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Integrative Approach on Infertility Caused Due to Hypothyroidism with Its Management

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Abstract:

Infertility is defined by the failure to achieve clinical pregnancy after 12 months or more of regular unprotected sexual intercourse. According to WHO primary infertility in India is in between 3.9-16.8% and prevalence of hypothyroidism in reproductive age group is 2-4%, it has been shown to be the cause of infertility and habitual abortions. There is a significant high prolactin (PRL) level in hypothyroid women leads to infertility and galactorrhoea. Relationship between thyroid health and fertility is important and complex part of conception. According to Ayurved, impaired metabolism in hypothyroidism due to Dhatwagnimandya has adverse effect on Dhatu. Which may naturally affect the normal production of Artava and Shukra in individuals who have hypothyroidism. This can result the abnormality in reproductive system. **Methods-** A search was undertaken in MEDLINE or the PubMed database, Davidson's principal of medicine, DC Dutta's textbook of gynaecology, Charak Samhita, Sushrut Samhita and Ashtanghridaya. **Results-** Hypothyroidism can impact fertility by disruption of the menstrual cycle, making it harder to conceive, interference with ovulation**,** increased risk of miscarriage**,** increased risk of premature birth. **Discussion-** As sushrut stated that *aartav* is *upadhatu* of *rasa dhatu* and *aartav* is considered as menstrual blood and ovumTherefore, it is clear that impaired metabolism due to *dhatwagnimandya* in hypothyroidism has adverse effect on healthy formation of follicles can lead to infertility.

Keywords: Infertility, Hypothyroidism, *dhatwagnimandya, aartav*

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Introduction

Infertility is defined as a failure to conceive within one or more years of regular unprotected coitus. It is divided into 2 types primary infertility and secondary infertility. Reasons such as overweight, faulty diet habits, stressful and sedentary lifestyle, smoking, medical conditions, environmental pollutants, medications and family medical history, infections might have an effect on conception in couples. The male is directly responsible in about 30–40 percent, the female in about 40–55 percent and both are responsible in about 10 percent cases. The remaining 10 percent, is unexplained [1] Women in the reproductive age group has 2-4% of prevalence of hypothyroidism. Hypothyroidism can affect fertility due to anovulatory cycles, luteal phase defects, hyperprolactinemia, and sex hormone imbalance.[2] Common signs and symptoms of hypothyroidism are tiredness, weight gain, poor appetite, periorbital oedema, cold intolerance, hoarseness of voice, constipation, lethargy somnolence and goitre, bradycardia, aches and pains, delayed relaxation of ankle jerks, muscle stiffness, mental slowness, carpel tunnel syndrome, deafness, depression, myotonia, anaemia, puffy face, dry- thick skin (toad skin), cold extremities, sparse hair or alopecia, nonpitting oedema, and loss of eyebrows along with this menorrhagia (later Oligomenorrhea), galactorrhoea and impotence. [3] Among all menorrhagia is most common. Low levels of thyroid hormone can interfere with the ovulation, which impairs fertility. Therefore, the relationship between the thyroid health and fertility is an important and complex part of conception.

Hypothyroidism can lead to following issues in women reproductive system

- Disruption of the menstrual cycle, making it harder to conceive.
- Interference with the release of an egg from the ovaries (ovulation)
- Increased risk of miscarriage
- Increased risk of premature birth [4]

In males also thyroid dysfunction is one of the commonest causes of infertility.

