

THE STUDY OF VANDHYATVA-INFERTILITY IN CURRENT ERA**Vd. Hankare Sandip Baban***

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ABSTRACT

Infertility is a significant medical problem that affecting 10 to 15% of couple, with approximately equal contribution. Infertility is defined as failure to achieve conception by a couple of mature age, having normal coitus, during appropriate period of menstrual cycle, regularly, at least for 1 year. According to ayurveda important factor for conception are considered as rutu (fertile period), kshetra (uterus and reproductive organs), ambu (proper nutrient fluid), bija (shukra and shonita) and normalcy of hrudaya or psychology, proper functioning of vayu (normal nervous system) and shadbhavas (matraja, pitraja, atmaja, satvaja, satmyaja and rasaja). Abnormality in any one of them can cause vandhyatva-infertility.

In current era so many advanced techniques are available for diagnosis of proper cause of infertility. For example in male -semen analysis, hormonal testing, transrectal and scrotal ultrasound and in female for example-ovulation testing, hystosalphingography, laproscopy, hormonal testing, genetic testing, pelvic ultrasound. There is innumerable cause in current era which is causing infertility in human being. Infertility is cure with the help of medical and surgical treatment.

The infertility rate is increased due to change in life style, stress, improper diet and socioeconomic cause. So for that purpose, the study of vandhyatva-infertility in current era is being presented in this paper.

INTRODUCTION

Infertility is defined as failure to achieve conception by a couple of mature age, having normal coitus, during appropriate period of menstrual cycle, regularly, at least for 1 year. According to ayurveda important factor for conception are considered as rutu (fertile period), kshetra (uterus and reproductive organs), ambu (proper nutrient fluid), bija (shukra and shonita) and normalcy of hrudaya or psychology, proper functioning of vayu (normal nervous system) and shadbhavas (matraja, pitraja, atmaja, satvaja, satmyaja and rasaja). Abnormality in any one of them can cause vandhyatva-infertility. Description of vandhyatva is present only in Harita samhita. Harita has defined vandhyatva as failure to achieve a child rather than pregnancy, because he has included garbhasravi and mrtavasta also under the vandhyatva. This definition is not acceptable today.

In current era so many advanced techniques are available for diagnosis of proper cause of infertility. Infertility is cure with the help of medical and surgical treatment.

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Ayurvedic View

Description of vandhyatva is present only in Harita samhita. Harita has defined vandhyatva as failure to achieve a child rather than pregnancy, because he has included garbhasravi and mrtavasta also under the vandhyatva. This definition is not acceptable today. Other ayurvedic classics have not used word vandhyatva, but it's the only symptoms i.e. failure to achieve pregnancy has been referred under various condition i.e. coitus with an old woman, young or diseased woman, coitus in abnormal posture, due to diseases of yoni (reproductive system) and abnormalities of artava. Kasyapa say that the couple having number of children with proper growth and development due to effect of nature or their own deeds are fortunate, otherwise (having failed to achieve to pregnancy) should be treated. In Sushruta samhita Vandhya yonivyapada is explained under yoniroga. Charaka and vagbhat have referred vandhya due to abnormality of bijamsa. Both these references do not give complete picture of vandhyatva.

Causative factors explained by all the ayurvedic classics are summarised hereunder

- 1) Yonipradosha:- Yonivyapada, injury to artavahasrotasa, yonyarsha, garbhakoshabhanga, bhagasankocha and sphalita mutratwa.
- 2) Manasika abhitapa
- 3) Shukradosha
- 4) Asrka dosha
- 5) Ahara dosha
- 6) Vihara dosha
- 7) Akala yoga
- 8) Loss of bala
- 9) Atma dosha
- 10) Affliction by jataharinis
- 11) Daivaprakopa

Classification and clinical features

Classification of vandhya or vandhyatva has not been given in any classic except Harita samhita. Harita has described classification and etiology together. Vandhya is of six types according to Harita;-Harita mentioning vandhya of six types has named only five.

