ORCHITIS

Inflammation Of The Testicles, Orchiditis, Didymitis

An inflammation of the testes, involving swelling and heavy pains.

Diagnosis

Male

Related Diagnoses:
Azoospermia | Mumps | Idiopathic male infertility | Hydrocele testis | Chlamydia infection | Epididymitis | Syphilis

About Orchitis

The most common pathogens responsible for orchitis vary with patient age. In young boys it is usually caused by the mumps virus, leading to parotitis. Men younger than 35 are more commonly infected with sexually acquired organisms, including Chlamydia trachomatis or Neisseria gonorrhoeae. Men over 35 typically demonstrate infection with enteric Gram-negative rods (Escherichia coli), or other - Gram-positive ones (Staphylococcus and Streptococcus). Recent instrumentation with cystoscopy or transrectal ultrasound- (TRUS-) guided prostate biopsy also increases the likelihood of infection with Gram-negative rods.

Another type of Gram-negative bacteria causing a rare endemic enzootic disease called Brucellosis (Mediterranean or Malta fever) may also result in epididymoorchitis. However, although the occurrence of Brucellar epididymoorchitis as the presenting finding is an extremely rare manifestation of Brucellosis, patients can rarely apply to the clinicians with acute scrotum as an initial finding.

Another risk factor which can cause orchitis is an open inguinal hernia repair. This procedure is widely used for treatment of hernia. Ischemic orchitis typically presents 2–3 days after inguinal hernia surgery and can progress to infarction. Ischemic injury is likely due to thrombosis of the venous plexus, rather than iatrogenic arterial injury or inappropriate closure of the inguinal canal. Although ischemic orchitis, atrophy, and orchiectomy are uncommon complications, all patients should be warned of these potential complications and operative consent should include these risks irrespective of the type of hernia or the surgical approach.

On the other hand, orchitis can be caused by an autoimmune reaction (autoimmune orchitis) leading to a reduction in fertility. Autoimmune orchitis is rare in humans, compared to anti-sperm antibodies. To study orchitis in the testis, autoimmune orchitis has been induced in the rodent testis. The disease starts with the appearance of testicular antibodies, then movement of macrophages and lymphocytes from the blood stream into the testis, breaking of the physical interactions between the developing sperm and Sertoli cells, entry
of neutrophils or eosinophils, and finally death of the developing sperm, leading to infertility.

Associated diseases
- epididymitis
- parotitis
- gonorrhoea infection
- chlamydia infection

Complications
- unilateral testicular atrophy - occurs in 60% of patients with orchitis
- chronic epididymitis
- testicular infarction
- scrotal abscess

Risk factors
- mumps
- syphilis
- bloodstream infection
- high-risk sexual behavior
- sexually transmitted infections
- repeated urinary tract infections
- anatomical abnormality of the urinary tract
- reflux of urine
- surgery of the urinary tract

Impact on fertility
Orchitis could cause azoospermia, most likely due to testicular tissue necrosis. Necrosis appears to be the dominant cell death pathway in infected testis. Substantial necrotic changes seen in Sertoli cells contribute to impaired spermatogenesis by loss of function in supporting the dependent germ cells.

Azoospermia is associated with very low levels of fertility or even sterility, but many forms are amenable to medical treatment.

Prevention
Mumps vaccines safely prevent mumps as the major cause of orchitis. When given to a majority they decrease complications at the population level. Practice safe sex to prevent from sexually transmitted infections.

Symptoms
- hematospermia (blood in the semen)
- hematuria (blood in the urine)
- severe pain
- visible swelling of a testicle or testicles and often the inguinal lymph nodes on the affected side
• testicular redness
• testicular pain and tenderness
• fever and chills
• nausea
• malaise and fatigue
• headache
• body aches
• pain with urination

Therapies

Self therapy

It is possible to apply ice packs to the scrotal area but not directly on skin, because frostbites can be created. To handle pain and discomfort it is recommended to rest, elevate the scrotum while lying down, wear an athletic supporter and refrain from sex until the infection has cleared.

Conventional medicine

Pharmacotherapy

The management of this condition requires intravenous antibiotic therapy and surgical evaluation. However, in most of the cases orchiectomy is not necessary because the conditions are amenable to conservative antibiotic therapy. To relieve pain, it is recommended to use non-steroidal anti-inflammatory drugs such as naproxen or ibuprofen.