According to FIGO manual (1990) causes of female infertility are:

1. Tubal and peritoneal factors (25–35%)
2. Ovulatory factor (30–40%)
3. Endometriosis (1–10%).

As we can see 30-40% rate is because of ovulatory factors and ovarian dysfunction is likely to be linked with disturbed hypothalamus-pituitary-ovarian axis either primary or secondary from thyroid or adrenal dysfunction. One of the many causes of luteal phase defect one is subclinical hypothyroidism in this condition there is inadequate growth and function of the corpus luteum. There is inadequate progesterone secretion. The lifespan of corpus luteum is shortened to less than 10 days. As a result, there is inadequate secretory changes in the endometrium which hinder implantation.[5]

According to Ayurved, after meeting of *Shuddha Shukra* and *Shuddha Aartav* with association of *Jivatma* the product formed is called as *Garbha*.[6]

According to Ayurved, *Mandagni* is the cause of each and every disease. Hypothyroidism is manifested by impaired metabolism i.e., by hypometabolism, reason behind this is *Mandagni*. Normal *Agni* leads to formation of *Rasa Dhatu*, from *Rasa Dhatu* formation of *Rakta Dhatu* occurs, from *Rakta Mamsa* and so on, lastly from *Majja Dhatu* formation of *Shukra-Aartav Dhatu* occurs.[7] This *Poshan* of *Dhatu* occurs by either mechanism of *Kshirdadhinayaya, Kedarkulyanaya*, and *Khalekapotnaya.*

Raja is *Upadhatu* of *Rasa Dhatu*. *Aartav* and *Pushpa* are synonym of *Raja* [8]

Although *Rasa* is *Soumyagunatmak* and *Raja* is *Agnigunatmak* therefore *Garbha* is *Agni-Somagunatmak.*

As *Shukra* and *Aartav* are the constitutes of *Garbha*, any type of abnormality in this can lead to infertility.

Material and Methods

A search was undertaken in MEDLINE or the PubMed database. The search was limited to only English literature including those studies which were published, Davidson's principal of medicine, DC Dutta's textbook of gynaecology, J B Sharma's textbook of medicine, API textbook of medicine, Charak Samhita, Sushrut Samhita and Ashtanghridaya, Haaritsamhita.

Observation and Results

There are many factors which are responsible for male and female infertility one of the major factors is thyroid disorder specifically hypothyroidism. [9] The aetiology of infertility is multifactorial with thyroid disorders as the most common presenting

factor, hypothyroidism in particular. Infertility in women can lead to emotional and psychological stress. In adult women hypothyroidism is associated with diminished libido, failure of ovulation, polymennorhoea, menorrhagia, reduced fertility. Hypothyroidism is commonest endocrine problem seen in female population as it affects physiological activities of the body such as menstruation and fertility. Proportion of irregular menstrual cycles are more in females in hypothyroid group than in euthyroid group. In men hypothyroidism may cause reduced libido, impotence, oligospermia.

As Prolactin is also under the control of TRH, disturbances in reproductive system are often associated with Hyperprolactimia. Rarely associated with pituitary enlargement due to thyrotroph hyperplasia.[10]

Hypothyroidism can affect fertility in various ways resulting in anovulatory cycles, luteal phase defect, high prolactin (PRL) levels, and sex hormone imbalances. Therefore, normal thyroid function is necessary for fertility, pregnancy, and to sustain a healthy pregnancy, from the earliest days after conception. Therefore undiagnosed, untreated thyroid functions may lead to infertility.

Thyroid function evaluation should be done in -

- One who want to get pregnant
- Family history of thyroid dysfunction
- Irregular menstrual cycle
- Had more than two miscarriages
- Unable to conceive after 1 year of unprotected intercourse.[11]

Thyroid evaluation should include T3, T4, TSH, Thyroid peroxidase i.e., TPO antibodies.

Subclinical hypothyroidism is more common. It can cause anovulation directly or by causing elevation in PRL. Many infertile women with hypothyroidism had associated hyperprolactinemia due to increased production of thyrotropin releasing hormone (TRH) in ovulatory dysfunction.[11]

Therefore, measurement of PRL along with TSH is equally important.

Hypothyroidism

It has association with increased production of TRH

It stimulates pituitary to secrete TSH and PRL

↓

Hyperprolactimia adversely affects fertility potential by impairing GnRH function and leads to impairment of ovarian dysfunction.

