

Renal & thyroid disease in pregnancy

Objectives

- a-Know Physiological changes of these two organs during pregnancy .
- b- Discuss types of their disorders during pregnancy , their C/F ,diagnosis & management .
- C-Discuss fetal & maternal complications of these disorders .

Physiological changes in pregnancy

Ureters and renal calyces dilatation (remembered in U/S).

renal plasma flow + glomerular filtration urinary protein
excretion and creatinine clearance. So: -

The upper limit of serum creatinine clearance falls to $60 \mu\text{mol/L}$.

The upper limit for proteinuria throughout pregnancy is 300mg/24 hours.

Urinary tract infection

It is more common in pregnancy due to physiological dilatation of the upper renal tract.

Asymptomatic bacteriuria 4-7%, 40% of them will develop symptomatic UTI.

Cyss: 1% of pregnancies

Pyelonephritis: 1 to 2% of pregnancies

Predisposing factors:

- previous history of UTI.

- Diabetes mellitus, polycystic kidneys, urinary tract calculi, renal tract abnormalities (duplex kidney or ureter)
- Neuropathic bladder (spina bifida or multiple sclerosis).
- Drugs: steroids or immunosuppression.

Presentation

Asymptomatic: Asymptomatic bacteriuria + patients with predisposing factors: midstream urine specimens (antenatal screening).

Clinical features include:

Cystitis: urinary frequency, dysuria, haematuria, proteinuria and suprapubic pain.

Pyelonephritis: fever, loin pain and/or abdominal pain, vomiting and rigors.

Diagnosis

Dipstick for proteinuria.

MSU for analysis. Bacteriuria: 100000 organisms/ml of urine or more

MSU for culture and sensitivity. It should be repeated if it is non-significant or with mixed growth.

management

Asymptomatic bacteriuria: a 3-day course of antibiotics (oral) to prevent pyelonephritis + preterm labour.

Acute cystitis: a 7-day course of antibiotics (oral).

- Urine culture following treatment to ensure eradication of organisms.
- Recurrent bacteriuria occurs in 15% of women in pregnancy and requires a second course of antibiotics.

- U/S: in patients with 2 or more UTIs (+ve culture).

Pyelonephritis: 🍌

- antibiotics for 10-14 days.
- IV antibiotics for patients with vomiting or pyrexia.
- IV fluids may be required.
- renal function should be checked.
- U/S to exclude hydronephrosis, renal calculi and congenital abnormalities (**risk factors**).

prophylactic antibiotics: two or more UTIs (positive culture) i.e. recurrent UTI or one of the above risk factors

Treatment regimens for UTI in pregnancy

<p><u>Oral antibiotics:</u> 🍌</p> <ul style="list-style-type: none"> - amoxicillin 500 mg tds. - Cefadroxil 500mg bd. - Cephalexin 250 mg tds. - nitrofurantoin 100 mg tds (not third trimester). 	<p><u>IV antibiotics for pyelonephritis:</u> 🍌</p> <ul style="list-style-type: none"> - Cefuroxime 750mg tds - Augmentin 1gm tds - Gentamicin 2-5mg/kg divided 8 hourly for organism resistant to or women allergic to penicillin and cephalosporin
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Prophylaxis of UTI:

- Cephalexin 250 mg od.
- amoxicillin 250 mg od.

Renal impairment

Aetiology:

1. reflux nephropathy
2. diabetes

3. systemic lupus erythromatosus (SLE)

4. Glomerulonephritis .

5. polycystic kidney disease.

Classification: mild, moderate or severe depending on the serum creatinine.

creatinine depends on the muscle mass i.e. a figure representing moderate impairment in an 85-kg may represent severe impairment for a 50-kg woman

Presentation:

hypertension and proteinuria ± haematuria in early pregnancy. Blood tests for urea and creatinine must be done.

Effect of pregnancy on renal impairment: ■

- mild impairment (creatinine < 125 µmol/l): tolerate pregnancy well with no renal function deterioration.

- severe renal impairment (creatinine > 250 µmol/l): at increased risk of permanent loss of function during and after pregnancy and even end stage of renal failure.