- 1) Kakavandhya (one child sterility)
- 2) Anapatya (primary sterility)
- 3) Garbhasravi (repeated abortion)
- 4) Mrtavasta (repeated stillbirth)
- 5) Balakshaya (loss of strength)

Infertility due to childhood age, injury to or prolapsed of uterus, loss of dhatus and constriction of vagina and uterus due to coitus done before menarche etc. all had to be considered under sixth category.

Sadhyasadhyaata

Prognosis of infertility depends upon its specific causes such as infertility due to incurable disease of yoni or artava will automatically become incurable.

Chikitsa

- 1) Treatment of specific causes responsible for infertility.
- 2) Avoiding etiological factors.
- 3) Use of strength producing and brmhana articles.
- 4) After using snehana, swedana, vaman, virechana, asthapana, anuvasana basti in consecutive order, the man should be given milk and ghee medicated with madhura drugs and woman, oil with masha etc. is opinion of few authors.
- 5) The drugs prescribed for pumsawanakarman can also be used.

MODERN VIEW

Definition

Infertility is defined as failure to achieve conception by a couple of mature age, having normal coitus, during appropriate period of menstrual cycle, regularly, at least for 1 year.

Primary or secondary

- Primary infertility: - The inability to conceive after 1 year of unprotected intercourse for a woman younger than 35, or after 6 months of unprotected intercourse for a woman 35 or older (Speroff & Fritz, 2005).

- Secondary infertility: - The inability of a woman to conceive who previously was able to do so (Speroff & Fritz, 2005).

Causes of infertility:- Causes are shared almost equally by men and women.

Causes of male infertility

- A) Defective spermatogenesis
- B) Obstruction of the efferent duct system
- C) Failure to deposit sperm high in the vagina
- D) Errors in the seminal fluid

A) Defective spermatogenesis

The causes of the defective spermatogenesis are:

- 1) Congenital - Undescended testes, Kartagener syndrome, Hypospadias.
- 2) Thermal factor -The scrotal temperature is raised in conditions such as varicocele, big hydrocele or filariasis.
- 3) Infection - Mumps, orchitis, chronic systemic illness, bacterial or viral infection of the seminal vesical or prostate.
- 4) General factors - Malnutrition or heavy smoking alcohol intake.
- 5) Endocrine - Like Kallmanns syndrome, sertoli- cell- only syndrome.
- 6) Genetic - Klinefelters syndrome.
- 7) Iatrogenic - Radiation, cytotoxic drugs, nitrogen fumation, cimetidine etc.
- 8) Immunological factor - Antibodies against spermatozoal surface antigens.

B) Obstruction of the efferent duct system

- Obstruction of the efferent duct by infection like tubercular, gonococcal or by surgical trauma (herniorrhaphy).

C) Failure to deposit sperm high in the vagina

- Erectile dysfunction, ejaculatory defect-premature, retrograde or absence of ejaculation, hypospadias.

D) Errors in the seminal fluid

- Unusually high or low volume of ejaculate, low fructose content, high prostaglandin content, undue viscosity.

Causes of female infertility

A) Ovarian factors:- The ovulatory dysfunctions encompass

- Anovulation or oligo-ovulation
- Decreased ovarian reserve
- Luteal phase defect
- Luteinised unruptured follicle

B) Tubal and peritoneal factors

- The obstruction of the tubes may be due to Pelvic infection, Previous tubal surgery or sterilisation, Salpingitis isthica nodosa, Tubal endometriosis and others, Polyps or mucous debris within the tubal lumen or tubal spasm.

C) Peritoneal factors

- In addition to peritubal adhesions, even minimal endometriosis may produce infertility.

D) Uterine factors

- Uterine hyperplasia, inadequate secretory endometrium, fibroid uterus, endometritis (tubercular), uterine synechiae.

E) Cervical factors

- Anatomic: - Anatomic defect prevents sperm ascent may be due to congenital elongation of the cervix, second degree uterine prolapse and acute retroverted uterus.

- Physiologic:- The fault lies in the composition of the cervical mucus, the mucus may be scanty. Presence of the antisperm.

