends on the fertility potential of both the Female and Male partner. The major cause in Infertility is Female factor which is 40-55% [2]. Female factors are Ovarian, Tubal, Cervical, Uterine and Endometrial factors (FIGO). Many factors are responsible for Female Infertility which are Tubal Factors about 40% [3], Ovarian factor 0.5%, Cervical factor 20% And Uterine factor 10%. Also 30-40% in female [4] and 10-30% in male are the causative factors seen. According to Shabda-kalpataru a woman who has hindrance of any kind in normal process of conception is termed as Vandhya. For healthy progeny Pumbeeja (Shukra) and Streebeeja (Artava) are important [5] Artavakshaya, Artavanasha are due to Dhatukshaya and Avarana in Artavavaha Srotasa [6].

Diminishing Ovarian Reserve (DOR)- Diminishing Ovarian Reserve (DOR) is a condition in which the ovary loses its normal reproductive potential compromising fertility and causing early menopause. It comes out with reduction of oocyte quantity, quality and reproductive potential [7]. According to Ayurveda it is correlated with Dhatukshaya Vandhya explained in Harita Samhita [8].

Causes –

<table>
<thead>
<tr>
<th>Causes</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autoimmune</td>
<td>Organ, non – organ specific auto antibodies bind gonadotrophins and receptors</td>
</tr>
<tr>
<td>Iatrogenic</td>
<td>Chemotherapy, Uterine artery embolization, Ovarian drilling</td>
</tr>
<tr>
<td>Infection</td>
<td>Varicella, Tuberculosis shigellosis, Malaria, Cytomegalovirus</td>
</tr>
<tr>
<td>Oxidative stress</td>
<td>ROS induced DNA damage, Chromosomal abnormalities, Poor oocyte quality</td>
</tr>
<tr>
<td>Environmental toxins</td>
<td>Tobacco, Polycyclic aromatic hydrocarbons</td>
</tr>
<tr>
<td>Autosomal genes</td>
<td>FSH, LH, Oestrogen receptor mutation, CYP19A1 mutation etc</td>
</tr>
<tr>
<td>Chromosomal defects</td>
<td>Monosomy, Turner Syndrome, Trisomy, Fragile X syndrome</td>
</tr>
</tbody>
</table>

Pathogenesis - The exact pathology is obscure but it can be due to, Decrease in Primordial follicle pool, Accelerated atresia of follicles, Defective maturation, Recruitment of Primordial follicle

Clinical Features - primary / secondary infertility, menstrual irregularities, osteoporotic changes. Vaginal dryness thus dyspareunia, hot flushes, sleep disturbance, mood swings, weight gain, uterine prolapse etc.
Ovarian Reserve Test –

Assessment –
1) AMH < 1.5 ng/dl
2) Basal FSH between > 10 – 15 IU/L (on 3rd day)
3) AFC < 10 Bilateral ovaries

Case Report –
Name – Xyz, Age – 35 Yrs., Occupation – IT Job, Socioeconomic Status – Middle, Chief complaint – Unable to conceive, Present Menstrual History (Since 1 & ½ year) LMP – 2/6/2018, 2-3 days / 30-40 days, 1 pad / day, Irregular, Scanty flow, No dysmenorrhea
Past Menstrual History (Before 1 & ½ year) - 4-5 days / 28-30 days, 2-3 pad / day, Regular, Moderate flow, No dysmenorrhea
Obstetric History - Married for 5 years, Score = G1 P0 A1 D0, A1 – 1-month spontaneous abortion (April 2017)

General Examination
Pulse – 76/min, Blood pressure – 126/82mmHg, Respiration rate – 20/min, Height -160 cm, Weight - 62 kg, BMI – 24.22 (Normal), Temperature – 98.6, Body Build -Average, No Pallor, No Oedema

Systemic Examination
RS / CVS / CNS – Normal, Per Abdomen – Soft, Nontender, L0 S0 K0, Per Speculum- Cervix – Parous, Normal size, No Nebothian cyst / polyp / erosion / fibroid, vagina Healthy, No Bleeding, No Discharge
Per Vagina- Cervix – at the level of ischial spine, Uterus – Normal size, AVAF, Non mobile, Bilateral fornices – free, non-tender, No palpable adnexal mas / ovaries, Cervical motion - free, non-tender

Table 1: Investigation – (21/1/2018)

