KING SAUD UNIVERSITY MEDICAL CITY

DEPARTMENT OF OBSTETRICS & GYNECOLOGY

COURSE 482

Urinary Tract Infection & Anemia in Pregnancy

Urinary Tract Infections in Pregnancy

Urinary Tract Infections (terminology)

- Bacteriuria

Bacteria in the urine

- Significant bacteriureia

= or > 10^5 CFU/mL of urine

- Asymptomatic bacteriuria
- Lower UTI /cystitis
- Upper UTI / pyelonephritis

Types of UTI Recurrences

1. Relapse:

same organism within 2-3 wks

2ndry to perineal colonization or inadequate Rx

2. Reinfection:

2ndry to recurrent new organism within 12 wks

bladder bacteriuria

3. Superinfection:

new organism while on Rx

4. recurrent UTI :

2 in 6months or = >3 in 1year

Urinary Tract Infections in Pregnancy

- Common medical complication of pregnancy (2-10%)
- Pathphysiology: ascending infection from vagina and rectum
- Most common causative organisms: gram –ve enteric bacteria (e.g: E.Coli 60-80%, Proteus, K. Pnemoniae, Pseudomonas, and GBS.
- Lactobacilli cause no UTI

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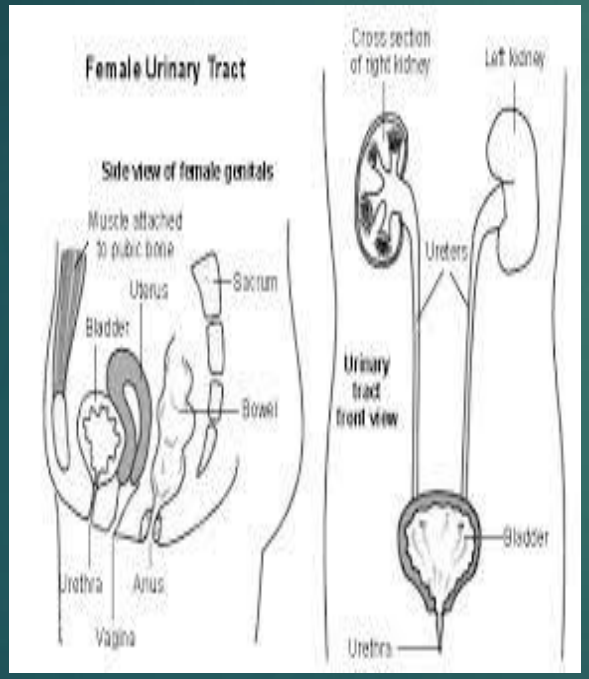
WHY

- FEMALE GENDER

Life time risk 1 in 2 (50%)



Anatomic Changes in Pregnancy (increase stasis)

- Kidneys: ↑ in length, weight, and pelves size (physiologic hydronephrosis); Rt > Lt
- Ureters: dilated or hydroureter (Rt > Lt), urinary stasis
- Mechanism: hormonal or mechanical
- Consequences: ↑ risk of urinary tract infections

Risk Factors for UTI's in Pregnancy

1. Mechanical obstruction: ureteropelvic junction, urethral or ureteric stenosis, & calculi
2. Functional obstruction: pregnancy & vesicoureteral reflux
3. Others: Systemic diseases: DM, sickle cell trait/disease, gout, cystic renal disease

Classification of UTI's

Clinical:

- Asymptomatic (8%)
- Symptomatic (1-2%)

Anatomical:

- Lower tract dis: asymptomatic bacteriuria and acute cystitis
- Upper tract dis: acute pyelonephritis

Asymptomatic Bacteriuria (ABU)

- Incidence in pregnancy: 2-10% similar to sexually active women
- Consequences: acute pyelonephritis (30%)
- Clinical presentation: ??
- Diagnosis: ?
- Management: outpatient Abx (amoxil, 1st generation cephalosporin, nitrofurantoin)
- length: 3-10 days

Acute Cystitis

- Incidence in pregnancy: 1-2%
- Consequences: acute pyelonephritis (30%)
- Clinical presentation:
- Diagnosis:
- Management: outpatient Abx , analgesics
- Length: 7-10 days
- Re culture