The amount of thyrotropin releasing hormone (TRH) from the hypothalamus is markedly increased by inhibition of pyroglutamyl peptidase II, the enzyme catalysing TRH. The increased TRH in hypothyroidism causes increased thyroid-stimulating hormone and PRL secretion by pituitary, leading to infertility and galactorrhoea.

Thyroid hormones unite with Follicle-Stimulating Hormone (FSH) and stimulate granulosa cell differentiation, followed by normal follicle development which is necessary for ovulation and corpus luteum formation. Thus, thyroid hormones in adequate levels are necessary for induction of ovulation. [12]

According to Ayurved in hypothyroidism there is impaired metabolism of *Jathragni* which further leads to *Dhavagnimandya* hence *Rasadhatvagnimandya* further leads *Uttarotar Dhatvagnimandya* which finally results in improper formation of *Shukra* and *Aartav.*

Various *Aharaj-Viharaj-Manasik Nidansevan*

↓

Jatharagnimandya

↓

It further leads to *Dhatwagnimandya*

↓

Vitiated *Agni* leads to formation of *Ama*

↓

Rasavaha Strotodusti

↓

Rasa Dhatu Vaishamya

↓

Uttarotar Dhavagnimandya

↓

Improper formation of *Shukra* and *Aartav*

As *Shukra* and *Aartav* are creator of *Garbha*, any type of abnormality in this can lead to infertility.

Important factors of constituents of *Garbha* are

1) *Rutu* (fertile period) 2) *Kshetra* (Reproductive organs)

3) *Ambu* (nutritive fluids) 4) *Beeja* (Ovum or Sperm) [13]

Here, *Rutu* signifies *Rutukal*, *Kshetra* means *Garbhashaya*, *Ambu* is *Poshak Rasa Dhatu*, *Beeja* means Ovum or Sperm.

- Normal functioning of *Vata Dosha* as it is one of the important governing factors of the body.
- *Garbhavrudhikar Bhava* or *Grabhotpattikar Bhava* i.e., *Matruj, Pitruj, Aatmyaj, Satmya, Rasaj, Satvaj* [14]
- Therefore, any type of abnormality in these factors can lead to infertility.

Along with this *Satvik Ahar-Vihar* and *Acharan* is important.

a) Following reasons are given by Charak behind infertility:[15]

a) Any type of *Yonirog* among 20 types of *Yonivyapad.*

b) Mental trauma

c) *Dusti* of *Shukra* or *Aartav*

d) Inappropriate habits of *Aahar -Vihar*

e) Conception after *Rutukal*

f) *Dourblya* due to malnourishment.

There are 9 types of *Shukra-Aartav Dusti*, such as *Vata Shukra, Pitta Shukra, Kapha Shukra, Kunap Shukra, Granthi Shukra, Puya Shukra, Kshina Shukra, Mutra Shukra, Purish Shukra, likewise Vatastra, Pittastra, Kaphastra, Kunapastra, Granthastra, Shinastra, Mutrastra, Purishatra* they are unable to produce *Garbha*.[16]

Management according to Ayurved

First line of treatment should be correction of *Agnimandya.* As *Kayagnidipti* is the first outcome of *Shodhana.*[17] After *Deepan- Pachan*; *Vaman, Virechan*, *Basti, Uttar basti, Nasya* can be given according to *Avastha*.

Hypothalamus-Pituitary-Ovarian axis regulates the menstrual cycle with ovulation. *Panchakarma* such as *Basti* causes local uterine contractions which stimulate the endometrium and ovarian receptors.

Internal medications like *Kanchanar guggul* and *Varunadi Ghrita, Trikatu Churna*, *Vidanga Churna* help in removing the *Srotolepa* and resolving *Agnimandya*. Especially the *Kanchanar* is considered a drug of choice for *Granthi Vikar* & *Galaganda*. It has balancing activity on the thyroxin production, increasing any deficient production & decreasing any excess. The *Shodhana Chikitsa* can be helpful to correct ovarian, tubular & uterine problems causing *Vandhyatva* and help to conceive.

