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Questions

Write shorts notes on

- 1 Male infertility
2. Testosterone

Male infertility is any health issue in a man that lowers the chances of his female partner getting pregnant.

About 13 out of 100 couples can't get pregnant with unprotected sex. There are many causes for infertility in men and women. In over a third of infertility cases, the problem is with the man. This is most often due to problems with his sperm production or with sperm delivery.

What Happens Under Normal Conditions?

The man's body makes tiny cells called sperm. During sex, ejaculation normally delivers the sperm into the woman's body.

The male reproductive system makes, stores, and transports sperm. Chemicals in your body called hormones control this. Sperm and male sex hormone (testosterone) are made in the 2 testicles. The testicles are in the scrotum, a sac of skin below the penis. When the sperm leave the testicles, they go into a tube behind each testicle. This tube is called the epididymis.

Just before ejaculation, the sperm go from the epididymis into another set of tubes. These tubes are called the vas deferens. Each vas deferens leads from the epididymis to behind your bladder in the pelvis. There each vas deferens joins the ejaculatory duct from the seminal vesicle. When you ejaculate, the sperm mix with fluid from the prostate and seminal vesicles. This forms semen. Semen then travels through the urethra and out of the penis.

Male fertility depends on your body making normal sperm and delivering them. The sperm go into the female partner's vagina. The sperm travel through her cervix into her uterus to her fallopian tubes. There, if a sperm and egg meet, fertilization happens.

The system only works when genes, hormone levels and environmental conditions are right.

Causes

Making mature, healthy sperm that can travel depends on many things. Problems can stop cells from growing into sperm. Problems can keep the sperm from reaching the egg. Even the temperature of the scrotum may affect fertility. These are the main causes of male infertility:

Sperm Disorders

The most common problems are with making and growing sperm. Sperm may:

- not grow fully
- be oddly shaped
- not move the right way
- be made in very low numbers (oligospermia)
- not be made at all (azoospermia)

Sperm problems can be from traits you're born with. Lifestyle choices can lower sperm numbers. Smoking, drinking alcohol, and taking certain medications can lower sperm numbers. Other causes of low sperm numbers include long-term sickness (such as kidney failure), childhood infections (such as mumps), and chromosome or hormone problems (such as low testosterone).

Damage to the reproductive system can cause low or no sperm. About 4 out of every 10 men with total lack of sperm (azoospermia) have an obstruction (blockage). A birth defect or a problem such as an infection can cause a blockage.

Varicoceles

Varicoceles are swollen veins in the scrotum. They're found in 16 out of 100 of all men. They are more common in infertile men (40 out of 100). They harm sperm growth by blocking proper blood drainage. It may be that varicoceles cause blood to flow back into your scrotum from your belly. The testicles are then too warm for making sperm. This can cause low sperm numbers.

For more information please refer to the Varicoceles information page.

Retrograde Ejaculation

Retrograde ejaculation is when semen goes backwards in the body. They go into your bladder instead of out the penis. This happens when nerves and muscles in your bladder don't close during orgasm (climax). Semen may have normal sperm, but the semen cannot reach the vagina.

Retrograde ejaculation can be caused by surgery, medications or health problems of the nervous system. Signs are cloudy urine after ejaculation and less fluid or "dry" ejaculation.

Immunologic Infertility

Sometimes a man's body makes antibodies that attack his own sperm. Antibodies are most often made because of injury, surgery or infection. They keep sperm from moving and working normally. We don't know yet exactly how antibodies lower fertility. We do know they can make it hard for sperm to swim to the fallopian tube and enter an egg. This is not a common cause of male infertility.

Obstruction

Sometimes sperm can be blocked. Repeated infections, surgery (such as vasectomy), swelling or developmental defects can cause blockage. Any part of the male reproductive tract can be blocked. With a blockage, sperm from the testicles can't leave the body during ejaculation.

Hormones

Hormones made by the pituitary gland tell the testicles to make sperm. Very low hormone levels cause poor sperm growth.

Chromosomes

Sperm carry half of the DNA to the egg. Changes in the number and structure of chromosomes can affect fertility. For example, the male Y chromosome may be missing parts.

