LOW CONCENTRATION OF SPERM

Oligozoospermia, Decreased Sperm Concentration, Low Sperm Count

A condition refers to semen with a low concentration of sperm.

♀ Symptom ♂ Male

About Low concentration of sperm

Oligozoospermia, refers to semen with a low concentration of sperm and is a common finding in male infertility. Normal concentration of sperm requires normal function of testicles as well as the hypothalamus and pituitary glands producing hormones which are triggered in sperm production (gonadotropin-releasing hormone (GnRH), follicle-stimulating hormone (FSH), luteinizing hormone (LH)). Produced sperm is transported through the tubes in reproductive apparatus, mixed with the semen and ejaculated. Disruption in any part of this process may affect concentration of sperm in semen. Often semen with a decreased sperm concentration may also show significant abnormalities in sperm morphology and motility (technically “oligoasthenoteratozoospermia”).

Causes of oligozoospermia include many factors, such as medical, environmental causes, health, lifestyle or other possible causes.

Medical causes:

- varicocele, infection (orchitis, epididymitis, HIV), ejaculation problems (retrograde or lack ejaculation due to surgery or disease), immune system, tumors, undescended testicles, hormone imbalance, blockage of tubules that transport semen, chromosome defects, celiac disease, certain medication (testosterone replacement therapy, anabolic steroid use, chemotherapy, antifungal and antibiotic medication)

Environmental causes:

- industrial chemicals, heavy metal exposure, radiation or X-rays, overheating of the testicles

Health, Lifestyle and other causes:

- drug, alcoholism, prolonged sitting, cigarette smoking, stress, obesity, sperm testing issues

Often semen with a decreased sperm concentration may also show significant abnormalities in sperm morphology and motility (technically “oligoasthenoteratozoospermia”).

The diagnosis of oligozoospermia is based on one low count in a semen analysis performed on two occasions. For many decades sperm concentrations of less than 20 million sperm/mL were considered low or oligospermic, recently, however, the WHO reassessed sperm criteria and established a lower reference point, less than 15 million sperm/mL, consistent with the 5th percentile for fertile men. Sperm concentrations fluctuate and oligospermia may be temporary (caused by different illnesses like high fever, exposure to certain drugs and poisons, smoking and drinking, radiotherapy and inflammation of the testes) or permanent (caused by hormonal disorders, malnutrition, stress and sexually transmitted diseases like Chlamydia and gonorrhea).

Sources usually classify oligospermia in 3 classes:

- Mild: concentrations 10 million – 20 million sperm/mL
- Moderate: concentrations 5 million – 10 million sperm/mL
- Severe: concentrations less than 5 million sperm/mL

Achieving a pregnancy naturally may be a challenge if the male suffers from a low sperm count. However, chances are good if the female partner is fertile; many couples with this problem have been successful.
Prognosis is more limited if there is a combination of factors that include sperm dysfunction and reduced ovarian reserve (physiological decrease in the number of eggs).

Low concentration of sperm may be associated with several diseases including:

**Undescended testes**

Undescended testis also called cryptorchidism is simply defined as the absence of one or both testes from the scrotum. Cryptorchidism is a testicular factor where the testes produces semen of poor quality despite adequate hormonal support and include.

**Klinefelter syndrome**

The term Klinefelter syndrome describes a group of chromosomal disorder in which there is at least one extra X chromosome to a normal male karyotype, 46,XY. The testes are abnormal, atrophic, or absent, and sperm production severely disturbed to absent. FSH levels tend to be elevated (hypergonadotropin) as the feedback loop is interrupted (lack of feedback inhibition on FSH). Testicular failure includes absence of failure production as well as low production and maturation arrest during the process of spermatogenesis.

**Kallmann syndrome**

Kallmann syndrome is a rare genetic condition that is characterized by a failure to start or a failure to complete puberty. It is also accompanied by a lack of sense of smell (anosmia) or a highly reduced sense of smell (hyposmia). The condition may be associated with pretesticular azoospermia, which is characterized by inadequate stimulation of otherwise normal testicles and genital tract. This genetic condition leads to gonadotropin-releasing hormone (GnRH) deficiency or gonadotropin deficiency commensurate with inadequate stimulation of the testes to produce sperm.

**Varicocele**

A varicocele is an abnormally dilated venous network that drains blood from the testicles. Varicocele is a major cause of male infertility, as it may impair spermatogenesis through several distinct physiopathological mechanisms. Elevated testicular temperature in men with reduced sperm quality and varicocele has been demonstrated as well as the reduction in temperature following varicocele repair. However, the mechanism by which temperature affects spermatogenesis is not clearly understood. Azoospermia (an undetectable amount of sperm in the semen) or severe oligospermia occurs in 4-13% of men with clinical varicoceles.

