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The organs of the male reproductive system are specialized for three primary functions:To produce, maintain, transport, and nourish the male reproductive cells (sperm), and protective fluid (semen).To discharge sperm within the female reproductive tract.To produce and secrete male sex hormones.

Unlike the female reproductive system, most of the male reproductive systems are located outside the body. The male reproductive system is dependent on hormones which are chemicals that regulate the activity of many different types of cell or organs.

The primary hormones involved in the male reproductive system are: frollicle/stimulating hormones, luteinizing hormones and the testosterone.

The following are some of the functions of the male reproductive organs.

ORGASM

There is no standard definition of orgasm. Each specialty such as endocrinology or psychology examines this activity from each one's perspective, making it difficult to reach a consensus on the definition. Orgasm is generally associated with ejaculation, although the two processes are physiologically different. Certain physiological features are associated with orgasm, including hyperventilation up to 40 breaths/min, tachycardia, and high blood pressure. In fact, faster heart rate was found to be an indicator of " real " male orgasm during intravaginal intercourse, differentiating it from " fake " orgasm. Orgasm is also associated with powerful and highly pleasurable pelvic muscle contractions (especially ischiocavernosus and bulbocavernosus), along with rectal sphincter contractions and facial grimacing. There is also an associated release and elevation in PRL and oxytocin levels after orgasm; however, the significance of this elevation is not entirely clear .

Studies using positron emission tomography, which measures changes in regional cerebral blood flow, have identified areas of activation in the brain during orgasm. Primary intense activation areas are noted to be in the mesodiencephalic transition zones, which includes the midline, the

zona incerta, ventroposterior and intralaminar thalamic nuclei, the lateral segmental central field, the suprafascicular nucleus, and the ventral tegmental area. Strong increases were seen in the cerebellum. Decreases were noted at the entorhinal cortex and the amygdale.

Quality and intensity of orgasms are variable. For instance, short fast buildup of sexual stimulation toward orgasm is associated with less intense orgasms than slow buildup. Early orgasms are less satisfying than later orgasms in life as the person learns to accept the pleasure associated with orgasms. Lower levels of androgen are associated with weaker orgasms, such as in hypogonadism or in older age. It has been suggested that pelvic muscle exercises, particularly the bulbocavernosus and ischiocavernosus muscles, through contracting those muscles 60 times, 3 times daily for 6 weeks will enhance the pleasure associated with orgasm. However, the effort and time associated with such exercises prevent their utilization. The orgasm induced through deep prostatic massage is thought to be different from the orgasm associated direct penile stimulation. Although penile stimulation orgasms are associated with 4–8 pelvic muscle contractions, prostatic massage orgasms are associated with 12 contractions. Prostatic massage orgasms are thought to be more intense and diffuse than penile stimulation orgasms, but they require time and practice and are not liked by many men.

Following orgasm in men is a temporary period of inhibition of erection or ejaculation called the refractory period. This is a poorly understood phenomenon, with some investigators suggesting a central rather than spinal mechanism causing it . Elevated levels of PRL and serotonin after orgasm have been suggested as a potential cause; however, there is much debate about their exact role. More research is still needed in the area of male organs.

SPERMATOGENESIS

Spermatogenesis is the process by which haploid spermatozoa develop from germ cells in the seminiferous tubules of the testis. This 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 types of cells.

Type A cells replenish the stem cells,

Type B cells differentiate into primary spermatocytes. The primary spermatocyte divides meiotically (Meiosis I) into two secondary spermatocytes; each secondary spermatocyte divides into two equal haploid spermatids by Meiosis II. 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 spermatocytes, and the two secondary spermatocytes by their subdivision produce four spermatozoa and four haploid cells.

Spermatozoa are the mature male gametes in many sexually reproducing organisms. Thus, spermatogenesis is the male version of gametogenesis, of which the female equivalent is oogenesis. In mammals it occurs in the seminiferous tubules of the male testes in a stepwise fashion. Spermatogenesis is highly dependent upon optimal conditions for the process to occur correctly, and is essential for sexual reproduction. DNA methylation and histone modification have been implicated in the regulation of this process. It starts at puberty and usually continues uninterrupted until death, although a slight decrease can be discerned in the quantity of produced sperm with increase in age.