<table>
<thead>
<tr>
<th>Test</th>
<th>Value</th>
<th>Test</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hb</td>
<td>11.8 gm/dl</td>
<td>T3</td>
<td>91.13 ng/dl</td>
</tr>
<tr>
<td>TLC</td>
<td>9,600/cumm</td>
<td>T4</td>
<td>7.34 ng/dl</td>
</tr>
<tr>
<td>RBC</td>
<td>4.01 Mill/ul</td>
<td>HIV/VDRL/HBsAg</td>
<td>Non-Reactive</td>
</tr>
<tr>
<td>ESR</td>
<td>22 mm in 1 hr</td>
<td>Montoux test</td>
<td>2 x 2 mm (N)</td>
</tr>
<tr>
<td>PLT</td>
<td>27,70,000/cumm</td>
<td>LA</td>
<td>31.51 (N)</td>
</tr>
<tr>
<td>Blood group</td>
<td>A+ve</td>
<td>ACL</td>
<td>4.2 (N)</td>
</tr>
<tr>
<td>FBS</td>
<td>98 mg/dl</td>
<td>Urine Pus cells, Epi cells</td>
<td>Nil, 1 – 2 /hpf</td>
</tr>
<tr>
<td>Sr TSH</td>
<td>4.02 Ulu/ml</td>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
USG (TVS) on (4/6/2018)
Uterus – AV measuring 6.8 x 3.4 x 4.6 cm, endometrial thickness – 5mm, Ovaries and tubes are normal
LMP – 2/6/2018, DAY 3, FSH -15.2 mlU/ml, AMH -0.8 ng/ml, AFC- Left ovary = 3, Right ovary = 2, Total 5 impression – Diminished (Low) Antral follicles count 5.

Treatment
1. Counselling of the patient and her husband done
2. According to Dosha, Koshtha, Kala and Dosha Avastha, Deepana, Pachana done.
3. Shodhana Chikitsa
4. Shaman Shikitsa

Table 2: Shodhana Chikitsa (From 10/06/2020 till 11/09/2020)

<table>
<thead>
<tr>
<th>Drug</th>
<th>Dose</th>
<th>Duration</th>
<th>Anupana</th>
</tr>
</thead>
<tbody>
<tr>
<td>Phalasarpi</td>
<td>1 tsp</td>
<td>Morning after breakfast</td>
<td>Warm Milk</td>
</tr>
<tr>
<td>Hingwasthaka churna</td>
<td>1 gm BD</td>
<td>Before meal</td>
<td>Warm Water</td>
</tr>
<tr>
<td>Shatavari Churna with Goghrita</td>
<td>5 gm BD</td>
<td>After Breakfast</td>
<td>Warm Milk</td>
</tr>
<tr>
<td>Manasaitravataka</td>
<td>1 tab</td>
<td>Before Bed</td>
<td>Normal water</td>
</tr>
</tbody>
</table>

Above treatment given for 3 months

Table 3: Shodhana Chikitsa (From 10/06/2020 Till 11/09/2020)

<table>
<thead>
<tr>
<th>Basti</th>
<th>Drug</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yog Basti- Sihanik Snehana with Bala Taila and Swedana With Dashamoolo Kwatha</td>
<td>Shatapushpa Taila</td>
<td>120ml</td>
</tr>
<tr>
<td>Anuvasaana Basti</td>
<td>Shatapushpa Taila</td>
<td></td>
</tr>
<tr>
<td>Niruha Basti</td>
<td>Mustadi Yapana Basti</td>
<td>960ml</td>
</tr>
<tr>
<td>Uttarabasti</td>
<td>Phalasarpi</td>
<td>20ml</td>
</tr>
</tbody>
</table>

All 3 Bastis are given on 5th day of menstrual cycle for consecutive 3 cycles.
Follow Up: Monthly Follow Up Taken

Observation and Result
Ultrasoundography and hormonal study was repeated on 3rd day of menstrual cycle in 4th cycle, Transvaginal sonography (6/10/2018) DAY 3 of Menstrual, LMP – 4/10/18, Uterus – AV measuring 7 x 3.4 x 4.4 cm, Endometrial thickness – 5.1 mm, Ovaries and tubes are normal, FSH -7.83 mlU/ml, AMH -1.2 ng/ml, AFC -Left ovary = 9, Right ovary = 5, Total 14 impression – increased Antral follicles count. Later on, patient came with 1 month 5 days Amenorrhoea on 11/1/19.
Urine pregnancy test was positive. Sonography done on 8 March 2019 showed regular gestational sac with 13 weeks and 1 day of gestational age. Placenta anterior, amniotic fluid normal. Patient delivered on 13 September 2019, full term normal delivery with healthy female baby of 2.9 kg.

