

Male Factor Infertility

Randine Lewis, Ph.D., Lic.Ac.

In the United States, it is estimated that approximately 15% of the population falls into the category of being unable to conceive. In 40% of these cases, sperm abnormalities are either a factor or the factor.

Male factor infertility is assessed based upon the following values:

- (1) deficient sperm count (less than 10 million per millileter; volume should be 1 - 5 mL of ejaculate)
- (2) insufficient sperm motility (over 60% should be motile and demonstrate purposeful forward movement), and/or
- (3) poor sperm morphology (more than 50-60% abnormal in form)

Infertility is defined as the inability to fertilize the ovum; whereas sterility is defined as the lack of sperm production.

The average ejaculate sample contains almost 200 million sperm. Amazingly enough, only a few dozen sperm actually reach the egg for a chance at penetration. This makes for some pretty ominous statistics for sperm overall. It is for this reason that sperm numbers must be so high, just to have a modicum of hope of reaching the vicinity of the egg traveling down the fallopian tube. If both partners have fertility issues, it seems truly a miracle that conception ever even takes place. Luckily, there are methods to improve sperm count, motility, and morphology.

Etiology

Male fertility depends upon adequate production of spermatozoa by the testes, unobstructed transit of sperm through the seminal tract, and satisfactory delivery to the ovum. Deficient sperm production may be affected by factors such as radiation and other environmental toxins, undescended testis, varicocele, traumatic induced or infectious testicular atrophy, drug effects, prolonged fever, and endocrine disorders that affect the hypothalamic-pituitary-gonadal axis. Antisperm antibodies may be a factor in certain couples, and may be produced by either partner. If a man produces antibodies to his own sperm, the antibodies will typically attack the sperm's tail. If the woman produces sperm antibodies, they will often attack the head of the sperm.

Congenital anomalies may obstruct the seminal tract, as well as certain surgical procedures. Low sperm counts can be aggravated, if not caused, by factors such as tight fitting underwear which raises the scrotal temperature, environmental toxins, urogenital infections, poor diet and prescription drugs (anti-hypertensives and anti-inflammatories can drastically reduce sperm count). Even anti-histamines negatively affect sperm count, by diminishing the seminal fluid, which contains high levels of anti-oxidants within it. Stress, lack of sleep, and overuse of alcohol, nicotine and marijuana decrease sperm production as well.

When the cause of the abnormality is known, often its identification and elimination can cure the problem. In other cases, deeper analysis is necessary.

Diagnosis

Significant medical history would include a history of childhood cryptorchidism (failure of the testes to descend), mumps, or history of sexual problems. Physical manifestations may include structural abnormalities, particularly the presence of a varicocele (scrotal swelling). The size and shape of the testicles should be within the normal range. General evaluation of secondary sex characteristics may provide clues to an underlying endocrine disorder. Hypothyroidism, hypopituitarism, other functional adrenal disorders, and hypogonadism are certain endocrine disorders which may possibly play a role in sperm abnormalities.

Male sterility is easier to diagnose with western methods than female infertility, but harder to treat. The only potential remedy is surgery. Yet many men with sperm problems are treated effectively with nutritional supplementation and herbs. If the physical examination reveals no abnormality and the man is not impotent (able to engage in intercourse, can become erect, and can ejaculate), the next diagnostic step consists of obtaining a sperm specimen and examining the ejaculate histologically for numbers, motility, and morphology (correct shape). A minimum of 2 to 3 specimens should be analyzed before determining ejaculate adequacy, as sperm values can fluctuate from one sample to the next.

Grossly the semen should look slightly viscous and opaque, and the volume should be between 1 and 5 mL.

Sperm density should be (optimally) over 20 million/mL. The results of semen analyses are recorded into the following categories:

- (1) adequate
- (2) aspermia - absence of ejaculate (surgical sequelae or neurogenic dysfunction)
- (3) azoospermia - absence of sperm in the semen (from testicular disorders)
- (4) oligospermia - lowered sperm density
- (5) diminished motility and impaired sperm forward progression
- (6) abnormal sperm morphology
- (7) antisperm antibodies.