Surgery

If the testicle is considered nonviable, orchiectomy is performed.

Assisted reproduction

In patients where orchitis caused azoospermia, microscopic epididymal sperm aspiration (MESA) or testicular sperm extraction (TESE, microTESE) is the method of choice for recovering spermatozoa for in vitro fertilization (IVF-ICSI). If these surgical retrieval methods are used, then PGS is usually recommended to assess the genetic constitution of the resulting embryos.

In patients, where no own sperm are available, donor sperm should be considerate as an option. Donated embryos may be used in couples, where man has no sperm and quality of woman’s egg are too low, mostly due to her higher age.

Find more about related issues
Diagnoses

Azoospermia
Complete absence of sperm in the ejaculate of a man.
Learn more at: www.fertilitypedia.org/therapy/diag/azoospermia

Mumps
Mumps was a common childhood viral disease caused by the mumps virus. Mumps frequently causes orchitis and impairs male fertility.
Learn more at: www.fertilitypedia.org/therapy/diag/mumps

Idiopathic male infertility
A condition in which fertility impairment occurs spontaneously or due to an unknown cause.
Learn more at: www.fertilitypedia.org/therapy/diag/idiopathic-male-infertility

Hydrocele testis
An accumulation of clear fluid in the tunica vaginalis, the most internal of membranes containing a testicle.
Learn more at: www.fertilitypedia.org/therapy/diag/hydrocele-testis

Chlamydia infection
A common sexually transmitted disease (STD) caused by the Chlamydia trachomatis bacteria that can lead to serious reproductive morbidity.
Learn more at: www.fertilitypedia.org/therapy/diag/chlamydia-infection

Epididymitis
An inflammation of epididymis.
Learn more at: www.fertilitypedia.org/therapy/diag/epididymitis

Syphilis
A sexually transmitted infection caused by the bacterium Treponema pallidum subspecies pallidum.
Learn more at: www.fertilitypedia.org/therapy/diag/syphilis

Organs

Testes
Male gonads which produce both sperm and androgens, such as testosterone, and are active throughout the reproductive lifespan of the male.
Learn more at: www.fertilitypedia.org/edu/organs/testes

Vas deferens
The duct in the testicle that carries semen from the epididymis to the ejaculatory duct.
Learn more at: www.fertilitypedia.org/edu/organs/vas-deferens

Reproductive cells
Sertoli cells
The cell in seminiferous epithelium responsible for nutrition and development of germ (sperm) cells.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/sertoli-cells

Sperm
A male reproductive cell which is able to fertilize the counterpart female gamete - the oocyte.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/sperm

Spermatogonium
An undifferentiated male germ cell with self-renewing capacity representing the first stage of spermatogenesis.
Learn more at: www.fertilitypedia.org/edu/reproductive-cells/spermatogonium

Biological control

Testosterone
Steroid hormone produced primarily in the testes of the male; responsible for the development of secondary sex characteristics in the male.
Learn more at: www.fertilitypedia.org/edu/biological-control/testosterone

Reproductive functions

Fertilization
The fusion of an ovum with a sperm to initiate the development of a new individual organism.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/fertilization

Spermatogenesis
Process in which spermatozoa are produced from male primordial germ cells in testicles by way of mitosis and meiosis.
Learn more at: www.fertilitypedia.org/edu/reproductive-functions/spermatogenesis

Risk factors

Groin surgery
A surgery, which is performed in inguinal part of the body.
Learn more at: www.fertilitypedia.org/therapy/RF/groin-surgery

Inguinal hernia
A protrusion of abdominal-cavity contents through the inguinal canal.
Learn more at: www.fertilitypedia.org/therapy/RF/inguinal-hernia

Mumps
An infection that primarily affects the parotid glands, caused by the mumps virus which can impair male fertility.
Learn more at: www.fertilitypedia.org/therapy/RF/mumps

Promiscuity
Having casual sexual relations frequently with different partners.
Learn more at: www.fertilitypedia.org/therapy/RF/promiscuity
Sexually transmitted diseases
Illnesses that have a significant probability of transmission between humans by means of human sexual behavior and that may impact fertility.
Learn more at: www.fertilitypedia.org/therapy/rf/sexually-transmitted-diseases

Surgery of the urinary tract
The branch of surgeries which are performed on diseases of the urinary tract system and the reproductive organs.
Learn more at: www.fertilitypedia.org/therapy/rf/surgery-of-the-urinary-tract