**Anorexia Nervosa**

Anorexia nervosa is an eating disorder characterized by a low weight, fear of gaining weight, a strong desire to be thin, and food restriction. Many people with anorexia see themselves as overweight even though they are in fact underweight. The possible explanation of low concentration of sperm in anorexia nervosa patients is due to alteration in circulation of reproductive hormone concentration.

**Thyroid disorders**

Hypothyroidism (disorder in which the thyroid gland does not produce enough thyroid hormone) can cause poor semen quality, poor testicular function and further low concentration of sperm. Lower function of thyroid gland causes elevated levels of thyrotropin-releasing hormone (TRH) and thyroid-stimulating hormone (TSH) and subsequently elevated level of prolactin (hyperprolactinemia). In case of hyperprolactinemia the pulsatile secretion of the gonadotropin releasing hormone (GnRH) is inhibited, which in turn causes decreased pulsatile release of follicle stimulating hormone (FSH), luteinizing hormone (LH), and testosterone, and it causes spermatogenic arrest, impaired sperm motility, and altered sperm quality.

**Oligozoospermia**

Oligozoospermia is a disease characterizes by lower sperm concentration (less than 15 million sperm/ml) caused by many reasons. There are many causes for oligospermia including:

- Pre-testicular factors refer to conditions that impede adequate support of the testes and include situations of poor hormonal support and poor general health.
Testicular factors refer to conditions where the testes produces semen of poor quality despite adequate hormonal support.

Post-testicular factors decrease male fertility due to conditions that affect the male genital system after testicular sperm production and include defects of the genital tract as well as problems in ejaculation.

**Prostatitis**

Prostatitis is inflammation of the prostate gland. Chronic prostatitis causes scarring of the prostatic and ejaculatory ducts with inflammatory-associated obstructions of the male reproductive tract and subsequent lower concentration of sperm.

**Prognosis**

Oligozoospermia is the abnormality of sperm count in semen. Depending upon the sperm count, the chance of conception can be lower than at a healthy man. The smaller sperm count is, the chance to conceive decreases. However, chances are very good if a female partner is fertile.

Besides, exclusion of other abnormal characteristics of sperm cells, such as shape or motility is necessary, and thus the combination of oligozoospermia with asthenozoospermia (reduced sperm motility) or teratozoospermia (a large number of spermatozoa with abnormal morphology. The combination of oligozoospermia with other diagnosis of abnormal characteristics of sperm cells may even more decrease the chances for successful conception.

**Find more about related issues**

**Organs**

**Testes**
Male gonads which produce both sperm and androgens, such as testosterone, and are active throughout the reproductive lifespan of the male.
Learn more at: [www.fertilitypedia.org/edu/organs/testes](http://www.fertilitypedia.org/edu/organs/testes)

**Diagnoses**

**Varicocele**
An abnormal enlargement of the pampiniform venous plexus in the scrotum.
Learn more at: [www.fertilitypedia.org/therapy/diag/varicocele](http://www.fertilitypedia.org/therapy/diag/varicocele)

**Anorexia Nervosa**
An eating disorder characterized by the maintenance of a body weight below average, fear of gaining weight, and a distorted body image.
Learn more at: [www.fertilitypedia.org/therapy/diag/anorexia-nervosa](http://www.fertilitypedia.org/therapy/diag/anorexia-nervosa)

**Undescended testes**
In the case of cryptorchidism one or both testes are absent from the scrotum. It is the most common etiologic factor of azoospermy in the adult.
Learn more at: [www.fertilitypedia.org/therapy/diag/undescended-testes](http://www.fertilitypedia.org/therapy/diag/undescended-testes)

**Thyroid disorders**
A medical condition impairing the function of the thyroid.
Learn more at: [www.fertilitypedia.org/therapy/diag/thyroid-disorders](http://www.fertilitypedia.org/therapy/diag/thyroid-disorders)

**Klinefelter syndrome**
The set of symptoms that result from two or more X chromosome in males.
Learn more at: [www.fertilitypedia.org/therapy/diag/klinefelter-syndrome](http://www.fertilitypedia.org/therapy/diag/klinefelter-syndrome)
Kallmann syndrome
A genetic condition where the primary symptom is a failure to start puberty or a failure to fully complete puberty.
Learn more at: www.fertilitypedia.org/therapy/diag/kallmann-syndrome

Oligozoospermia
Semen with a low concentration of sperm and is a common finding in male infertility.
Learn more at: www.fertilitypedia.org/therapy/diag/oligozoospermia

Prostatitis
An inflammation of the prostate gland.
Learn more at: www.fertilitypedia.org/therapy/diag/prostatitis

Testicular failure
The inability of the testicles to produce sperm or testosterone.
Learn more at: www.fertilitypedia.org/therapy/diag/testicular-failure

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