DISCUSSION
According to Ayurvedic approach to Dhatukshayajanya Vandhya in terms of diminishing ovarian reserve (DOR) following events takes place.

1. Vata Prakopa → Agni Vaishamya → Rasa Dushti → Artava Dushti → Sthana Sanshraya in Garbhashaya → Pariksheena of Dhaturi Artava → Dhatukshayajanya Vandhya

Chikitsa is based on following 3 Sutras—

1) वमनं ववरेचनंचैवववतिरा (मा) तथापनंिथा। स्त्रीणां प्रविद्धा प्रिर (व) वति मै। (भे.० सं ० शा. २)
2) तब वसितद्वात्वात्सचिरोपशमनात्मक (तिसताचार्य)
3) कृद्दि: समान: सवेच्छा विशेषति (विपत्ययः)। (अ.ह.स.२/१३)

In First Shloka Acharya Bhaela states that Shodhana is necessary in Vandhya. Second one is Basti Chikitsa (Enema) is best for aggravated Vata Dosha. Third Shloka states states as similar things increases and opposite of that decreases the output. Ayurveda states the
holistic remedy which is alternative to hormonal therapy for infertility. Ayurvedic approach to Dhatukshayajanya Vandhya in terms of diminishing ovarian reserve (DOR) is gaining importance. The case presents with Vata Dosha Vikriti (alteration of Dosha) progressing towards Dhatu Kshaya thereby affecting Artava Upadhatu Kshaya Lakshanas [9]. The treatment protocol aims for a Shamana of Vata Dosha and correction of Agni thereby creating equilibrium of Doshas in Madhyama Vayavastha (Elderly female). The Dhatupushhti itself can be attributed for the physiology of Artava. The oral administration of Hingwastakachurna has Deepana and Pachana properties. Also, Hingu possess Stripushpajana [10] It also works on Amnaavasrotas which is a main base of any disease through it Agnideepana leads to formation of healthy Ahararasa results in good nutrition to Rasa Dhatu and later on Raja and Stanya Upadhatu. Oral and Internal administration of Phalasarpi owes its Vataharara, Dhatuvardhaka, Vandhyatvahari, Balya and Brimhana properties helps in improvement of Artavakshaya through Dhatupushti thus creating a satisfactory improvement in hormonal assay. Shatavari is a Pushpaprajakari which helps in formation of follicles, ovulation and thereby a healthy progeny. It has Phytoestrogens. Pathogenesis of gynaecological disorders always involves Vata Dosha. 

(तिस्वामा) Hence Basti Karma (enema) which is the prime treatment modality in Vata Vyadhis [11]. It is considered as Ardhha Chikitsa [12]. Mustadi Yapana Basti [13] is specifically indicated as a superior line of treatment in the condition of Vrishya Karma. Its effect on Anti Mullerian hormone (AMH) as well as on FSH etc. thus helps in Balya, Rasayana and Garbhashaya Shodhana Karma. Acharyas says Phalasarpi helps the woman to achieve conception and cures female genital tract disorder. It is Vatahara, Balya, Brimhiniya, Garbha and Rasayana thus helps in nourishment of reproductive organs and baby later. It works as Prasajathapaka (maintains pregnancy) and Yonipradosha Shamaka (reduces diseases of Uterus and vagina) properties. It also helps in proper development of endometrium, follicles result in healthy progeny. All three Bastis have potency to get absorbed and creates osmotic pressure which enhances absorption of drug administered through intrauterine Uttarbasti. It promotes drug action through endometrium then to internal iliac vein passes into the systemic circulation and exerts its positive action on hypothalamo-pituitary – ovarian axis, which helps in promotion of primordial follicles under control of FSH and regulates function of other hormones. Manasamitravatam is a Tridosha Shamaka, potent anti-stress, antioptic and anti-depressant. According Acharya Charaka for Garbhadhana the most important thing is शैवंपत्य गम्भरशालानाम् i” (soundness of mind or peaceful mind).

Adding to this not having child gives stress to patient hence added in the prescription.

CONCLUSION

There are many causes of female infertility but diminishing ovarian reserve is much common cause in elderly patients. The long-term treatments with hormonal imbalance results from many untoward effects like weight gain, stress, depression and premature menopause if not treated well. Ayurveda gives major spotlight on Panchakarma Shodhana as well as Shamana. In this case important consideration was given to Vata Anulomana, Deepana and Pachana because proper functioning of Vata Dosha is necessary in every aspects of fertility means proper functioning of hypothalamo-pituitary – ovarian axis.

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