URINARY TRACT INFECTION

• Second most common infection following respiratory infections.

• Majority of infections are caused by bacteria, though some are fungal.

• Normal flora found in the urethra consist of lactobacillus and staphylococcus.

• Common causative organisms: Escherichia coli (gram-negative enteral bacteria) causes most community acquired infections , Staphylococcus saprophyticus (gram-positive organism causes 10 – 15%), Catheter-associated UTI's caused by gram-negative bacteria: Proteus, Klebsiella, Seratia, Pseudomonas

• Most common pathogen for cystitis, prostatitis, pyelonephritis: Escherichia coli , Staphylococcus saprophyticus ,Proteus mirabilis ,Klebsiella ,Enterococcus

• Most common pathogen for urethritis : Chlamydia trachomatis , Neisseria Gonorrhea

• Types:

Lowe tract infection: uethraitis, prostatitis,cystaitis

Upper tract infection: pyelonephritis,peri nephric abscesses

• Pathogenesis:

Two potential routes : (1) The hematogenous route, with seeding of the kidney during the course of bacteremia (2) The ascending route, from the urethra to the bladder, then from the bladder to the kidneys via the ureters.

The major causes of hematogenous infection are S. aureus, Salmonella species, P. aeruginosa, and Candida species

• Symptoms of UTI

Dysuria , Increased frequency, urgency ,Hematuria ,Fever Nausea/Vomiting (pyelonephritis) , Flank pain (pyelonephritis), Discharge

Findings on Exam in UTI:

Physical Exam:

Suprapubic tenderness (Cystitis) , CVA tenderness (pyelonephritis) , Urethral discharge (urethritis) ,Tender prostate on PRE (prostatitis)

• Uropathogenic E. coli virulence factors:

Type 1 pill: most imp for periuretheral and bladder colonisation ,P pili: most important for upper UTI, bind to Gal -Gal receptors ,Motility , Alpha haemolysin ,Cytotoxic necrotising factors (CNF) , Lipopolysaccharide

• Urease-producing members of the genus Proteus are associated with urinary stones, which themselves are predisposing factors for infection.مهم

Cystitis

1. Most common UTI

2. Remains superficial, involving bladder mucosa, which becomes hyperemic and may hemorrhage

3. General manifestations of cystitis: Dysuria , Frequency and urgency , Nocturia (excessive urination at night) ,Urine has foul odor, cloudy (pyuria), bloody (hematuria) , Suprapubic pain and tenderness

• Uncomplicated (Simple) cystitis :In healthy woman, with no signs of systemic disease , Non-pregnant ,No fever, nausea, vomiting, flank pain. Diagnosis : Dipstick urinalysis (no culture or lab tests needed)

• Complicated cystitis :In men, or woman with comorbid medical problems, Indwelling foley catheters , Urosepsis/hospitalization.

• Recurrent cystitis (3 episodes in previous 12 months OR 2 episode in previous 6 months)

• Indwelling foley catheter

Try to get rid of foley if possible! , Only treat patient when symptomatic (fever, dysuria) , Leukocytes on urinalysis , Patient's with indwelling catheters are frequently colonized with great deal of bacteria.

Should change foley before obtaining culture, if possible

Pyelonephritis

• an upper urinary tract infection, is a bacterial infection of the renal pelvis, tubules, and interstitial tissue in one or both kidneys.

• Bacteria reach the bladder through the urethra and ascend to the kidney ,It is frequently secondary to urine backup into the ureters usually at the time of voiding,

Urinary tract obstruction (e.g. Urinary stones, tumors, and prostatic hypertrophy) is another cause, Pyelonephritis may be acute or chronic.

• Almost always caused by E.coli

• Risk factors :Pregnancy , Urinary tract obstruction and congenital malformation ,Urinary tract trauma, scarring ,Renal calculi , Polycystic or hypertensive renal disease , Chronic diseases, i.e. diabetes mellitus , Vesicourethral reflux

• Acute Pyelonephritis may be unilateral or bilateral

• Pt will become acutely ill, weakness , malaise and pain in the costovertebral angle (CVA)

• Medical Management :Adequate fluids at least eight glasses per day.

Prostatitis

• Symptoms:Pain in the perineum, lower abdomen, testicles, penis, and with ejaculation, bladder irritation, bladder outlet obstruction, and sometimes blood in the semen

• Diagnosis: Typical clinical history (fevers, chills, dysuria, malaise, myalgias, pelvic/perineal pain, cloudy urine) , The finding of an edematous and tender prostate on physical examination , Will have an increased PSA , Urinalysis, urine culture.

• Acute bacterial Prostatitis: high fever, chills, pain around the base of penis, cloudy urine, sever

• Chronic bacterial Prostatitis: mild, symptoms come and go, urgency, dysuria, pain after ejaculation, LBP, rectal pain, heavy feeling behand scrotum.

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