An Overview of Sperm Production

Sperm production begins during puberty in response to the same hormones (LH and FSH) as in the female. But the LH signals cells within the leydig cells of the testes to produce testosterone, and FSH signals sertoli cells to produce sperm. Estrogen is also important in sperm formation, but too much dietary synthetic sources of estrogen can be harmful.

The seminal vesicles secrete substances which nourish the sperm, including fructose (which feeds the sperm), fibrinogen (which holds or coagulates the fluid together) and prostaglandins (which help the sperm penetrate the cervix). The prostate adds an alkaline fluid to the ejaculate. It is extremely important to keep the sperm in a more alkaline environment because the vaginal pH is relatively acidic. Seminal fluid in normal, fertile men contains antioxidant factors. In many subfertile men the seminal fluid may not

contain the protective elements, or the circulating free radicals may be so abundant that the seminal fluid is not capable of scavenging the damaged reactive oxygen species. Therefore, men with suboptimum sperm counts should include dietary sources of antioxidants.

The plasma membrane of human sperm contains high levels of polyunsaturated fatty acids, making them extremely susceptible to peroxidative changes. Free radical damage leads to functional impairment in the sperm, lowering motility and morphology.

Most vaginal lubricants are hostile to sperm. The only vaginal lubricants which have been found to support sperm longevity are egg whites (yes, really) and canola oil.

Treatment

Avoid excess environmental toxins including synthetic estrogens. Beef and dairy cattle are often fed bovine growth hormone to enhance growth and milk production. Most meat, dairy products, and even poultry and eggs contain substantial quantities of synthetic estrogens. Some reports have shown the presence of synthetic estrogen in sources of drinking water as well. Therefore, purified drinking water is suggested.

Pesticides and other chemicals which may impair spermatogenesis are found in non-organically grown produce. It is therefore best to consume organic fruits and vegetables.

Keep scrotal temperatures between 94 and 96 degrees Fahrenheit. Men with slight varicoceles are encouraged to use cool packs daily on the testicles.

Avoid saturated fats, hydrogenated oils, coconut, palm and especially cottonseed oil (contains gossypol which inhibits sperm formation).

Include polyunsaturated oils and essential fatty acids.

Natural Supplements

Soy products contain isoflavones or phytoestrogens which occupy estrogen receptor sites at the exclusion of circulating synthetic estrogens, and have a very weak estrogenic (which physiologically translates to anti-estrogenic) effect. Soy, other legumes, nuts and seeds also contain phytosterols which promote testosterone production.

Oxidative damage is present in almost half of the diagnosed cases of oligospermia. To prevent further free radical damage to developing sperm, it is recommended that the following nutritional supplementation be included:

Vitamin C - 2,000 mg/day (in divided doses)

Vitamin E - 800 IU/day

Beta-carotene - 100,000 IU/day

Selenium

Other nutritional supplements which are critical to sperm production include:

Zinc - 60 mg/day (necessary for sperm production and testosterone metabolism)

Vitamin B12 - 1000 ug/day (involved in the replication of cells)

L-Arginine - 4 g/day (an amino acid involved in cellular replication)

L-Carnitine - 600 mg, three times per day (found in very high levels in sperm, this amino acid transports fatty acids into the mitochondria and assists sperm motility)

Because of sperm's susceptibility to oxidative damage it is recommended to include free-radical scavengers like oligomeric proanthocyanidins. One of the most potent bioactive antioxidant sources comes from the extracts of pine bark extract, red wine extract, grape seed extract, and bilberry extract. Oligomeric proanthocyanidins may be purchased through health and nutritional sources.

TCM Diagnosis

From a Chinese perspective, the main causes of male infertility fall under two broad categories: one is a deficiency of the Kidneys (usually kidney Yang; sometimes kidney yin); the other is damp-heat in the pelvic organs. [Kidney deficiency may also affect the liver and spleen and lead to stasis of qi and blood.] The presence of a varicocele translates to blood stasis in our Chinese medical diagnosis. The swollen veins obstruct transit; it is therefore necessary to invigorate and move the blood so the sperm can develop normally.

Chinese Medical Treatment

Ginseng (Chinese, Korean, or Siberian), which supplements the source qi, promotes testicular growth, testosterone levels and sperm formation.