Garbhasthapak Dravya such as *Endri, Brahmi, Shatavari, Patala, Lakshmana, Guduchi* etc along with *Dugdha* or *Ghrita* can

be given. *Dravya* from *Jivaniya Gana* is also useful [18]

To avoid miscarriage Charak guided to sidestep sitting on *Visham Asana, Vegdharan*, heavy work, *Ushna-Tikshna Aahar, Pramitashan, Krodha-Shoka-Bhaya* etc. [19]

In all *Yonivyapad Shodhan* should be carried out.

Vataj Yonirog- Snehan, Swedan, Basti

Pittaj Yonirog-Raktapittanashak Upachar

Kaphaj Yonirog- Ruksha and *Ushna Upachar*

Dwidoshaj Yonirog- According to prime *Dosh* treatment should be given

Sannipataj Yonirog- Tridoshnashak treatment should be given.[20]

Management according to modern science

Levothyroxine is given, according to need starting with 25 µgm daily and it can be increased up to 150 µgm. Once the women become euthyroid, ovulation usually ensures. Alternately clomiphene can be started with thyroxine.

As hyperprolactinemia causes oligo-amennorhea with galactorrhoea and infertility treatment is with bromocriptine or cabergoline can be given [21]

Along with the medicines following changes in lifestyle are mandatory:

- Life style changes: avoid stress, healthy diet and regular exercise
- Avoid tight undergarments and should take cold bath
- Alcohol, smoking, tobacco chewing should be stopped
- Any drugs which impair spermatogenesis or cause sexual dysfunction should be stopped.

Discussion

As there is major and complex association between hypothyroidism and infertility, management of hypothyroidism is necessary in affected couples who wants to have a child. Mostly ovarian dysfunction is caused due to thyroid disorder. Subclinical hypothyroidism is one of the major causes of luteal phase defect. In this condition there is inadequate growth and function of the corpus luteum results in inadequate progesterone secretion hence, inadequate secretory changes interfere with implantation.

According to Ayurved metabolism of body is driven by *Jathragni, Bhutagni* and *Dhatvagni.* From *Ahar Rasa* in sequential pattern production of *Shukra* occurs by *Sarbhaga* of *Majja.* From *Poshak Ansha* of *Shukradhatu* in *Shukravaha Strotas* production of *Garbhasthapak Shukra* occurs. Therefore, its essential to maintain normal status of *Agni*.

Normalizing *Agni* will help in *Uttarotar Dhatu Poshan* thus quality of *Shukra* and *Aartav Dhatu* will be improved, as *Garbha* is combition of *Shukra* and *Aartav* improving healthy state of *Agni* is mandatory. *Yonidoshahara, Sukradustihara, Balya, Brimhana*, *Vayasthapana, Vrishya, Punsatva Dravya* helps in conception. After *Shodhan* and *Shaman Chikitsa Phaal Ghrita* can be given as *Rasayana,* this treatment helps in *Garbha Sthapana* as it helps in improving the quality of endometrium.

As per Ayurved, food affects the mind also by causing either an increase or decrease in the three *Guna* of mind, i.e., *Rajo, Satva*, and *Tama*. Therefore, diet plays a very crucial role in maintaence of good health. In our classics it is said that if dietetics is properly followed, medicine is not required but if dietetics is not observed, even medicines are not useful. Dietary management involves strict compliance and adherence to *Oja* building foods and to avoid the substances which diminish the *Ojas.* This is important to regulate ovulation and enhances fertilization. Eating whole foods provides all nutrients for the health of the body in addition to fibre that influences hormonal levels.

Brahmri Pranayama, Sarvangasana, Pacchimotanasan, Suptabaddhakonasana, etc are useful.

