



## **Stress Induced Oligozoospermia: Review Article**

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### **Abstract:-**

Ayurveda denotes health as a balanced state of mind and body. A person is healthy if his *Mansik Gunas* (*Satva, Raj and Tama*) are in equilibrium state as well as *Tridoshas* and *Saptadhatus* are proportionate as well. Stress has been a part of human life since long but the present era is dominated by it in much broad spectrum. Stress disturbs the *Mansik Bhavas* of individuals which have adverse effects on physical health deliberately. One such effect of stress on physical health is Male Infertility especially Oligozoospermia i.e. low sperm count have close correlation with *Ksheen Shukra* mentioned in Classical Ayurvedic Texts. It has been observed that the stress contributes a lot in this burning issue. Stressed conditions vitiate *Vata* and *Pitta Dosha*. *Sadhak Pitta* and *Praan Vayu* are the most affected ones, which creates a drying effect in the body. This leads to *Mandagni* and *Ojakshay* as well as *Dhatu Kshayatmak* condition. As *Shukra Dhatu* is the *Saar Bhaag* of all the *Dhatus*, both the *Agni Mandya* and *Dhatu Kshay* condition result in *Ksheen Shukra*. Improper diet, too much of work load, disturbed lifestyle all are stress triggers which are increasing the manifestation of Oligozoospermia to a very large extent. Stress also leads to hormonal imbalance which affects the formation of sperms leading to low sperm count.

Keywords:- Stress, Oligozoospermia, *Ksheen Shukra*, *Mandagni*.

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## **Introduction:-**

The present scenario deals with a lot of hush and rush. With the evolution of time there has been a drastic change in the past few decades in lifestyle, eating and sleeping patterns. Gone are the days when human beings used to eat healthy worked physically hard and lead a disciplined life. This technical era is full of stress and impatient living. In the urge to earn more, to live a lavish lifestyle people have pressurised their mind ignoring health and ultimately suffering from numerous health issues.

Mind and body are two wheels that drive the vehicle of life. If one wheel gets disturbed or if there are disbalances it leads to disparity of this vehicle. The inter-relationship of mind and body are mentioned in Ayurveda as well as Modern science. If mind is not residing in peace it may cause physical disorders and vice versa.

There are two health issues which have been increasing on a continuous level those are Stress and Infertility. Infertility has become a global issue faced by 8-12% of couples globally on an average. Out of total cases of infertility 30-40% account for male infertility. There are various causes of male infertility and Oligozoospermia i.e. low sperm count is the most common one. For many decades, sperm concentration of less than 20 million sperm/ml, low or Oligospermic but recently WHO has reassessed sperm count criteria and established a lower reference point, less than 15 million sperm/ml. Ayurvedic literature has witnessed the description of *Ksheen Shukra* which has close resemblance with Oligozoospermia.

Stress is a natural physical and mental reaction to life experiences. Each and every individual deals with stressful conditions one or the other time. The pressure of career, work load to meet the deadlines, responsibility of family and many more are the triggers of stress. Mental stress impacts the physical health as well. There are really major consequences of stress on body. The most common disorders that have been found to be are IBS, Ulcers, Obesity, one such issue is Male Infertility. *Ati Chinta* and *Shok* (Excessive thinking and grief) are mentioned as *Nidanas* of *Ksheen Shukra* in *Ayurveda*. Stress vitiates *Vata* and *Pitta* which are responsible for *Kshay* of *Shukra Dhatu*. Stress also known as *Avsaad* in *Ayurveda* leads to



*Agnimandya* and *Aruchi* which are responsible for impairing the formation of *Aahar Rasa* and *Dhatwagni Mandya* which leads to deterioration of *Rasadi Dhatus*, sequentially *Kshay* in *Shukra Dhatu* and also the modern researches have proved that long term stress is a main cause for oligospermia, may be due to hormonal impact.

➤ **AIMS AND OBJECTIVES:-**

- To review the causes of Oligozoospermia i.e. *Ksheen Shukra* according to *Ayurveda* and Modern science.
- To rule out and establish the relation between Stress and Male Infertility.

➤ **REVIEW OF LITERATURE**

Male Infertility refers to a male's inability to cause pregnancy in a fertile female. It is one of the most common issue these days and accounts for 40-50% of infertility. Oligozoospermia is one of the most common cause of male infertility and is defined as low sperm count. The World Health Organisation (WHO) classifies sperm count at or above 15 million sperm per ml of semen as average. Anything below that is considered to be oligozoospermia. *Acharyas* have described the qualities of *Shukra* as *Spatikabha*, *Madhugandhi*, *Drava*, *Picchila*, *Avisra*, *Madhura*, *Saumya*, *Sheeta* and *Snigdha*<sup>1</sup>. It not only impacts the personal life but also the social life of individuals.