Cornus Officinalis Fructus, used to stabilize the kidney essence, and tonify the liver and kidneys, has been found to improve sperm motility.

Kidney yang tonics like Eucommia, Epimedii, Radix Morindae Officinalis and Cornu Cervi Parvum are used in the appropriate presentation of impotence, fatigue, low back pain, urinary frequency and spermatorrhea.

Sperm antibodies are addressed according to pattern discrimination, for both males and females, and treated accordingly.

Most men with diagnosed varicocele that I treat respond to improvement with the formula Cinnamon and Poria decoction or Gui Zhi Fu Ling Wan, which consists of Ramulus Cinnamomi Cassiae, Sclerotium Poriae Cocos, Radix Paeoniae, Cortex Moutan Radicis, and Semen Persicae. This formula, which is traditionally used for gynecologic disorders of blood stasis in the uterus, has proven very promising in treating morphologic sperm abnormalities resulting from varicocele. The formula invigorates the blood, inhibiting the pooling mechanism which causes the poor sperm quality. A study from the American Journal of Chinese Medicine, 24, 1996, on The Effects of Guizhi-fuling-wan on male infertility with varicocele was conducted by Ishikawa, Ohashi, Hayakawa, Kaneko & Hata at the Department of Urology, Ichikawa General Hospital in Japan. The abstract reported that 37 infertile patients with varicocele were

treated with Gui Zhi Fu Ling Wan, (7.5 g/day) for three months. Semen qualities such as sperm concentration and motility were graded. A varicocele disappearance rate of 80% was obtained with 40 out of 50 varicoceles, and sperm count and motility improvements were found in 71.4% and 62.1% of patients, respectively.

Journal of Chinese Medicine, Number 54, May 1997, entitled Xu Runsan's Experience in Treating Sperm Abnormality, stated the main causes of sperm abnormality are deficiency of the kidney yang or kidney yin, or deficiency of the kidneys which affects the liver and spleen and leads to stasis of qi and blood or downward flow of damp-heat.

Differentiation and treatment was made as follows:

1) Deficiency of kidney yang

aversion to cold

low back pain

coldness in the scrotum

deep and thready pulse

thin and white tongue coating

You Gui Wan

Shu Di Huang, Shan Yao, Shan Zhu Yu, Tu Si Zi, Gou Qi Zi, Lu Jiao Jiao, Du Zhong, Dang Gui, Rou Gui, Fu Zi

for patients with aspermia remove Du Zhong, Rou Gui and Fu Zi and add Chuan Xiong and Hong Shen

for patients with absence of sperm liquefaction add Bei Xie

for patients with dead sperm add Xu Duan

Giovanni Maciocia's Obstetrics & Gynecology in Chinese Medicine suggests treating kidney yang deficiency with the prescription:

Wu Zi Yan Zong Wan, Five Seeds Developing the Ancestors Pill:

Lycium, Cuscuta, Schisandra, Semen Plantaganis, and Fructus Rubrus.

2) Deficiency of kidney yin

emaciation

irritability

weak, frail pulse

red tongue body

Zuo Gui Wan variation

Shu Di Huang, Shan Yao, Shan Zhu Yu, Tu Si Zi, Gou Qi Zi, Gui Jiao, Lu Jiao Jiao, Niu Xi

for patients with aspermia add Dang Gui, Chuan Xiong, Nu Zhen Zi, and Han Lian Cao

for patients with absence of sperm liquefaction add Dan Shen, Bei Xie, and Huang Bai

Stimulate acupuncture points

Sp 6 Three yin meeting

Ren 4

K3

K7

A study conducted by the College of Acupuncture & Moxabustion at the Shanghai University of TCM, Shanghai, China, reported 35 cases of dysspermia infertility were treated only with low frequency electroacupuncture on Sp6, Ren 12 and Ren 4 along with moxibustion (heating the acupoints). The results of the study showed improvement in lumbosacral aching, frequent urination, emission and prospermia; activity and quantity of sperm, semen quality and spermatogenic environment (semen quantity increased obviously after treatment with significant decrease of mucosity and liquefaction time) improved. Sex hormones were normalized as follows:

33.5% improvement in FSH

35.3% in LH

57.1% in estrogen

65.1% in testosterone