Medication

Certain medications can change sperm production, function and delivery. These medications are most often given to treat health problems like:

- arthritis
- depression
- digestive problems
- infections
- high blood pressure
- cancer

Diagnosis

Causes of male fertility can be hard to diagnose. The problems are most often with sperm production or delivery. Diagnosis starts with a full history and physical exam. Your health care provider may also want to do blood work and semen tests.

History and Physical Exam

Your health care provider will take your health and surgical histories. Your provider will want to know about anything that might lower your fertility. These might include defects in your reproductive system, low hormone levels, sickness or accidents.

Your provider will ask about childhood illnesses, current health problems, or medications that might harm sperm production. Such things as mumps, diabetes and steroids may affect fertility. Your provider will also ask about your use of alcohol, tobacco, marijuana and other recreational drugs. He or she will ask if you've been exposed to ionizing radiation, heavy metals or pesticides. Heavy metals are an exposure issue (e.g. mercury, lead arsenic). All of these can affect fertility.

Your health care provider will learn how your body works during sex. He or she will want to know about you and your partner's efforts to get pregnant. For example, your healthcare provider may ask if you've had trouble with erections.

The physical exam will look for problems in your penis, epididymis, vas deferens, and testicles. Your doctor will look for varicoceles. They can be found easily with a physical exam.

Semen Analysis

Semen analysis is a routine lab test. It helps show the cause of male infertility. The test is most often done twice. Semen is collected by having you masturbate into a sterile cup. The semen sample is studied. It can be checked for things that help or hurt conception (fertilization).

Your health care provider will study your sperm volume, count, concentration, movement ("motility"), and structure. The quality of your sperm tells much about your ability to conceive (start a pregnancy). For instance, semen is normal if it turns from a pearly gel into a liquid within 20 minutes. If not, there may be a problem with the seminal vesicles, your male sex glands. Lack of fructose (sugar) in a sperm-free sample may mean there are no seminal vesicles. Or it may mean there is a blocked ejaculatory duct.

Even if the semen test shows low sperm numbers or no sperm, it may not mean you are permanently infertile. It may just show there's a problem with the growth or delivery of sperm. More test may be needed.

Transrectal Ultrasound

Your health care provider may order a transrectal ultrasound. Ultrasound uses sound waves bouncing off an organ to get a picture of the organ. A probe is placed in the rectum. It beams sound waves to the nearby ejaculatory ducts. The health care provider can see if structures such as the ejaculatory duct or seminal vesicles are poorly formed or blocked.

Testicular Biopsy

If a semen test shows a very low number of sperm or no sperm you may need a testicular biopsy. This test can be done in an operating room with general or local anesthesia. A small cut is made in the scrotum. It can also be done in a clinic using a needle through the numbed scrotal skin. In either case, a small piece of tissue from each testicle is removed and studied under a microscope. The biopsy serves 2 purposes. It helps find the cause of infertility. And it can collect sperm for use in assisted reproduction.

Hormonal Profile

The health care provider may check your hormones. This is to learn how well your testicles make sperm. It can also rule out major health problems. For example, follicle-stimulating hormone (FSH) is the pituitary hormone that tells the testicles to make sperm. High levels may mean your pituitary gland is trying to get the testicles to make sperm, but they won't.

Treatment

Treatment depends on what's causing infertility. Many problems can be fixed with drugs or surgery. This would allow conception through normal sex. The treatments below are broken into 3 categories:

Non-surgical therapy for Male Infertility

Surgical Therapy for Male Infertility

Treatment for Unknown Causes of Male Infertility

Non-Surgical Treatment for Specific Male Infertility Conditions

Many male infertility problems can be treated without surgery.

Anejaculation

Anejaculation is when there's no semen. It's not common, but can be caused by:

- spinal cord injury
- prior surgery
- diabetes
- multiple sclerosis
- abnormalities present at birth
- other mental, emotional or unknown problems

Drugs are often tried first to treat this condition. If they fail, there are 2 next steps. Rectal probe electroejaculation (RPE, better known as electroejaculation or EEJ) is one. Penile vibratory stimulation (PVS) is the other.

