

Urological Emergency

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Urinary Tract Infections

Uncomplicated cystitis or urinary tract infection
Complicated cystitis
Acute complicated or uncomplicated pyelonephritis
Epididymitis
Prostatitis
Urosepsis

Uncomplicated cystitis

Definition:

No functional or anatomical abnormalities in the urinary tract, no renal dysfunction and no comorbidities.

Patient groups – uncomplicated UTIs

- 1.** Otherwise healthy, non-pregnant women in premenopause (standard group)
- 2.** Otherwise healthy pregnant women
- 3.** Otherwise healthy postmenopausal women
- 4.** Men with uncomplicated UTIs!!!

Pyelonephritis

Definition:

Pyelonephritis: acute bacterial infection of the renal pelvis and renal parenchyma characterized by fever, flank pain and bacteriuria.

Clinically, acute pyelonephritis is defined as urinary tract infection accompanied by flank pain, tenderness over the kidney, and/or fever (>38 degrees Celsius).

Etiology of pyelonephritis

Ascending infection: Women > Men

Vesicoureteral reflux: e.g., indwelling DJ ureter catheter

Clinical presentation of pyelonephritis

Sudden fever and chills

Constant flank pain, frequently described as abdominal pain, especially in children; severe flank tenderness

Pollakisuria, Dysuria

Nausea, vomiting, diarrhea with a severe sense of illness, abdominal tenderness ranging from guarding to pain on release, decreased bowel sounds

Complications of acute pyelonephritis

Sepsis, septic. shock, emphysematous pyelonephritis in diabetes mellitus with high mortality, renal abscess, renal parenchymal damage due to scarring. Atrophic of kidney

Diagnosis:

clinical

Laboratory and Urinalysis

sonography of kidney and bladder, residual urine?

CT or IVP if necessary.

Epididymitis

Epididymitis is an acute or chronic inflammation of the epididymis with various causes:

Bacterial epididymitis

- Caused by a urinary tract infection: spectrum of pathogens includes E.coli, Proteus, Klebsiella, Pseudomonas and Staphylococcus.
- Caused by a sexually transmitted disease: spectrum of pathogens includes Chlamydia or Gonokokken.
- Tuberculosis: very rare (hematogenous manifestation).

Nonbacterial infectious epididymitis: caused by viruses, fungi or parasites

Chronic epididymitis: Duration of illness longer than six weeks

Chronic epididymal pain

Clinical Presentation of Epididymitis

Testicular pain:
tenderness in the
epididymis.

Fever in cases of
advanced inflammation

Swelling and redness of
the scrotum

Clinical signs of urethritis
are not always present.

Preserved cremasteric
reflex

Positive Prehn's sign:
decreasing pain upon
elevation of the testicle is
typical of epididymitis.
Prehn's sign is
unreliable.

Complications: Abscess
formation, urosepsis,
Fournier's gangrene

Epididymitis

- Scrotum has overlying erythema, edema in 60%
- Normal vertical
lie



Treatment of Epididymitis

Symptomatic treatment:

Bed rest, elevating the testicle, applying cold compresses, anti-inflammatory drugs such as Diclofenac 75 mg 1-0-1. In cases of severe pain, nerve block anesthesia of the spermatic cord at the external inguinal ring using a long-acting local anesthetic (Bupivacain) is an option.

Antibiotic therapy for Epididymitis:

After obtaining a urine culture and if necessary, urethral swabs, targeted antibiotic therapy is initiated.

Especially sexually transmitted Epididymitis:

Ceftriaxon 500 mg i.m. as a single dose combined with Azithromycin 2 g p.o. as a single dose or Doxycyclin 100 mg 1-0-1 for 10 days.

Primarily ascending urinary tract infection:

e.g. Cephalosporin or Ciprofloxacin 500 mg 1-0-1 or another Chinolon for at least 10 days.

Prostatitis

Etiology of acute prostatitis

Acute prostatitis is usually caused by a bacterial infection that has ascended from urinary tract.

Specific risk factors: BPS, phimosis, urinary tract infections (acute cystitis, epididymitis), urinary catheters, prostate punch biopsy or transurethral resections (especially in cases of infected urine).

Clinical Presentation of acute Prostatitis

General symptoms: fever, chills, lower back and perineal pain.

Urinary symptoms: frequent urge to urinate, pollakiuria, dysuria, possibly symptoms of obstruction (weak urine stream to urinary retention).

Digital rectal examination: acute prostatitis results in a highly painful digital rectal examination of the prostate; the prostate has a doughy consistency and an abscess may be palpable as fluctuation.

Diagnosis of acute Prostatitis

Urine sediment: Pyuria, bacteriuria and microhematuria are typical findings in urine sediment.

Urine culture: Urine culture usually identifies the pathogen and is therefore mandatory before starting treatment.

Blood culture: Can identify the pathogen in cases of high fever or clinical signs of urosepsis.

Laboratory: Leukocytosis with a left shift, elevated CRP and elevated PSA.

Sonography: Residual urine?

Transrectal sonography: TRUS in cases of suspected abscess; due to the risk of bacteremia, this should only be performed after initiation of antibiotic therapy. Alternatively CT or MRI.