F) Vaginal factors

- Atresia vagina, transverse vaginal septum, septate vagina.

Combined factors

- General factors:- Advanced age of the wife beyond 35.
- Infrequent intercourse, lack of knowledge of coital technique and timing.
- Apareunia and dyspareunia.
- Anxiety and apprehension.
- Use of lubricants during intercourse which may be spermicidal.
- Immunological factors.

Investigation of Infertility**In Male****History****General medical history**

- A general medical history should be taken with special reference to sexually transmitted diseases, mumps, orchitis, diabetes, recurrent chest infection or bronchiectasis. Relevant surgery such as herniorrhaphy, operation on testis or surgery in genital area to be enquired.

Occupational history

- Exposure to excessive heat or radiation.

Social habits

- Particularly heavy smoking and alcohol.

Examination**Full physical examination**

Inspection and palpation of the genitalia. Testicular volume should be measured. Presence of varicocele should be elicited in the upright position.

Investigation**a) Routine investigation**

- Urine and blood examination including postprandial sugar.

b) Seminal fluid analysis

Fresh sample (to lab within 30 mins.):– Most sperm in initial ejaculate

Male should be abstinent for 48 to 72 hours.

Volume: 2.0ml or more

Ph: 7.2- 8.0

Sperm concentration: 20 million/ml or more

Total sperm count: >40 million per ejaculate or more

Motility: 50% or more progressive forward motility

Morphology: 15% or more with normal forms

Viability: 75% or more living

White blood cells: less than 1 million/ ml

Immunobead test: fewer than 20% spermatozoa with adherent particles

MAR test: fewer than 10% spermatozoa with adherent particles

Sperm agglutination: < 2(scale 0-3)

Sperm Terms

- Asthenozoospermia, oligospermia /oligozoospermia, Polyzoospermia, necrozoospermia, teratozoospermia, azoospermia, aspermia, oligoasthenoteratozoospermia.

In-depth evaluation

- These are needed in case of azoospermia, oligospermia, low volume ejaculate, problems of sexual potency.

Serum FSH, LH, testosterone, prolactin and TSH**Fructose content in the seminal fluid****Testicular biopsy****Transrectal ultrasound (TRUS)****Vasogram****Karyotype analysis**

Immunological tests:- Two types of antibodies have been described - sperm agglutinating and sperm immobilising.

Female**History**

- Age, duration of marriage, history of previous marriage with proven fertility if any are to be noted.

General medical history

Specially reference to tuberculosis, sexually transmitted disease, features suggestive of pelvic inflammation or diabetes.

The surgical history:-

- Specially abdomen and pelvic surgery. This may be related to peritubal adhesions.

Menstrual history:-

- Hypomenorrhoea, oligomenorrhoea, amenorrhoea

Previous obstetric history

- Including no. of pregnancies, the interval between them and complication during pregnancy, Contraceptive practice should be elicited. IUCD may produce PID,

Sexual problems such as dyspareunia and loss of libido are to be enquired.

Examinations

General examination

- Obesity, marked reduction in weight. Abnormal distribution of hair or underdevelopment of secondary sex characters are to be noted.

Systemic examination

Hypertension, organic heart disease, chronic renal failure, endocraniopathies.

Gynaecological examination

- Includes adequacy of hymenal opening, evidence of vaginal infections, cervical tear, undue elongation of cervix, uterine size, position and mobility.

Speculum examination

- May reveal abnormal cervical discharge.

Ovulation factors

Ovulation dysfunctions commonly associated with infertility are

A) Anovulation or oligo-ovulation.

B) Luteal phase defect (LPD).

C) Luteinised unruptured follicle (LUF).

A) Diagnosis of ovulation (anovulation or oligo-ovulation)

The various methods used in to detect ovulation are grouped as follows

1) Indirect

a) Menstrual history

b) Evaluation of peripheral or endorgan changes:-

- BBT
- Hormone estimation (Serum progesterone, LH, oestradiol)
- Vaginal cytology
- Urine LH
- Endometrial biopsy
- Cervical mucus study
- Sonography

2) Direct

Laproscopy

3) Conclusive:- Pregnancy

B) Luteal phase defect:- Diagnosis of LPD is based on BBT chart, endometrial biopsy, serum progesterone.