Rectal probe electroejaculation is most often done under anesthesia. This is true except in men with a damaged spinal cord. RPE retrieves sperm in 90 out of 100 men who have it done. Many sperm are collected with this method. But sperm movement and shape may still lower fertility.

Penile vibratory stimulation vibrates the tip and shaft of the penis to help get a natural climax. While non-invasive, it doesn't work as well as RPE. This is especially true in severe cases.

Assisted reproductive techniques like in vitro fertilization (IVF) and intracytoplasmic sperm injection (ICSI) are of great value to men with anejaculation.

Congenital Adrenal Hyperplasia (CAH)

CAH is a rare cause of male infertility. It involves flaws from birth in certain enzymes. This causes abnormal hormone production. CAH is most often diagnosed by looking for too much steroid in the blood and urine. CAH can be treated with hormone replacement.

Genital Tract Infection

Genital tract infection is rarely linked to infertility. It's only found in about 2 out of 100 men with fertility problems. In those cases, the problem is often diagnosed from a semen test. In the test, white blood cells are found. White blood cells make too much "reactive oxygen species" (ROS). This lowers the chances of sperm being able to fertilize an egg. For example, a severe infection of the epididymis and testes may cause testicular shrinking and epididymal duct blockage. The infection doesn't have to be sudden to cause problems.

Antibiotics are often given for full-blown infections. But they're not used for lesser inflammations. They can sometimes harm sperm production. Non-steroidal anti-inflammatories (such as ibuprofen) are often used instead.

Inflammation from causes other than infection can also affect fertility. For example, chronic prostatitis, in rare cases, can also block the ejaculatory ducts.

Hyperprolactinemia

Hyperprolactinemia is when the pituitary gland makes too much of the hormone prolactin. It's a factor in infertility and erectile dysfunction. Treatment depends on what's causing the increase. If medications are the cause, your health care provider may stop them. Drugs may be given to bring prolactin levels to normal. If a growth in the pituitary gland is found, you may be referred to a neurosurgeon.

Testosterone is a male sex hormone that is important for sexual and reproductive development. The National Institutes of Health regards testosterone as the most important male hormone. Women also produce testosterone, but at lower levels than men.

Testosterone belongs to a class of male hormones called androgens, which are sometimes called steroids or anabolic steroids. In men, testosterone is produced mainly in the testes, with a small amount made in the adrenal glands. The brain's hypothalamus and pituitary gland control testosterone production. The hypothalamus instructs the pituitary gland on how much testosterone to produce, and the pituitary gland passes the message on to the testes. These communications happen through chemicals and hormones in the bloodstream.

Testosterone is involved in the development of male sex organs before birth, and the development of secondary sex characteristics at puberty, such as voice deepening, increased penis and testes size, and growth of facial and body hair.

The hormone also plays a role in sex drive, sperm production, fat distribution, red cell production, and maintenance of muscle strength and mass, according to the Mayo Clinic. For these reasons, testosterone is associated with overall health and well-being in men. One 2008 study published in the journal *Frontiers of Hormone Research* even linked testosterone to the prevention of osteoporosis in men.

In women, the ovaries and adrenal glands produce testosterone. Women's total testosterone levels are about a tenth to a twentieth of men's levels.

Low testosterone

Levels of testosterone naturally decrease with age, but exactly what level constitutes "low T," or hypogonadism, is controversial, Harvard Medical School said. Testosterone levels vary wildly, and can even differ depending on the time of day they're measured (levels tend to be lower in the evenings). The National Institutes of Health includes the following as possible symptoms of low testosterone:

- Reduced sex drive
- Erectile dysfunction or impotence
- Increased breast size
- Lowered sperm count
- Hot flashes
- Depression, irritability and inability to concentrate
- Shrunk and softened testes
- Loss of muscle mass or hair
- Bones becoming prone to fracture

It is important to note, however, that conditions other than low T can cause erectile dysfunction, such as diseases in the nerves or blood.

Doctors typically to treat men for hypogonadism if they have symptoms of low testosterone and their testosterone levels are below 300 nanograms per deciliter.

High testosterone

High testosterone levels can cause problems in women, including irregular menstrual cycles, increases in body hair and acne, and a deepening of the voice. Women with polycystic ovarian syndrome have high levels of male hormones, including testosterone, which can be a cause