Symptoms

Atrophy of the testicles
A not-temporary condition in which the testes diminish in size and may be accompanied by loss of function.
Learn more at: www.fertilitypedia.org/edu/symptoms/atrophy-of-the-testicles

Fatigue
A subjective feeling of tiredness which is distinct from weakness, which has a gradual onset.
Learn more at: www.fertilitypedia.org/edu/symptoms/fatigue

Fever
A temperature above the normal range due to an increase in the body's temperature set-point.
Learn more at: www.fertilitypedia.org/edu/symptoms/fever

Headache
The symptom of pain anywhere in the region of the head.
Learn more at: www.fertilitypedia.org/edu/symptoms/headache

Infertility
The failure to achieve a clinical pregnancy after 12 months or more of regular unprotected sexual intercourse.
Learn more at: www.fertilitypedia.org/edu/symptoms/infertility

Nausea and vomiting
A sensation of unease and discomfort in the stomach with an involuntary urge to the forceful expulsion of the contents of stomach through the mouth.
Learn more at: www.fertilitypedia.org/edu/symptoms/nausea-and-vomiting

Painful urination
A burning or stinging sensation during urination.
Learn more at: www.fertilitypedia.org/edu/symptoms/painful-urination-1

Testicular pain
A discomfort felt in the testicles (testes) or scrotum.
Learn more at: www.fertilitypedia.org/edu/symptoms/testicular-pain

Testicular swelling
Excessive accumulation of any fluid in the area of testicles.
Learn more at: www.fertilitypedia.org/edu/symptoms/testicular-swelling
Vascularity
Ultrasound with color Doppler interrogation showing A: right testis with preserved vascularity; B: right epididymis with enlargement and slightly increased vascularity.

Tuberculous
Tuberculous epididymitis and orchitis.

Therapies

Egg donation
Process by which a woman donates eggs for purposes of assisted reproduction or biomedical research. Learn more at: www.fertilitypedia.org/edu/therapies/egg-donation

ICSI
A micromanipulative fertilization technique in which a single sperm is injected directly into an egg. Learn more at: www.fertilitypedia.org/edu/therapies/icsi

Orchiectomy
Orchiectomy is a surgical procedure in which one or both testicles are removed. Learn more at: www.fertilitypedia.org/edu/therapies/orchiectomy

Pharmacotherapy of infections
Antibiotics or antibacterials are a type of antimicrobial used in the treatment and prevention of bacterial infection. Learn more at: www.fertilitypedia.org/edu/therapies/pharmacotherapy-of-infections

Sperm donation
The procedure in which a man (sperm donor) provides his sperm for fertility treatment. Learn more at: www.fertilitypedia.org/edu/therapies/sperm-donation

Standard IVF
A process in which an egg is fertilised by sperm outside the body: in vitro. Own or donated gametes may be used. Learn more at: www.fertilitypedia.org/edu/therapies/standard-ivf

Gallery
Acute inflammation: showing hyalinised residual seminiferous tubules and dense infiltrate of neutrophils.

Sources

“Neonatal epididymo-orchitis caused by Pseudomonas aeruginosa: a case report” — by Karibi et al. licensed under CC BY 2.0

“Multidrug Resistant Epididymitis Progressing to Testicular Infarct and Orchietomy” — by Farber et al. licensed under CC BY 3.0

“Testicular immunology” — sourced from Wikipedia licensed under CC BY-SA 3.0

“Epididymoorchitis as the First Finding in Patients with Brucellosis” — by Karaköse et al. licensed under CC BY 3.0

“Orchitis” — sourced from Wikipedia licensed under CC BY-SA 3.0

“An Unusual Case: Salmonella UTI and Orchitis in HIV Patient” — by Arshed et al. licensed under CC BY 3.0

“Appropriate cut-off value for follicle-stimulating hormone in azoospermia to predict spermatogenesis” — by Chen et al. licensed under CC BY 2.0

“Necrosis is the dominant cell death pathway in uropathogenic Escherichia coli elicited epididymo-orchitis and is responsible for damage of rat testis” — by Lu et al. licensed under CC BY 3.0 DE

“Ultrasound with Doppler interrogation” — by Farber et al. licensed under CC BY 3.0

“Tuberculous” — by Rosen licensed under CC BY-SA 2.0

“Epididymo orchitis histopathology” — by Department of Pathology, Calicut Medical college licensed under CC BY-SA 4.0