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COURSE TITLE: Renal Physiology, Body fluid and Temperature Regulation and Autonomic Nervous System.

**Question**

Write short notes on the following:

1. Spermatogenesis
2. Testosterone
3. Semen
4. Male orgasm
5. Male infertility

ANSWER

1. Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis. The process starts with the mitotic division of the stem cells located close to the basement membrane of the tubules. These cells are called spermatogonial stem cells.

The mitotic division of these produces two type of cells. Type A cells replenish the stem cells, and type B cells differentiate into primary spermatocytes. The primary spermatocyte divides meiotically (meiosis I) into two secondary spermatocytes; each secondary spermatocytes divides into two equal haploid spermatids by Meiosis.

The spermatids are transformed into spermatozoa (sperm) by the process of spermiogenesis. These develop into mature spermatozoa, also known as sperm cells. Thus, the primary spermatocyte gives rise to two cells the secondary spermatocyte and the two secondary by their subdivision produce four spermatozoa and four haploid cells.

1. Testosterone is the primary male sex hormone. In male humans, testosterone plays a key role in the development of male reproductive tissues such as testes and prostate, as well as promoting secondary sexual characteristics such as increased muscle and bone mass, and the growth of body hair.

In addition, testosterone is involved in health and well-being, and the prevention of osteoporosis. Insufficient levels of testosterone in men may lead to abnormalities including frailty and bone loss.

1. Semen is also known as seminal fluid, it is an organic fluid that contains spermatozoa. It is secreted by the gonads (sexual glands) and other sexual organs of male or hermaphroditic animals and can fertilize the female ovum. In humans, seminal fluid contains several components besides spermatozoa: proteolytic and other enzymes as well as fructose are elements of seminal fluid which promote the survival of spermatozoa, and provide a medium through which they can move or "swim". Semen is produced and originates from the seminal vesicle, which is located in the pelvis. The process that results in the discharge of semen is called ejaculation. Semen is also a form of genetic material. In animals, semen has been collected for cryoconservation. Cryoconservation of animal genetic resources is a practice that calls for the collection of genetic material in efforts for conservation of a particular breed.
2. Male Orgasm: Orgasm (from Greek ὀργασμός orgasmos "excitement, swelling"; also sexual climax) is the sudden discharge of accumulated sexual excitement during the sexual response cycle, resulting in rhythmic muscular contractions in the pelvic region characterized by sexual pleasure. They are often associated with other involuntary actions, including muscular spasms in multiple areas of the body, a general euphoric sensation and, frequently, body movements and vocalizations. The period after orgasm (known as the refractory period) is often a relaxing experience, attributed to the release of the neurohormones oxytocin and prolactin as well as endorphins (or "endogenous morphine").

Human orgasms usually result from physical sexual stimulation of the penis in males (typically accompanying ejaculation) and of the clitoris in females. Sexual stimulation can be by self-practice (masturbation) or with a sex partner (penetrative sex, non-penetrative sex, or other sexual activity).

The health effects surrounding the human orgasm are diverse. There are many physiological responses during sexual activity, including a relaxed state created by prolactin, as well as changes in the central nervous system such as a temporary decrease in the metabolic activity of large parts of the cerebral cortex while there is no change or increased metabolic activity in the limbic (i.e., "bordering") areas of the brain. There is also a wide range of sexual dysfunctions, such as anorgasmia.

1. Male Infertility: refers to a male's inability to cause pregnancy in a fertile female. In humans it accounts for 40–50% of infertility. It affects approximately 7% of all men. Male infertility is commonly due to deficiencies in the semen, and semen quality is used as a surrogate measure of male fecundity.

Causes

1. Immune fertility
2. Genetics

Others being: Age, Malaria, Humps, Trauma.

Prevention

Some strategies suggested or proposed for avoiding male infertility include the following:

Avoiding smoking as it damages sperm DNA

Avoiding heavy marijuana and alcohol use.

Avoiding excessive heat to the testes.

Maintaining optimal frequency of coital activity: sperm counts can be depressed by daily coital activity and sperm motility may be depressed by coital activity that takes place too infrequently (abstinence 10–14 days or more)