The Male Reproductive System and Prostate

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TESTIS AND EPIDIDYMIs

CONGENITAL ANOMALIES

Cryptorchidism or undescended testis is a condition in which the testicle is arrested at some point along its descent. Its incidence in adult male population. . In 70% of cases, the undescended testis lies in the inguinal ring, in 25% in the abdomen and, in the remaining 5%, it may be present at other sites along its descent from intra-abdominal location to the scrotal sac.

ETIOLOGY. The exact etiology is not known in majority of cases. However, a few apparent causes associated with cryptorchidism are as under:

1. Mechanical factors e.g. short spermatic cord, narrow inguinal canal, adhesions to the peritoneum.

2. Genetic factors e.g. trisomy 13, mal development of the scrotum or cremaster muscles.

3. Hormonal factors e.g. deficient androgenic secretions.

MORPHOLOGIC FEATURES.

Grossly,

1. Seminiferous tubules: There is progressive loss of germ cell elements so that the tubules may be lined by only spermatogonia and The tubular basement membrane is thickened. Advanced cases show hyalinised tubules with a few Sertoli cells only, surrounded by prominent basement membrane.

2. Interstitial stroma: There is usually increase in the interstitial fibrovascular stroma and conspicuous presence of Leydig cells, seen singly or in small clusters.

CLINICAL FEATURES.

1. Sterility-infertility. Bilateral cryptorchidism is associated with sterility while unilateral disease may result in infertility.

2. Inguinal hernia. A concomitant inguinal hernia is frequently present along with cryptorchidism.

3. Malignancy. Cryptorchid testis is at 30-50 times increased risk of developing testicular malignancy, most commonly seminoma and embryonal carcinoma,

INFLAMMATIONS

Inflammation of the testis is termed as orchitis and Inflammation of the epididymis is called as epididymitis; the latter being more common. A combination epididymo-orchitis may also occur.

Non-specific Epididymitis and Orchitis

Non-specific epididymitis and orchitis, or their combination, may be acute or chronic. The common routes of spread of infection are via the vas deferens, or via lymphatic and haematogenous routes. Most frequently, the infection is caused by urethritis, cystitis, prostatitis and seminal vesiculitis. Other causes are mumps, smallpox,influenza, pneumonia. The common infecting organisms in sexually-active are Neisseria gonorrhoeae and Chlamydia trachomatis, whereas the common organisms are urinary tract pathogens like Escherichia coli and Pseudomonas.

MORPHOLOGIC FEATURES.

Grossly, in acute stage the testicle is firm, tense, swollen and congested. There may be multiple abscesses, especially in gonorrhoeal infection. In chronic cases, there is usually variable degree of atrophy and fibrosis.

Histologically, acute orchitis and epididymitis are characterised by congestion, oedema and diffuse infiltration by neutrophils, lymphocytes, plasma cells and macrophages or formation of neutrophilic abscesses. Acute inflammation may resolve, or may progress to chronic form. In chronic epididymo-orchitis, there is focal or diffuse chronic inflammation, disappearance of seminiferous tubules, fibrous scarring and destruction of interstitial Leydig cells. Such cases usually result in permanent sterility.

Tuberculous Epididymo-orchitis Tuberculosis invariably begins in the epididymis and spreads to involve the testis. Tuberculous epididymo-orchitis is generally secondary tuberculosis from elsewhere in the body. It may occur either by direct spread from genitourinary tuberculosis such as tuberculous seminal vesiculitis, prostatitis and renal tuberculosis, or may reach by haematogenous spread of infection such as from tuberculosis of the lungs. Primary genital tuberculosis may occur rarely.

MORPHOLOGIC FEATURES.

Grossly, yellowish, caseous necrotic areas are seen. Microscopically, numerous tubercles which may coalesce to form large caseous mass are seen. Characteristics of typical tubercles such as epithelioid cells, peripheral mantle of lymphocytes, occasional multinucleated giant cells and central areas of caseation necrosis are seen .Numerous acid-fast bacilli can be demonstrated by Ziehl-Neelsen staining.

Spermatic Granuloma Spermatic granuloma is the term used for development of inflammatory lesions due to invasion of spermatozoa into the stroma. Spermatic granuloma may develop due to trauma, inflammation and loss of ligature following vasectomy.

MORPHOLOGIC FEATURES.

Grossly, the sperm granuloma is a small nodule, 3 mm to 3 cm in diameter, firm, white to yellowish-brown.

Histologically, it consists of a granuloma composed of histiocytes, epithelioid cells, lymphocytes and some neutrophils. Characteristically, the centre of spermatic granuloma contains spermatozoa and necrotic debris. The late lesions have fibroblastic proliferation at the periphery and hyalinisation.

MISCELLANEOUS LESIONS

Torsion of Testis

Torsion of the testicle may occur either in a fully-descended testis or in an undescended testis. The latter is more common and more severe. It results from sudden cessation of venous drainage and arterial supply to the testis, usually following sudden muscular effort or physical trauma

MORPHOLOGIC FEATURES.

The pathologic changes vary depending upon the duration and severity of vascular occlusion. There may be coagulative necrosis of the testis and epididymis, or there may be haemorrhagic infarction. The inflammatory reaction is generally not so pronounced.