Spermatogenesis starts in the bottom part of seminiferous tubes and, progressively, cells go deeper into tubes and moving along it until mature spermatozoa reaches the lumen, where mature spermatozoa are deposited. The division happens asynchronically; if the tube is cut transversally one could observe different maturation states. A group of cells with different maturation states that are being generated at the same time is called a spermatogenic wave.

Spermatogenesis takes place within several structures of the male reproductive system. The initial stages occur within the testes and progress to the epididymis where the developing gametes mature and are stored until ejaculation. The seminiferous tubules of the testes are the starting point for the process, where spermatogonial stem cells adjacent to the inner tubule wall divide in a centripetal direction—beginning at the walls and proceeding into the innermost part, or lumen—to produce immature sperm. Maturation occurs in the epididymis. The location [Testes/Scrotum] is specifically important as the process of spermatogenesis requires a lower temperature to produce viable sperm, specifically 1°-8 °C lower than normal body temperature of 37 °C (98.6 °F). Clinically, small fluctuations in temperature such as from an athletic support strap, causes no impairment in sperm viability or count.

MALE INFERTILITY

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.

Factors relating to male infertility include:]

Immune infertility

Antisperm antibodies (ASA) have been considered as infertility cause in around 10–30% of infertile couples. ASA production are directed against surface antigens on sperm, which can interfere with sperm motility and transport through the female reproductive tract, inhibiting capacitation and acrosome reaction, impaired fertilization, influence on the implantation process, and impaired growth and development of the embryo. Risk factors for the formation of antisperm antibodies in men include the breakdown of the blood- testis barrier, trauma and surgery, orchitis, varicocele, infections, prostatitis, testicular cancer, failure of immunosuppression and unprotected receptive anal or oral sex with men.

Genetics

Chromosomal anomalies and genetic mutations account for nearly 10–15% of all male infertility cases.

Klinefelter Syndrome

One of the most commonly known causes of infertility is Klinefelter Syndrome, affecting 1 out of 500–1000 newborn males. Klinefelter Syndrome is a chromosomal defect that occurs during gamete formation due to a non-disjunction error during cell division. Resulting in males having smaller testes, reducing the amount of testosterone and sperm production. Males with this syndrome carry an extra X chromosome (XXY), meaning they have 47 chromosomes compared to the normal 46 in each cell. This extra chromosome directly affects sexual development before birth and during puberty (links to learning disabilities and speech development have also been shown to be affected). There are varieties in Klinefelter Syndrome, where some cases may have the extra X chromosome in some cells but not others, referred to as Mosaic Klinefelter Syndrome, or where individuals have the extra X chromosome in all cells. The reduction of testosterone in the male body normally results in an overall decrease in the production of viable sperm for these individuals thereby forcing them to turn to fertility treatments to father children.

Y chromosome deletions

Y chromosomal infertility is a direct cause of male infertility due to its effects on sperm production, occurring in 1 out of every 2000 males.Usually affected men show no sign of symptoms other than at times can exhibit smaller teste size. Men with this condition can exhibit azoospermia (no sperm production), oligozoospermia (small number of sperm production), or they will produce abnormally shaped sperm (teratozoospermia). This case of infertility occurs during the development of gametes in the male, where a normal healthy male will produce both X and a Y chromosome, affected males have genetic deletions in the Y chromosome. These deletions affect protein production that is vital for spermatogenesis. Studies have shown that this is an inherited trait; if a male is fathered by a man who also exhibited y chromosome deletions then this trait will be passed down. These individuals are thereby "Y-linked", although daughters are not affected due to the lack of the Y chromosome.

Other factors include:

Age

Abnormal set of chromosomes

Centriole

Neoplasm, e.g. seminoma

Idiopathic failure

Cryptorchidism

Trauma

Hydrocele

Hypopituitarism in adults, and hypopituitarism untreated in children (resulting in growth hormone deficiency and proportionate dwarfism.)

Mumps

Malaria

Testicular cancer

Defects in USP26 in some cases

Acrosomal defects affecting egg penetration

Idiopathic oligospermia - unexplained sperm deficiencies account for 30% of male infertility.

PREVENTION OF MALE INFERTILITY

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).