Ectopia Vesicae & Cystitis - Dr. Dyar

Ectopia vesicae (exstrophy of the bladder)

Mechanism

- Caused by the incomplete development of the infra-umbilical part of the anterior abdominal wall, with incomplete development of the anterior wall of the bladder.

Clinical Features

- One in 50,000 births, (4 male: 1 female)
- The presence of the viscera behind it
- Edges of abdominal wall can be felt
- Umbilicus is absent
- In the male:
  - The completely epispadiac penis is broader and shorter than normal,
  - Bilateral inguinal hernia.
  - The prostate and seminal vesicles are rudimentary,
  - The testes are normal and usually descended.
- In female:
  - The clitoris is bifid
  - The labia minora are separated anteriorly, exposing the vaginal orifice.
- In both sexes:
  - There is separation of the pubic bones, which are connected by a strong ligament.
  - Linea alba is broad.
  - In the rare, incomplete form of penile epispadias or female epispadias, the pubes are united and the external genitalia are almost normal, although in the female the clitoris is bifid.

Treatment

Steps of Surgery:

1. Iliac osteotomy.
2. Closure of the bladder and closure of abdominal wall; In the first year of life, the bladder is closed following osteotomy of both iliac bones just lateral to the sacroiliac joints.
3. Reconstruction of the sphincter and bladder neck. In some patients, the reconstructed bladder remains small and requires augmentation.
   - Another option is urinary diversion.

Urinary Tract Infection

Epidemiology

The major risk factors:

2. Later in life, the incidence of UTI increases significantly for both males and females.
3. Women (36 and 65) years: gynecologic surgery and bladder prolapse.
5. Patients older than 65 years: the incidence of UTI continues to increase in both sexes: Incontinence and chronic use of urinary catheters.
6. In (younger than 1 year and older than 65 years): the morbidity and mortality of UTI are the greatest.
Infection of the Urinary bladder

‘Cystitis’ gives rise to symptoms of:

1. Frequency
2. Urgency
3. Dysuria
4. Suprapubic discomfort, pain or Back pain
5. Cloudy offensive urine
6. Hematuria
   - Lower urinary tract infections (UTI) are much more common in women than in men, particularly in the under 50s.
   - Recurrent lower urinary infection occurs in some healthy women after intercourse, without any demonstrable abnormality of the urinary tract.

Indications of Investigations

1. Repeated attacks of UTI in women,
2. A single attack in a man
3. A single attack in a child of either sex,
   - Should always be followed by investigation to discover and treat the predisposing cause; sometimes, however, no cause can be found.

Asymptomatic bacteriuria is found commonly (in 5—10%), particularly in women, and investigation may fail to demonstrate any underlying cause.

Predisposing factors

1. Incomplete emptying of the bladder caused by prostatic obstruction, urethral stricture or meatal stenosis, bladder diverticulum, neurogenic bladder.
2. Diabetes and lifetime history of UTI are risk factors for acute cystitis.
3. Presence of a calculus, foreign body or neoplasm.
4. Incomplete emptying of the upper tract caused by dilatation of the ureters associated with pregnancy or vesico ureteric reflux.
5. Oestrogen deficiency: lowered local resistance.

Routes of infection

1. Ascending infection: from Periurethral bacteria is the commonest route. The organisms originate in the bowel, contaminate the vulva and reach the bladder because of the shortness of the female urethra.
2. Descending infection: from the kidney (tuberculosis).
3. Haematogenous spread: can occur in immunocompromised patients and in neonates. Staphylococcus aureus, Candida species, and Mycobacterium tuberculosis are common pathogens that travel through the blood to infect the urinary tract.
4. Lymphogenous spread: through the rectal, colonic, and periuterine lymphatics
5. From adjacent structures: (fallopian tube, vagina or gut). Intraperitoneal abscesses or vesicointestinal or vesicovaginal fistulas.
Bacteriology

- Escherichia coli (80%)
- Klebsiellae,
- Proteus mirabilis,
- Staphylococcus epidermidis
- Streptococcus faecalis.
- Pseudomonas,
- Staphylococcus aureus
- Various streptococci.

Clinical features

Symptoms

The severity of the symptoms varies greatly.

- **Frequency**: This occurs during the day and night, it may occur every few minutes and may cause incontinence.
- **Pain**: Pain varies from mild to severe. It may be referred to the suprapubic region, the tip of the penis, the labia majora or the perineum.
- **Haematuria**: The passage of a few drops of blood-stained urine or blood-stained debris at the end of micturition. Less often the whole specimen is blood stained.
- **Pyuria**: This is usually present.

On Examination

- Tenderness over the bladder.
- Midstream urine specimens should be collected.

Investigation

- **Urinalysis (GUE), Urine C/S**
- **Cystoscopy**: This is not necessary in the acute phase.
- **Uroflometry** (urinary flow rates)
- **U/S & post-void residual urine.**
- **IVU**
- Difficult cases may require *urodynamic* investigation.

Treatment:

- Empirical treatment, the patient is urged to drink.
- Appropriate first-line antibiotics include:
  - **Trimethoprim-sulfamethoxazole (TMP-SMX)**: It interferes with the bacterial metabolism of folate. Hypersensitivity reactions & rashes.
  - **Flouroquinolones**: They interfere with the bacterial DNA gyrase, preventing bacterial replication.
  - **Nitrofurantoin**: It inhibits bacterial enzymes and DNA activity. Long-term use may result in pulmonary hypersensitivity reaction
  - **Cephalosporins**: inhibit bacterial cell wall synthesis. Adverse reactions include hypersensitivity and gastrointestinal upset.
- Failure to respond indicates the necessity for further investigation to exclude predisposing factors.
Special forms of lower urinary tract infection:

Acute abacterial cystitis (acute haemorrhagic cystitis)

- The patient presents with symptoms of severe UTI.
- Pus is present in the urine, but no organism can be cultured.
- It is sometimes associated with abacterial urethritis and is commonly sexually acquired.
- Tuberculous infection and carcinoma in situ must be ruled out.
- The underlying causative organism may be mycoplasma or herpes.

Frequency—dysuria syndrome (urethral syndrome):

- This is common in women.
- Symptoms of urinary infection, but with negative urine cultures and absent pus cells.
- Carcinoma in situ, tuberculosis and interstitial cystitis should be excluded.
- Urologists advise patients to adopt general measures such as wearing cotton underwear, using simple soaps, general perineal hygiene and voiding after intercourse.
- Other treatments include cystoscopy and urethral dilatation, although the benefits remain doubtful.

Recurrent Cystitis/UTI

A. Presentation and findings

- Caused either by:
  o Bacterial persistence: the removal of the infected source
  o Reinfection with another organism: preventative therapy
- Management of bacterial persistence and reinfection are distinct.

B. Radiologic imaging is indicated when bacterial persistence is the suspected cause:

- Ultrasonography can be obtained to provide a screening evaluation of the genitourinary tract.
- Intravenous pyelogram,
- Cystoscopy,
- CT scans may occasionally be necessary.

Bacterial reinfection: the patient should be carefully evaluated for evidence of vesicovaginal or vesicoenteric fistula.