UTI & ASYMPTOMATIC BACTERURIA

DR. MOATH SALEH BANI HANI

RENAL PHYSIOLOGY CHANGES IN PREGNANCY

- Structural changes :

-mass effect of the gravid uterus on the renal system .

-the kidneys increase 1-1.5 cm in length and 30% in vol.

-the collecting system expand more than 80%, with greater dilatation on the right side (mild right physiologic hydro-nephrosis is seen 6th week)

-renal vol. returns to normal within the first week postpartum , but hydro-nephrosis may not normalize **until 3-4 months** .

RENAL PHYSIOLOGY IN PREGNANCY

- Renal filtration :

-increase renal plasma flow by 50-70% (blood vol. increase),this will lead to an increase GFR .

-elevated GFR ----leads to ---increase in creatinine clearance , lower serum blood urea nitrogen (BUN) AND SERUM CREATININE .

-decreased tubular resorption in pregnancy increases urinary excretion of ELECTROLYTES(hypo-na) , GLUCOSE(**glycosuria**) , AMINO ACID AND PROTEIN

-**renal resorption of HCO3 decreases** to compensate for respiratory alkalosis of pregnancy .

- **Previously mentioned changes increase the risk of infection** .

URINARY TRACT INFECTION

- Urinary tract infection is more common in pregnancy because of the physiological dilatation of the upper renal tract and glycosuria .
- Risk factors :

-history of previouse UTI

-DM

-receiving steroid or immunosuppression .

-polycystic kidneys or reflux nephropathy .

-congenital abnormalities (duplex kidney or ureter)

-neuropathic bladder (spina bifida , multiple sclerosis)

Incidence

- The incidence of **asymptomatic bacteriuria** in pregnancy ranges from 4-7 % and up to 40 % of them will develop symptomatic UTI /if left untreated .
- Cystitis complicate 1-3% of pregnancies .
- Pyelonephritis complicate 1-2 % of pregnancies .

Asymptomatic bacteriuria

- Is the presence of bacteria within the urinary tract , excluding the distal urethra , without signs and symptoms of infection .
- The incidence of asymptomatic bacteriuria in pregnancy ranges from 4-7 % and up to 40 % of them will develop symptomatic UTI .
- A midstream urine specimen performed as part of booking investigation
- **Associated with low-birth weight infants and pre-term delivery** , so..in pregnancy should be treated .

Asymptomatic bacteriuria

- Screening for bacteriuria with a urine culture is recommended at the booking visit .
- Urine analysis may show **nitrites** and **leukocyte esterase** .
- A clean catch urine culture with 100,000 colonies/ml OR catheterized urine culture with more than 100 colonies is **diagnostic** .
- **E.coli** accounts for 75-90 % , klebsiella ,proteus ,enterobacter and staphylococcus are other common pathogens .

Acute cystitis

- Is urinary tract infection that affect the bladder or lower urinary tract
- Cystitis complicate 1-3% of pregnancies .
- Symptoms include :

- urinary frequency

-urgency

-dysuria

-hematuria

-supra-pubic discomfort .

Urethritis

- Is usually caused by chlamydia trachomatis , and should be suspected in patient with symptoms of acute cystitis and negative urine culture .
- Treatment of choice is azithromycin for the patient and her partner .
- re-test after 3-4 weeks after treatment .

Acute pyelonephritis

- Is inflammation of the kidney or upper urinary tract .
- Pyelonephritis complicate 1-2 % of pregnancies .
- Is the leading cause of septic shock in pregnancy , if left untreated .
- Signs and symptoms :

- fever & chills
-flank tenderness
-nausea and vomiting
-frequency , urgency , dysuria

Inx : -UA&uc and KFT
-renal U/S (to exclude hydronephrosis ,congenital abnormalities , stone)
-blood culture need NOT be routinely done and reserved for severely ill patient

Complication

- 1- preterm labor & PPROM
- 2-sepsis
- 3-ARDS

MANAGEMENT

- ALL bacteruria(ASB,CYSTITIS ,PYLONEPHRITIS) in pregnancy reqires treatment to prevent complication .
- For asymptomatic bacteriuria treatment for **3 DAYS**.
- For acute cystitis treatment for **7 days**
- For acute pyelonephritis for **10-14 days** (iv abx –oral abx)

- **Regular urine culture should be taken following treatment to ensure eradication of the organism (usually re-test after 1-2 weeks after treatment**)

Antibiotic

- The choice of antibiotic depend on the sensitivities of the causative organism , but , in suspected infection ,treatment should begin before the results of culture **(empirical therapy)**
- Penicillin(amoxicillin) and cephalosporins are safe in pregnancy .
- Augmentin (co-amoxiclav)increases the risk of necrotizing enterocolitis .
- Nitrofurantoin should be avoided in the 3rd trimester (may cause hemolytic anaemia in the neonate .
- Trimethoprime should be avoided in the first trimester (anti-folate)

Oral antibiotics :
Amoxicillin 500 mg three times a day
Cefadroxil 500 mg twice a day
Cephalexin 250 mg three times a day
Nitrofurantoin 100 mg three times daily (not in 3rd trimester)
Trimethoprime 200 mg twice daily (not in 1st trimester)

Intravenouse antibiotics for pyelonephritis
Cefuroxime 750 mg to 1.5 g three times a day
Amoxicillin 1 g three times a day
Gentamicin 5-7 mg/kg daily (for organism resistant to , or women allergic to penicillin and cephalosporins)

Prophylaxis of UTI :
Cephalexin 250 mg once daily
Amoxicillin 250 mg once daily

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- In pyelonephritis with vomiting or pyrexia , antibiotics should be give intravenously until pyrexia settles (afebrile for 48 h) then oral antibiotics to complete 14 days .

- Continuous prophylactic antibiotics are usually recommended only for those with two or more confirmed (+ve culture)UTIs and either one of :

-renal transplant

-congenital abnormalities

- renal stone

THANK YOU …

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