Varicocele

Varicocele is the dilatation, elongation and tortuosity تعرجof the veins of the pampiniform plexus in the spermatic cord. It is of 2 types: primary (idiopathic) and secondary It is nearly always on the left side as the loaded rectum presses the left vein. Secondary form occurs due to pressure on the spermatic vein by enlarged liver, spleen or kidney.

Hydrocele

A hydrocele is abnormal collection of serous fluid in the tunica vaginalis. It may be acute or chronic, congenital or acquired. The usual causes are trauma, systemic oedema such as in cardiac failure and renal disease, and as a complication of gonorrhoea, syphilis and tuberculosis. The hydrocele fluid is generally clear and straw-coloured but may be slightly turbid or haemorrhagic.

Haematocele

Haematocele is haemorrhage into the sac of the tunica vaginalis. It may result from direct trauma, from injury to a vein by the needle, or from haemorrhagic diseases. In recent haematocele, the blood coagulates and the wall is coated with ragged deposits of fibrin.

Teratoma

Teratomas are complex tumours composed of tissues derived from more than one of the three germ cell layers—endoderm, mesoderm and ectoderm. Testicular teratomas are more common in infants and children and constitute about 40% of testicular tumours in infants, whereas in adults they comprise 5% of all germ cell tumours.

Grossly, most teratomas are large, grey-white masses enlarging the involved testis. Cut surface shows characteristic variegated appearance—grey-white solid areas, cystic and honey-combed areas, and foci of cartilage and bone .

**PENIS**

INFLAMMATIONS Glans and prepuce are frequently involved in inflammation in a number of specific and non-specific conditions. The specific inflammations include various sexually-transmitted diseases such as hard chancre in syphilis, chancroid caused by Haemophilus ducreyi, gonorrhoea caused by gonococci, herpes progenitalis, and lymphopathia venereum caused by Chlamydia trachomatis. Balanoposthitis. Balanoposthitis is the term used for non-specific inflammation of the inner surface of the prepuce (and adjacent surface of the glans It is caused by a variety of microorganisms such as staphylococci, streptococci, coliform bacilli and gonococci. The type of inflammation may be acute or chronic, sometimes with ulceration on the mucosal surface of the glans

MALIGNANT TUMOURS Squamous Cell Carcinoma The incidence of penile carcinoma shows wide variation in different populations all cancers in males but it is 3-4 times more common its incidence is about 10% of all cancers.

PROSTATITIS Inflammation of the prostate. prostatitis, may be acute, chronic and granulomatous types. Acute Prostatitis Acute focal or diffuse suppurative inflammation of the prostate is not common. It occurs most commonly due to ascent of bacteria from the urethra, less often by descent from the upper urinary tract or bladder, and occasionally by lymphogenous or haematogenous spread from a distant focus of infection. The infection may occur spontaneously or may be a complication of urethral manipulation such as by catheterisation, cystoscopy, urethral dilatation and surgical procedures on the prostate. The common pathogens are those which cause UTI, most frequently E. coli, and others such as Klebsiella, Proteus, Pseudomonas, Enterobacter, gonococci, staphylococci and streptococci. The diagnosis is made by culture of urine specimen.

MORPHOLOGIC FEATURES.

Grossly, the prostate is enlarged, swollen and tense. Cut section shows multiple abscesses and foci of necrosis.

Histologically, the prostatic acini are dilated and filled with neutrophilic exudate. There may be diffuse acute inflammatory infiltrate. Oedema, hyperaemia and foci of necrosis frequently accompany acute inflammatory involvement.

Chronic Prostatitis Chronic prostatitis is more common and foci of chronic inflammation are frequently present. Chronic prostatitis is usually asymptomatic but may cause allergic reactions, iritis, neuritis or arthritis. Chronic prostatitis is of 2 types—bacterial and abacterial. Chronic bacterial prostatitis is caused in much the same way and by the same organisms as the acute prostatitis. It is generally a consequence of recurrent UTI. Diagnosis is made by detection of more than 10-12 leucocytes per high power field in expressed prostatic secretions, and by positive culture of urine specimen and prostatic secretions. This condition is more difficult to treat since antibiotics penetrate the prostate poorly. Chronic abacterial prostatitis is more common. There is no history of recurrent UTI and culture of urine and prostatic secretions is always negative, though leucocytosis is demonstrable in prostatic secretions. The pathogens implicated are Chlamydia trachomatis and Ureaplasma urealyticum.

MORPHOLOGIC FEATURES. Pathologic changes in both bacterial and abacterial prostatitis are similar. Grossly, the prostate may be enlarged, fibrosed and shrunken. Histologically, the diagnosis of chronic prostatitis is made by foci of lymphocytes, plasma cells, macrophages and neutrophils within the prostatic substance. Corpora amylacea, prostatic calculi and foci of squamous metaplasia in the prostatic acini may accompany inflammatory changes. Seminal vesicles are invariably involved.

Granulomatous Prostatitis Granulomatous prostatitis is a variety of chronic prostatitis, probably caused by leakage of prostatic secretions into the tissue, or could be of autoimmune origin.

MORPHOLOGIC FEATURES. Grossly, the gland is firm to hard, giving the clinical impression of prostatic carcinoma on rectal examination.

Histologically, the inflammatory reaction consists of macrophages, lymphocytes, plasma cells and some multinucleate giant cells. The condition may be confused with tuberculous prostatitis.

***Thank you for attention***