Conclusion

In *Shabdhaklpadrum*, description of word *Stri* is stated as one who carries Garbha. Infertility has significant negative social impacts on the lives of infertile couples and particularly women, who frequently experience violence, divorce, social stigma, emotional stress, depression, anxiety and low self-esteem. Hypothyroidism being the commonest cause of anvolutary cycles, luteal phase defect etc. therefore to cure hypothyroidism is very necessary. *Shodhan, Shaman*, improvement in dietary habits, practising proper *Yoga*, and different classical formulation to improve health of reproductive system efficiently can be given.

References

1] Dutta D C edited by Hiralal Konar: D.C. Dutta's Textbook of Gynaecology: Sixth Edition, New Delhi; Jaypee Brothers Medical Publishers (P) Ltd, 2013, Infertility chapter16 page no 227

2] Verma, I., Sood, R., Juneja, S., & Kaur, S. (2012). Prevalence of hypothyroidism in infertile women and evaluation of response of treatment for hypothyroidism on infertility. *International journal of applied & basic medical research*, *2*(1), 17–19. https://doi.org/10.4103/2229-516X.96795

3] Chugh S.N (2019): Textbook of medicine for MBBS: 4th edition Chapter 2 Thyroid gland and its disorder page no 831

4]

5] Dutta D C edited by Hiralal Konar: D.C. Dutta's Textbook of Gynaecology: Sixth Edition, New Delhi; Jaypee Brothers Medical Publishers (P) Ltd, 2013, Infertility chapter16 page no 229

6] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sharir Sthan Adhyaya* 3/3 page no 714

7] Shastri A (2017) Sushrutsamhita, Chaukhamba Sanskrit Pratisthan, Varanasi. *SharirSthan Adhyay* 14/10 page no 65.

8] Shastri A (2017) Sushrutsamhita, Chaukhamba Sanskrit Pratisthan, Varanasi. *SharirSthan Adhyay* 14/6 page no 64.

9] Sharma J B (2018): Textbook of Gynaecology: Frist edition: Avichal Publishing Company : Chapter10 Pathology of conception and infertility page no 207 and 209.]

10]Kamath Sandhya A (2019): the association of physicians of India: API textbook of medicine: 11th edition, volume 1 page no 758

11] Verma, I., Sood, R., Juneja, S., & Kaur, S. (2012). Prevalence of hypothyroidism in infertile women and evaluation of response of treatment for hypothyroidism on infertility. International journal of applied & basic medical research, *2*(1), 17–19. https://doi.org/10.4103/2229-516X.96795

12] Koyyada, A., & Orsu, P. (2020). Role of hypothyroidism and associated pathways in pregnancy and infertility: Clinical insights. Tzu chi medical journal, *32*(4), 312–317. https://doi.org/10.4103/tcmj.tcmj_255_19

13] Shastri A (2017) Sushrutsamhita, Chaukhamba Sanskrit Pratisthan, Varanasi. *SharirSthan Adhyay* 2/35 page no 19

14] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sharir Sthan Adhyaya* 3/3 page no 714

15]Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sharir Sthan Adhyaya* 2/7 page no 704

16] Garde G.K (2015), Sartha Vagbhat, Chakhamba Surbharti Publication, Varanasi *Sharirsthan Adhyaya* 1/10 page no 122

17] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sutrasthan Adhyaya* 16/17 page no 259

18] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sharir Sthan Adhyaya* 8/20 page no 778

19] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Sharir Sthan Adhyaya* 8/21 page no 779

20] Kale V.S (2014), *Charak Samhita,* Chaukhamba Sanskrit Publication, Delhi. *Chikitsastan Adhyaya* 30/42,45 page no 746

21]Sharma J B (2018): Textbook of gynaecology: Frist edition: Avichal Publishing Company: Chapter10 Pathology of conception and infertility page no 221 and 230.

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