C) Luteinised unruptured follicle:- Diagnosis with the help of sonography, laproscopy, ovarian biopsy.

Tubal factors

- The anatomical patency and functional integrity of the tubes are assessed by:

- Dilation and insufflation test
- Hysterosalpingography (HSG)
- Laproscopy and chromopertubation

- Sonohysterosalpingography
- Falloposcopy
- Salpingoscopy

Uterine factors

Uterine factors commonly associated with subfertility are submucous fibroids, congenital malformations, intrauterine adhesions. Ultrasonography, HSG, Hysteroscopy, Laproscopy are needed in the evaluation of uterine factors.

Cervical factor

- The cervix functions as a biological valve. This is in the sense that, in the proliferative phase, it permits the entry of sperm and in the secretory phase, hinders their penetration. As such, dysfunction at this level should be carefully evaluated. This is done by:
 - Postcoital test (PCT) (Sims-Huhner test)
 - Sperm cervical mucus contact test (SCMCT)
 - Endocrinopathy
 - Immunological factor

Treatment of infertilit

In male Infertility

Medical treatments

- Improving of general health, reduction of weight in obese, avoidance of alcohol and heavy smoking, avoidance of tight and warm undergarments.
- Use of vitamins E, C, D, B12 And folic acid.
- In hypogonadotrophic-hypogonadism, hCG 5000 IU im, and dopamine agonist is given in hypoprolactaemia.
- In presence of antisperm antibodies in the male, IUI with washed spermatozoa is done.
- In retrograde ejaculation - phenylephrine is used. Sperm recovered from the neutralised urine, processed spermatozoa is used for IUI.
- In teratospermia, asthenospermia - cause are unknown, no treatment is available. Donor insemination is the option.
- In genetic abnormality - artificial insemination with donor sperm is done.

Surgical

- Vasoepididymostomy or vasovassostomy in obstruction of vas.
- Surgery for vericocele, hydrocele.
- Orchidopexy in undescended testis.
- Impotency:- Psychological treatment, for erectile dysfunction sildenafil is given.
- Assisted reproductive technology (ART) for Male infertility.

In Female infertility

Medical treatments

Drugs:- Clomiphene, Human menopausal gonadotropin, hMG, FSH, Human chorionic gonadotropin (hCG), Gonadotropin – releasing hormone (Gn-RH)

analogs, Aromatase inhibitors, Metformin, Bromocriptine.

Surgery

- Laproscopic ovarian drilling or laser vaporization
- Wedge resection
- Surgery for pituitary prolactinomas
- Surgical removal of virilising or other functioning ovarian or adrenal tumour.
- Tubal and peritoneal factors
- Tubal factors are corrected only by surgery.
- Salpingo-ovariolysis by laproscopy or laprotomy in peritubal adhesions.
- Salpingography in proximal tubal block.
- Fimbrioplasty, neosalpingostomy in distal tubal block.
- Reversal of tubal ligation in mid tubal block.
- Assisted reproductive technology (ART).
- Uterovaginal surgery:- Myomectomy, metroplasty, adhesiolysis etc.

Combined factors

- The faults detected in both the partners should be treated simultaneously and not one after the other.

Artificial Insemination (AI)

Different methods are:-

- IUI
- Fallopian tube sperm perfusion.

Assisted reproductive technology (ART)

- ART encompasses all the procedures that involve manipulation of gametes and embryos outside the body for the treatment of infertility.
- IVF-ET: In vitro fertilization and embryo transfer
- GIFT: Gamete intra-fallopian transfer
- ZIFT: Zygote intra-fallopian transfer
- POST: Peritoneal oocyte and sperm transfer
- SUZI: Subzonal insemination
- ICSI: Intracytoplasmic sperm injection

Embryo or oocyte donation

Gestational surrogacy

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