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**DATE:** 22<sup>ND</sup> APRIL, 2020

**ASSIGNMENT:** WRITE SHORT NOTE ON:

- ❖ SPERMATOGENESIS
- ❖ TESTOSTERONE
- ❖ SEMEN
- ❖ MALE ORGASM
- ❖ MALE-INFERTILITY

**SPERMATOGENESIS:** Spermatogenesis is the origin and development of sperm cells within the male reproductive organ called the testes. The sperm cells are produced within the walls of the seminiferous tubules. Some randomly scattered cells called the sertoli cells that are responsible for providing the sperm cells support, nutrient and blood product. As the sperm cells grow, the sertoli cells help to transport them from the outer surface of the seminiferous tubule to the central channel the tubule. Sperm cells are continually being produced by the testes but not all parts of the seminiferous tubule produces sperm cells at the same time. One immature germ cell takes as long as 74 days to reach maturation. The immature cells called spermatogonia are derived from sperm cells in the outer walls of the seminiferous tubules. The stem cells are composed almost entirely of nuclear materials. The stem cells multiply by mitosis, half of the new cells go to become the future sperm cells and the other half remain as the stem cells for constant source of additional germ cells. The sperm cells are known as primary sperm cells. They move from the outer portion of the seminiferous tubule to a more central location and attach them-selves around the sertoli cells. The primary stem cells develop by increasing the amount the cytoplasm and the organelles in the cytoplasm. After a resting phase, the primary cell divide to form secondary sperm cells. During cell division, the nuclear material splits. In the primary sperm cells there are 46 chromosomes but in the secondary sperm cells there are 23 chromosomes. The 23 chromosomes at the secondary sperm cells is due to the fact that the egg will have another 23 chromosomes so when combined, the offspring can have the normal 46 chromosomes. The secondary sperm cell are oval in shape (the head of the sperm) and the nuclear material becomes more condensed to become mature. Once the sperm is mature, it

is transported through the long seminiferous tubule and stored in epididymis until it is ready to leave the male body.

**TESTOSTERONE:** Testosterone is a hormone produced by the testes primarily and the ovaries of women also make testosterone, although in small amounts. The production of testosterone starts to increase during puberty and drops after age 30. It plays an important role in sperm production and it's associated with sex drive. It also stimulates the secondary sex characteristics during puberty. Low testosterone level ( T level) can cause some symptoms in men; decreased sex drive, less energy, weight gain, depression, moodiness, low-self esteem, less body hair, thinner bones.

### **Important role of the testosterone**

- Development of the penis and testes.
- Deepening of the voice during puberty.
- Appearance of facial and pubic hair starting at puberty; later in life, it may play a role in balding.
- Ovarian function.
- Muscle size and strength.
- Bone growth and strength.

Adolescent boys with too little testosterone may not experience normal masculinisation. Signals sent from brain to the pituitary gland at the base of the brain controls the production of testosterone in men. The pituitary gland releases signals to the testes to produce testosterone. The proper balance between testosterone and estrogen is important for the ovaries to

work normally. Testosterone is synthesized in the body from Cholesterol but the amount of cholesterol in your body doesn't affect your amount of testosterone. The testosterone level are too carefully controlled by the pituitary gland in the brain for that to occur.

### **Problems associated with abnormally high testosterone level in men;**

- Low sperm
- Shrinking of the testicles and impotence.
- Heart muscles damage.
- Prostate enlargement with difficulty urinating.
- Acne
- Insomnia
- Headaches
- High blood pressure and cholesterol.
- Weight gain
- Fluid retention with swelling of the legs and feet.
- Increased muscle mass.
- Increased risk of blood clots.
- Mood swings, euphoria, irritability, impaired judgment, delusions.

### **Disease and conditions that affect testosterone**

A drop in testosterone can be caused by conditions

- Testes: Direct injury, castration, infection, radiation treatment, chemotherapy, tumors.
- Pituitary and hypothalamus gland: Tumor medication, HIV/AIDS, certain infections and autoimmune conditions.
- Genetic disease such as klinefelter syndrome, hemochromatosis (affect the testosterone)

Women may have a testosterone deficiency due to disease of the pituitary, hypothalamus or adrenal gland in addition to removal of the ovaries.

**SEMEN** : Semen is also known as seminal fluid. It is an organic fluid that contains spermatozoa. It is secreted by the sexual gonads and other sexual organ of males or hermaphroditic animals and can fertilize the female ovum. Seminal fluid contains several compounds; spermatozoa, fructose (promotes the survival of spermatozoa and provides a medium which they can move or swim), proteolytic and other enzymes. Semen produced and originates from the seminal vesicle which is located in the pelvis. Ejaculation is the process that results in the discharge of semen. Semen contains the genetic material of the father. They contribute about 2 to 5 percent of the total semen volume. As sperm travels through the reproductive tracts, they are bathed in fluids produced and secreted by the various tubules and glands of the reproductive system. After the testes, sperm is stored in the epididymis in which potassium, sodium and glycylphosphorylcholine (an energy source for sperm) are contributed to

the sperm cells. Sperm matures in the epididymis and its stored in the ampulla. The ampulla secretes a yellowish fluid, ergothioneine. It is a substance that reduces chemical substance by removing oxygen. The ampulla also secretes fructose which is a sugar that nourishes the sperm. During ejaculation, liquids from prostate gland and seminal vesicles are added to the sperm to dilute its concentration and provide a suitable environment for them. The fluid contributed by the seminal vesicles are approximately 60 percent of the total semen volume. The fluid contains; fructose, amino acids, citric acid, phosphorus, potassium and hormones known as prostaglandins. The prostate gland contributes about 30 percent of the seminal fluid. The constituents of the secretion of the prostate gland are; mainly citric acids, acid phosphatase, calcium, sodium, zinc, potassium, protein splitting enzymes and fibrolysin. A small amount of fluid is secreted by the bulbourethral and urethral glands which is a thick, clear lubricating protein commonly known as mucus. Sperm motility is made possible by small quantities of potassium and magnesium, the presence of adequate amount of oxygen in the plasma provides the semen with the proper temperature and slightly alkaline ph of 7 to 7.5. Sulfate chemical in semen helps prevent the sperm cells from swelling and the fructose is the main nutrient to sperm cells. The total volume of semen for each ejaculation of a human male is an average between 2 to 5ml. In stallions, the average ejaculation is about 125ml. In human beings, ejaculation contains normally 200-300 million sperms.