Peeping into the Ayurvedic Classical Texts *Shukra Dhatu* is the *Saar Bhaag* of all the *Dhatus* and is responsible for fertility in Males. *Shukra Dhatu* is, *Snigdha* in nature and is also responsible for nourishment of body. *Ksheen Shukra* is a condition is a condition in which there is *Swamanaan Alpeebhuta Shukra*. The condition in which the quantity of *Shukra* is *Alpa* is termed as *Ksheen Shukra*.

*Acharya Sushrut* and *Vagbhata* have used the term "*Ksheen Retas*" as a synonym of *Ksheen Shukra*.

*Acharyas* have explained that Vitiated *Vata and Pitta* are the two Doshas involved in the cause of *Ksheen Shukra*. *Vata and Pitta Prakopaka Hetus, Samanya Dhatu Kshaya karana* and *Shukra Kshaya Karana* are explained in various classics which are responsible for *Ksheen Shukra*. *Ayurved* has also mentioned the inappropriate life style and eating habits as a cause of *Ksheen Shukra*. Mental Fatigue is also responsible for depletion of *Shukra Dhatu*. The *Nidanas* mentioned in Classical texts are as follows:-

### **Nidanas of Ksheen Shukra**

1. *Ativyavaay<sup>2</sup>* and *Ativyayam*:- excessive sexual intercourse and exercise.
2. *Asatmya Ahara Sevan*:- intake of incompatible food.
3. *Akala Maithun*:- untimely sexual intercourse.
4. *Ayoni Maithun*:- coitus through *Marga* other than *Yoni*.
5. *Amaithun*:- No sexual intercourse for long time.
6. *Ati Ushna evam Ruksha Ahar Sevan*.
7. *Narinaam Arasajnanam*:- sexual intercourse with a woman who has no interest for sex.
8. *Ati Chinta evam Shok*:- Excessive thinking and grief.
9. *Atiyog of Shastr, Kshar and Agni Karma*.
10. *Vyadhi Karshan*:- deability due to disease.
11. *Vegdharan*:- Suppression of natural urges.
12. *Kshata*:- injury to *Vitapa Marma* causes *Alpa Shukra*.

Out of various *Nidanas* *Ati Chinta* and *Shok* are the *Nidanas* which are quoted in *Ayurveda* too. The Modern Science has described various causes of *Oligozoospermia* similar to *Ayurvedic* literature. The Causes of Male Infertility according to Modern Science are:-

### **CAUSES OF OLIGOZOOSPERMIA**

- Drugs, Alcohol, Smoking.
- Strenuous riding(bicycle riding, horse riding)
- Medication including androgens



- Obstruction in Vas Deferens
- Infection – eg. Prostatitis.
- Ejaculatory duct obstruction.
- Thermal causes
- Environmental factors.

As male infertility can be influenced by a variety of factors, one possible explanation for the declining trend would be that there are environmental and occupational factors along with lifestyle practices that contribute to the deterioration of quantity of sperms in semen. Disturbed *Jatharagni* ( Digestive fire) is also responsible for *Dhatu Kshay* in the body. Besides all these causes there is also a very important contributory factor which is responsible for oligozoospermia that is hormonal imbalance. There are multiple hormones like GnRH, LH and FSH which are responsible for spermatogenesis. Stress leads to increase secretion of hormones like prolactin, Arginine vasopressin, which leads to suppression of LH, FSH and GnRH leading to impairment of normal procedure of spermatogenesis (Production of sperms).Spermatogenesis is the procedure induced by FSH, GnRH in seminiferous tubules of testes. Therefore the maintenance of hormonal level is important for male fertility.

### **DISCUSSION:-**

Ayurveda defines Health is the state in which the *Doshas*, *Agni* and all the seven *Dhatu*s persist in a balanced state with proper formation and defecation of *Malas* along with mind, soul and senses interacting harmoniously to experience a feeling of self-wellness. The impact of disturbed physical health on mind and disturbed mental health on body is known. Stress is a condition that helps to combat with uncertain situations in life. Short term stress helps in managing the emergency conditions but when the stress is long term it impacts the physical health to large extent. The Ancient Science and the Modern science both have emphasized on



hazardous effects of stress one being the most common in today's scenario is Oligozoospermia i.e. *Ksheen Shukra*. The problem of infertility is closely related to psychological stress due to several other reasons as well. As a couple fails to achieve the expected goal of reproduction, feelings of frustration and disappointment raises stress. These feelings are compounded in couples experiencing infertility related disorders, requiring prolonged efforts to conceive.