Urinary Tract Infections

Description	First-line	Second-choice
Uncomplicated cystitis	Fosfomycin 1 x 3g p.o. single dose	Cephalosporins or Unacid (Amoxicillin/Sulbactam)
Complicated urinary tract infection	Cephalosporins/ Unacid	Cefotaxime 3 x 2g i.v. for 3-5 days
Acute complicated pyelonephritis	Cotrimoxazol 2x 1 p.o. for 3 days	Tazobactam 3 x 4,5g i.v for 7-10 days
Epididymitis	Cephalosporins Pivemicillinam	Escalation: Cefotaxime 3 x 2g i.v. for 7 days oder Tazobactam
Prostatitis	Cephalosporins (Cefotaxime)	Amoxicillin/Sulbactam, Cefotaxime for 2-4 Weeks
Urosepsis	Unacid or Tazobactam or Imipenem/Meropenem	Nosocomial: Tazobactam + Ciprofloxacin, or Imipenem/Meropenem

Fournier's gangrene

Treatment of Fournier's Gangrene

(gangrenous, necrotizing fasciitis)

Source of infection: the infection originates either from the skin, the urinary tract or the rectum.

Risk factors: Diabetes mellitus, local trauma or surgery, paraphimosis, periurethral extravasation of urine, urethral injuries, rectal injuries.

Symptoms: local swelling, redness, a mass, or crepitus (gas formation) of the scrotum or adjacent skin areas. As the condition progresses, dark, hemorrhagic necrotic areas develop.

Fever, signs of sepsis

Treatment

Radical resection (multiple surgeries)

Antibiotic therapy

Mortality > 20%!

Urosepsis

Definiton of Urosepsis

Sepsis is defined as a life-threatening organ dsyfunction caused by an inadequate host response to an infection.

Urosepsis is a life-threatening systemic reaction to a bacterial infection of the urogenital organs with a risk of shock.

EAU guideline.

Sepsis Criteria (SIRS)

Tachycardia: Heart rate $>90/\text{min}$

Tachypnoe: Respiratory rate $>20/\text{min}$ or hyperventilation ($\text{pCO}_2 < 33 \text{ mmHg}$)

Fever ($>38^\circ \text{C}$) or hypothermia ($<36^\circ \text{C}$)

Leukopenia ($<4000/\mu\text{l}$) or leukocytosis ($>12000/\mu\text{l}$) or left shift with $>10\%$ immature neutrophils Granulozyten

Kidney colic / Ureteral
stricture ...

Nephrolithiasis

Renal colic

„Urge to move“

microhematuria

Intense acoustic reflex

Echo shadow = „stone shadow“ !

Ectasia due to
obstruction of outflow ?

Uncontrasted abdominal
CT

Pain medication for acute colic

Check the urine!!!

Metamizol (e.g. Novalgin®)

NSAIDs (e.g. Ibuprofen, Diclofenac)

Alpha-1a Blockers (Alna®) (off Label Use in Germany)

Opioids (e.g. Piritramid = Dipidolor®) and antiemetics (e.g. Dimenhydrinat=Vomex A®)

Scopolamine-butylbromide (Buscopan®) is usually ineffective!

Possibly also urinary drainage (fever, severe pain, elevated electrolyte levels)

Acute scrotum

In urology, **acute scrotum** refers to sudden, severe pain of various causes in one and rarely both, scrotal compartments. In addition to the pain, which usually radiates to the groin region, swelling and redness may be present on the affected side of the scrotum.

Acute scrotal pain: Differential diagnoses

Testicular torsion

Hydatid torsion

Acute epididymitis

Incarcerated inguinal hernia

Orchitis

Testicular tumor

Testicular rupture, trauma

Testicular abscess

Testicular torsion?

Testicular torsion

Testicular torsion

In principle, it can occur at any time; however the condition is most common prenatally and in infants under two years of age. A second peak occurs between the ages of 15 and 20.

Diagnosis: clinical, Doppler sonography.

Treatment: Testicular reduction

In cases of complete ischemia, surgery should be performed within 6-8 hours; after that, the testicle is most likely to become

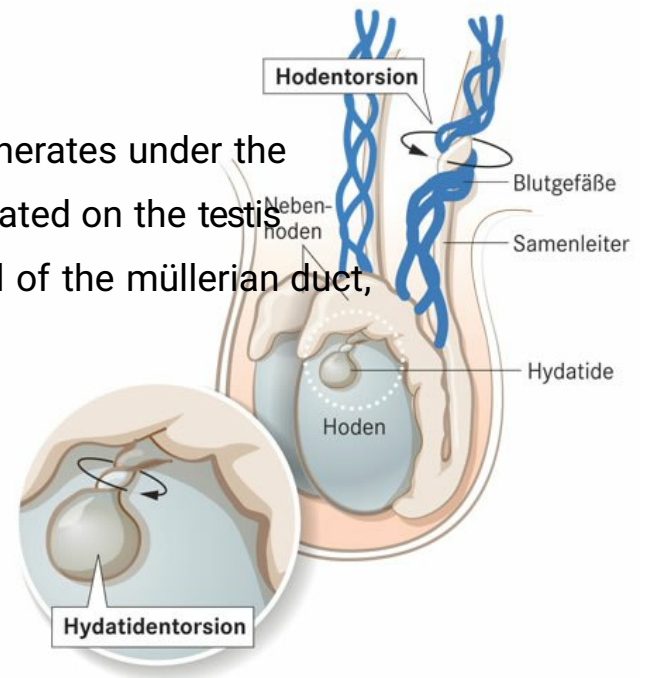


Hydatid torsion

Hydatid torsion is the roatation of the pedunculated appendix testis (Morgagni hydatid) around its own axis, accompanied by ischemia.

In men, it is a non-functional remnant of the müllerian duct.

Although the duct is formed in males, it subsequently degenerates under the infulence of anti-müllerian hormone. The appendix testis is located on the testis next to the head of the epididymis. It represents the cranial end of the müllerian duct, which has migrated descensus testis into the scrotum.



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