**MALE ORGASM:** Male orgasm is the orgasm relating to the male gender. Orgasm is when the pleasure peaks and releases. It can last from a few

seconds to a few minutes. Orgasm is widely regarded as the peak of the sexual excitement. It is a powerful feeling of physical pleasure and sensation, which includes a discharge of accumulated erotic. Orgasm includes the pelvic contraction and intense pleasure. Ejaculation is the explosion of semen from the penis. If ejaculation is going to happen, it happens during orgasm. Orgasm can be ejaculatory or non-ejaculatory. The production of semen is not necessary for orgasm to occur, this orgasm is called dry orgasm. Dry orgasm is harmless and just as enjoyable as the ejaculatory orgasm but it is dangerous for people trying to have a child. Orgasm is part of the sexual response cycle which happens in stages, everybody is different so the duration, intensity and even the order of the stages can vary from one person to another;

- Excitement: The excitement phase is the kick off to the sexual response cycle. It can be triggered by thoughts, touch, images or other stimuli depending on what turns you on. During this phase, the heart rate and breathing speeds up, blood pressure increases and the increased blood flow to the genitals causes an erection. When a man is stimulated physically or psychologically, he gets an erection. Blood flows into the corpora causing the penis to grow in size and become rigid. The testicles are drawn up toward the body as the scrotum tightens.
- Plateau: It is the intensified version of the excitement phase in which the penis and testicles continue to increase in size. As the blood vessels in and around the penis fill with blood, the glans and testicles increases size. In addition, thigh and buttocks muscles tense, blood pressure rises, the pulse quickens and the rate of breathing increases.
- Organ: This is when your pleasure peaks and releases, it can last from a

few seconds to a few minutes. Semen is forced into the urethra by a series of contraction in the pelvic floor muscles, prostate gland, seminal vesicles and the vas deference. Also, the semen to be forced out of the penis in a process called ejaculation. The average male orgasm last for 10-30 seconds.

- Resolution: The man now enters a temporary recovery phase where further orgasm are not possible. This is known as the refractory period and its length varies from person to person. It can last from a few minutes to a few days and this period generally grows longer as the man ages. During this phase, the man's penis and testicles return to their original size. The rate of breathing will be heavy and fast and the pulse will be fast.

### **Things that can affect orgasm ability**

- Premature ejaculation
- Retrograde ejaculation
- Anorgasmia
- Alcohol or substance use
- Depression, stress and anxiety

### **Causes of orgasm**

Orgasm are a sexual experience typically experienced as part of a sexual response cycle. They often occur following the continual stimulation of erogenous zones such as the genitals, anus, nipples and perineum.

Physiologically, orgasm occur following two basic responses to



continual stimulation:

- Vasocongestion: This process the body tissue fill up with blood, swelling in size as a result.
- Myotonia : This process muscles tense including both voluntary flexing and involuntary contracting.

### **Disorder**

- Distress
- Frustration
- Feeling of shame for both the sperm experiencing the symptoms and their partners.

**MALE INFERTILITY:** Male infertility is a medical condition that causes a man not to be able to impregnate a woman. Male infertility depend on how the body makes sperm and delivers them.

### **Causes of male in fertility**

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

Not grow fully.

Be oddly shaped.

Not moving the right way.

Be made in very low numbers (oligospermia)

Azoospermia

Sperm problems can be from traits you're born with, lifestyles like smoking, drinking alcohol and certain medications and low sperm count. Long-term sickness, damage of reproductive system, childhood infections and chromosome or hormonal problems can cause low sperm count.

- **Varicoceles:** They are swollen veins in the scrotum. They are found in 16 out of 100 men. They harm sperm growing by blocking proper blood drainage.
- **Retrograde ejaculation:** This is when sperm goes backward in the body, they go into the bladder instead of out the penis. This happens when nerves and muscles in your bladder don't close during orgasm. It can be caused surgery, medication or health problems of the nervous system.
- **Immunologic infertility:** Some times, antibodies in the man's body are produced to attack his own sperm. These antibodies are mostly made because of injury, surgery or infection. These antibodies keep the sperm from moving and working normally.
- **Obstruction:** Sperm can be blocked in some cases. Obstruction can be caused by repeated infections, surgery, swelling or developmental defects. Any part of the male reproductive tract can be blocked.
- **Hormones :** Testosterone is a hormone produced for sperm production, very low hormone level causes poor sperm growth.

**Chromosomes:** The sperm carries half the DNA of the offspring. Changes in the number a structure of the chromosomes can affect fertility.

## **Medications**

Some medications given to treat health conditions that can change sperm production function and delivery.

- Arthritis
- Depression
- Digestion problems
- Infections
- High blood pressure
- Cancer

## **Treatments**

The treatment for male infertility are in three groups;

- Non- surgical therapy
- Surgical therapy
- Treatment for unknown causes