The stressful conditions like *Krodha* (Anger), *Chinta* (excessive thinking), *Bhay* (fear) triggers *Vata Dosha* and Vitiates *Pitta Dosha* this leads to disbalance in *Samaan Vayu* and *Pachak Pitta* which disturbs the *Agni* leading to *Agni Mandya* condition. *Agni Mandya* leads to improper formation of *Aahara Rasa* or formation of *Ama* which lodges into *Shukravaha Strotas* which ultimately results in *Ksheen Shukra*. *Sadhak Pitta* and *Prana Vayu* are also affected to a large extent. The vitiation of *Vata* and *Pitta Dosha* leads to depletion of *Shukra Dhatu*, as *Vata* and *Pitta* possess opposite properties to *Shukra Dhatu*. *Vata* is *Rooksha*, *Laghu*, and *Pitta* being *Ushna*, *Tikshna* and *Katu* which in vitiated form leads suppression of *Gunas* of *Shukra* and *Ojas*.

The process of spermatogenesis is essential for human reproduction. A simple process is mediated by a variety of factors, including multiple hormonal influences. The hypothalamo-Pituitary Gonadal axis regulates the spermatogenesis procedure. The adequate quantity of sperm that is 15 million/ml of semen is responsible for fertility of male. The sperms must be motile and healthy as well. There are Modern Science has explained various causes of Infertility out of which stress is one of them. Stress is also responsible for inducing various unhealthy habits like consumption of excessive alcohol and various Drug abuse, which impacts male fertility to a great extent. An individual with stress also lacks interest in various activities of life which leads to lack of libido, a symptom of Oligozoospermia. Reactions to stress are associated with enhanced secretion of a number of hormones including glucocorticoids, catecholamines, growth hormone and prolactin, the effect of which is to increase mobilization of energy sources and adapt the individual to its new circumstances. In stress there is suppression of circulating gonadotropins and gonadal steroid hormones

leading to disruption of the normal procedure of spermatogenesis.\*\*Prolonged exposure to stress can lead to complete impairment of reproductive function.\*\* Gonadotrophin releasing hormone GnRH drive to the pituitary is decreased, probably due to increased endogenous CRH secretion. As reproduction is controlled by the hormones functional in the hypothalamic-Pituitary-Gonadal (HPG) axis<sup>3</sup>. Pituitary Gonadotropins luteinizing Hormone (LH) and Follicle Stimulating Hormone (FSH). Stress leads to impairment of secretion of pituitary hormones which are responsible for spermatogenesis. Stress increases prolactin secretion which is an often missed cause of Male Infertility. Prolactin creates inhibition of pulsatile release of gonadotropins from the anterior pituitary gland which has a direct effect on spermatogenesis<sup>4</sup>. Cortisol again a hormone which is produced in response to stress and increased level of cortisol may reduce the functional activity of LH, thereby reducing testosterone level. Arginine Vasopressin is neurohypophysial hormone has been implicated in stimulating contractile activity of the male reproductive tract in the testis. Higher levels of Vasopressin decrease sperm count and motility. The stressful conditions leads to increase in level of Arginine Vasopressin which leads to suppression of the process of sperm production.

➤ **CONCLUSION:-**

The role of stress in the aetiology of several disease is well recognized in Ayurvedic science and modern science. *Mano Avsaad* leads the body's susceptibility to various diseases as it leads to *Ojakshay*. Long term stress leads to vitiation of *Vata* and *Pitta* which creates depleted *Jatharagni* and *Dhatwagni*, which further leads to deficient manufacturing of Dhatus that nourish the body. When there is improper formation of first Dhatu Rasa it leads to *Kshay* of sequential *Dhatus* and hence *Shukra Dhatu* which is the essence of all the *Dhatus*. As per modern science the disturbance in mental peace, diet and lifestyle leads to various physical disorders and disturbed



equilibrium of hormones. The disbalances leads to impairment of proper functioning of Hypothalamo-pituitary-gonadotropin axis. It's proper functioning is required for spermatogenesis. Hence it is observed that stress actually affects Male Infertility in a negative way both according to Ayurveda and modern science.

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