Effect of renal impairment on pregnancy : ■

1. PE , IUGR, spontaneous and iatrogenic premature delivery. ■

- severe renal impairment + hypertension have < 50 % chance of successful pregnancy because of severe, early-onset of PE with severe IUGR. ■

- premature delivery is justified in rapidly worsening renal function to avoid dialysis even in the absence of PE. ■

2. severe renal impairment polyhydramnios and risk of cord prolapse due to fetal polyuria in response to high osmotic load from increased maternal urea. ■

3. nephrotic syndrome and heavy proteinuria severe hypoalbuminuria with associated risks of pulmonary oedema and thrombosis. ■

management of renal impairment

prepregnancy counseling and multidisciplinary care. •

Documenting baseline values (prepregnancy & early pregnancy) for creatinine, uric acid, albumin and protein. •

Tight control of even mild hypertension with antihypertensive agents (the choice is no different in women with renal disease). •

discontinue angiotensin-converting enzyme (ACE) inhibitors prior to pregnancy or once pregnancy is confirmed. •

Discontinue: diuretics unless there is severe hypoalbuminaemia and insipient pulmonary oedema. •

Admission: in worsening hypertension, increasing creatinine, and large increase in proteinuria because of high risk of PE with difficult diagnosis in the presence of BP + proteinuria.-- •

Diagnosis of PE is supported by: IUGR, thrombocytopenia and abnormal liver function. •

Prophylactic low-dose(75 mg/day) aspirin to decrease the risk of PE. •

Serial scans for fetal growth and liquor volume. •

Serial haematology and biochemistry. •

Post partum: continue close monitoring. ACE inhibitors are safely used in breastfeeding

Renal transplants

Pregnancy outcome in well functioning renal transplants is similar to the general population.

Pregnancy should be delayed for **1-2 years to allow graft function** to stabilize and immunosuppression to reach maintenance levels.

Risks in pregnancy: is related to pre-pregnancy renal function and to the presence of hypertension.

Women are immunosuppressed and prone to infection.

Immunosuppressive drugs used in pregnancy: prednisolone, azathioprine, & cyclosporine.

Dialysis

pregnancy on dialysis is unusual: end-stage renal failure reduces fertility.

Patients on dialysis should be advised not to get pregnant.

Common risks: anaemia and haemorrhage.

Increased risks of:

miscarriage, fetal death, pre-eclampsia, pre-term labour, PROM, polyhydramnios and placental abruption.

Pregnant women require increasing dialysis to maintain the pre-dialysis urea < 15-20 mmol/l.

Poor obstetric outcome is similar with both haemodialysis and peritoneal dialysis.

Thyroid Disease

- Physiological changes :-

1- slight increase in size of T.G.

2- Thyroid binding globulin double by liver due to estrogen stimulation so increase total T4 & T3.

3- no significant change in free T3, T4 level.

4 - renal clearance of iodine increased due to increased GFR & increased consumption of fetus lead to decreased plasma inorganic iodine .

Maternal Hyperthyroidism

- **incidence:** 2: 1000 of pregnancies.

- **causes:** Graves disease (90%) autoimmune disease with presence of circulating TSAB ,toxic nodule ,Hashimotos thyroiditis , multiple nodular goiter, trophoblastic disease (rare).

- **Diagnosis :-**

1- In early pregnancy ,the diagnosis c/o ly difficult

2- in uncontrolled hyperth.: maternal arrhythmias, vomiting, abd. Pain, diarrhea.

- **Fetal complications :** IUGR , stillbirth, fetal tachy cardia, preterm labor , abortion, congenital abn., fetal thyrotoxicosis.

-**Treatment :-**

1- drug therapy ; the aim is to maintain maternal T3,T4 level in high normal range ex.: carbimazole ,propyl thiouracil, B-blockers.

2- Radioactive iodine.

Maternal hypothyroidism

- **Incidence :** 9:1000 of pregnancies.

- **Causes :** iodine deficiency ,over treated hyperthyroidism.

- Diagnosis :-

A- C/F : easy fatigue ability, cold intolerance, slow speech, oligomenorrhea, infertility.

B- investigation: decreased free T3&T4, increased TSH.

- **Fetal complication** : congenital hypothyroidism & cretinism of newborn if the cause is maternal iodine deficiency, abortion, preterm labor, still birth.

- **Treatment** : restore TSH to normal range by thyroxine replacement therapy.

REFERENCE

OBSTETRIC BY TEN TEACHERS

DEWHURST,S TEXT BOOK OF OBSTETRIC & GYNECOLOGY