Adult Nursing II

Urinary Tract Infection

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Urinary Tract Infection (UTI): Classification

- **Lower UTI:**

  Cystitis (infection/ inflammation of the bladder)

  Urethritis (the urethra)

- **Upper UTI**:
- Pyelonephritis (infection of one or both kidneys)

Physiological Mechanisms to Maintain Urine Sterility

- Urethral valve at bladder neck
- Urine flow:
- Peristaltic waves of the ureters
- Contraction of the bladder (pressure)
- Uretero-vesical junction (angle of insertion of ureters $\rightarrow$ less backflow)
- Bladder mucosal cells (anti-adherent)
- Anti-bacterial enzymes in urine and acidity

Aetiology of Urinary Tract Infection

- Ascending infection from the perineum
- Dehydration
- Stasis of urine in the bladder
- Trauma
- Foreign body (in-dwelling catheter)

Aetiology of Urinary Tract Infection

- **Ascending infection** from the perineum (Escherischia coli bacteria mainly):
- Risk increased with:
- Poor hygiene
- Reduced flushing mechanism related to inadequate fluid intake and dehydration. Urine is concentrated
- Sexual intercourse

Aetiology of Urinary Tract Infection

- **Trauma/ injury** from:
- Renal calculi (stones)
- An indwelling catheter
- Frequent catheterisation (residual urine)

Aetiology of Urinary Tract Infection

- **Stasis of urine in the bladder:**
- Inadequate voiding
- Poor habit (need to empty frequently)
- Obstruction (urethral or ureteric)
- Neurogenic bladder
- Leads to growth of pathogens and risk of reflux to the kidneys

At risk population groups for UTI

- Catheterised clients
- The elderly
- Immunosuppressed clients
- Clients with:
- Diabetes Mellitus
- Renal calculi
- Neurogenic bladder

Lower UTI (Cystitis): Clinical manifestations

- Suprapubic pain or ache
- Dysuria (burning/ difficulty on micturition)
- Frequency
- Urgency
- Incontinence
- Haematuria
- Possibly pyrexia

Upper UTI (Pyelonephritis): Clinical Manifestations

- Hyperpyrexia (and tachycardia)
- Rigors (chills): more chance of leading to a systemic infection
- Severe pain over left or right loin (or both)
- Dysuria
- Nausea and vomiting, headache
- If gram negative sepsis and shock, hypotension

Urinary Tract Infection: Diagnosis

- Clinical picture and history
- MSU (CSU if catheter in situ) for micro-organisms, culture and sensitivity
- *(If UTI):*
- *Bacteria = >10^{5} colony-forming units/ ml*
- *RBC >4 / WBC >4 per high power field*
- *Nitrates+ Protein+*
- Blood culture if pyelonephritis suspected

Cystitis: Medical Management

- Usually self-care at home
- Increase fluid intake
- Maintain acid urine with juice (cranberry)
- Frequent voiding
- Good hygiene
- Antibiotic course (complete course) MSU to check free of infection 2 weeks after completion of antibiotics

Pyelonephritis: Medical Management

- Hospital admission
- Rest
- IV fluids and oral as tolerated (↑ intake)
- IV antibiotics: (later continue orally)
- Analgesia: may include narcotics initially
- Anti-spasmodic, Anti-pyrexial
- MSU 2 weeks after antibiotics completed

Urinary Tract Infection: Nursing Considerations

- Control of pyrexia:
- Tepid sponging or cold compresses
- Anti-pyrexials
- Monitor 4-hourly TPR
- Maintain IV therapy/ fluid balance
- Encourage oral fluids as tolerated and frequent voiding
- IV antibiotics
- Mouth care as required

Chronic Urinary Tract Infection

- Any acute urinary tract infection may become chronic.
- Chronic infection → progressive scarring and loss of nephrons
- May lead to end-stage renal disease (ESRD)(MSU after acute)
- Chronic UTI often has no specific symptoms: fatigue, headache, anorexia, weight loss, polyuria, thirst
- Long-term antibiotics may be required