Acute Pyelonephritis

- Incidence in pregnancy:2-4%

- The leading cause of ARDS and septic shock in pregnancy
- Most commonly in second Tx
- Consequences: sepsis, adult respiratory syndrome, anemia, renal failure, preterm labor
- Clinical presentation: fever/chills, CVA tenderness, nausea and vomiting

Acute Pyelonephritis

- Diagnosis:

S&S

Leukocytosis

Urine culture

Blood culture +ve in 10%

- Management: Inpatient
  - Admission - Antipyretic agents
  - Abx (i.v. ampicillin or cephalosporin then p.o)
- Length: 10-14 days
- Re culture 10-25% recurrent

Prevention:

Prenatal screening for ASB in pregnant women

Hygiene

Anemia in pregnancy

Physiologic anemia (dilutional anemia)

dilution because the plasma volume expands more than the erythrocyte volume

(The hematocrit in pregnancy normally drops several points below its pregnancy level)

the oxygen-carrying capacity of the blood is not deficient

- The total blood volume increase by 40%(10-24w)
- Hct decreases from between 38 and 45% in healthy women who are not pregnant to about 34% during late single pregnancy and to 30% during late multifetal pregnancy
- Red cell mass (driven by an increase in maternal erythropoietin production) also increases, but relatively less, compared with the increase in plasma volume

- Thus during pregnancy, anemia is defined as Hb < 10 g/dL (Hct < 30%)

- Women after middle age: 11.7 to 13.8 gm/dl

Hemoglobin (whole blood)

Units	Nonpregnant Female	First Trimester	Second Trimester	Third Trimester
g/dL	12 -15.8	11.6 - 13.9	9.7 - 14.8	9.5 -15
g/L	120 -158	116 - 139	97 - 148	95 - 150

References:

1. Abbassi-Ghanavati M, Greer LG, Cunningham FG. Pregnancy and laboratory studies: a reference table for clinicians. Obstet Gynecol. 2009 Dec;114(6):1326-31. PMID:19935037

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- Women who take iron supplements have less pronounced changes in hemoglobin, as they increase their red cell mass in a more proportionate manner than those not on hematinic supplements.

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e-Library of Evidence for Nutrition Actions (eLENA)

Daily iron and folic acid supplementation during pregnancy

Guidance summary*

WHO recommendations

Daily oral iron and folic acid supplementation is recommended as part of the antenatal care to reduce the risk of low birth weight, maternal anaemia and iron deficiency.

Suggested scheme for daily iron and folic acid supplementation in pregnant women	
Target group	Pregnant women
Dose	Iron: 30–60 mg of elemental iron[a]
	Folic acid: 400 µg (0.4 mg)
Frequency	One supplement daily
Duration	Throughout pregnancy. Iron and folic acid supplementation should begi as early as possible
Target group	All pregnant adolescents and adult women
Settings	All settings

a. 30 mg of elemental iron equals 150 mg of ferrous sulfate heptahydrate, 90 mg of ferrous fumarate or 250 mg of ferrous gluconate.

Remarks

- In settings where anaemia in pregnant women is a severe public health problem (40% of higher), a daily dose of 60 mg of elemental iron is preferred over a lower dose.

Pathological anemia

- the oxygen-carrying capacity of the blood is deficient because of disordered erythrocyte production or excessive loss of erythrocytes through destruction or bleeding
- Anemia occurs in up to one third of women during the 3rd trimester

Anemia in pregnancy

Causes

- Iron deficiency
- Folate deficiency
- HEMOGLOBINOPATHIES

Iron deficiency anemia

- CBC, MCV value
- MCV is low (<79 fL)
- masurement of serum iron, ferritin, and transferrin
- Typically, Hct is ≤ 30%, and MCV is < 79 fL. Decreased serum iron and ferritin and increased serum transferrin levels confirm the diagnosis.
- Usually ferrous sulfate 325 mg po once/day
- parenteral therapy

IM: 20% of pregnant women do not absorb enough supplemental oral iron

absolute non-compliance

IV: faster increases in Hb and better replenishment of iron stores in comparison with oral therapy,

Folate deficiency (Megaloblastic Macrocytic Anemia)

- increases risk of neural tube
- Deficiency occurs in 0.5 to 1.5% of pregnant women Diagnosis Measurement of serum folate
- Severe megaloblastic anemia may warrant bone marrow examination and further treatment in a hospital
- Treatment is folate 1 mg po bid

- Thank you