MEDICAL DISEASES COMPLICATING PREGNANCY

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Neurological disorders

Epilepsy
Approximately 30 per cent of those with epilepsy are women in their childbearing years. 1 in 200–250 pregnancies occur in women with a history of epilepsy. There is a ten-fold increase in mortality among pregnant women with epilepsy, seizures should still be controlled with the minimum possible dose of the optimal drug. The principal concern related to epilepsy in pregnancy is the increased risk of congenital abnormality caused by anticonvulsant medications. All of these drugs are associated with a two- to three-fold increased risk of fetal abnormality (5–6 per cent) compared to the general population, and an approximate doubling of the risk compared to unexposed epileptic mothers. Polytherapy further increases the risk (15–25 per cent).
The major fetal abnormalities associated with anticonvulsant drugs (including sodium valproate, carbamazepine, phenytoin, phenobarbitone) are neural tube defects, facial clefts and cardiac defects. Despite the risks of continuing anticonvulsants in pregnancy, failure to do so may lead to an increased frequency of epileptic seizures that may result in both maternal and fetal hypoxia. Therefore, women on multiple drug therapy should, wherever possible, be converted to monotherapy before pregnancy. Delivery mode and timing is largely unaltered by epilepsy, unless there has been accelerated seizure frequency in pregnancy, and anticonvulsant medication should be continued during labour. Breastfeeding can be encouraged,
Causes of seizures in pregnancy
- Epilepsy
- Eclampsia
- Encephalitis or meningitis
- Space-occupying lesions (e.g. tumour, tuberculoma)
- Cerebral vascular accident
- Cerebral malaria or toxoplasmosis
- Thrombotic thrombocytopenic purpura
- Drug and alcohol withdrawal
- Toxic overdose
- Metabolic abnormalities (e.g. hypoglycaemia)
Pre-pregnancy counselling

- Alter medication according to seizure frequency
- Reduce to monotherapy where possible
- Stress importance of compliance with medication
- Pre-conceptional folic acid 5 mg
- Explain risk of congenital malformation
- Explain risk from recurrent seizures
Respiratory disease

Asthma
• 3–12 per cent of pregnant women affected by asthma.
• Asthma is not consistently affected by pregnancy and it is reported that, during pregnancy, the severity of asthma remains stable in one-third of women, worsens in another third and improves in the remaining third.
• FGR is more common in women with symptomatic asthma than in non-asthmatic women, the historic increased risk of preterm delivery
• ergometrine or prostaglandin F2α, should be avoided.
• regional anaesthesia favoured over general, to decrease the risk of bronchospasm.
• The inheritance risk of asthma for the fetus ranges from 6 to 30 per cent.
Features of severe life-threatening asthma

- Peak expiratory flow rate 35 per cent of predicted
- \( pO_2 \) 8 kPa
- \( pCO_2 \) 4.6 kPa
- Silent chest
- Cyanosis
- Bradycardia
- Arrhythmia
- Hypotension
- Exhaustion
- Confusion
It is safer to take asthma drugs in pregnancy than to leave asthma uncontrolled.

Inhaled beta-sympathomimetics are safe, as is theophylline, although its metabolism is altered and drug levels need to be monitored.

Long-acting 2 agonists like salmeterol do not cause fetal malformation or FGR in prospective studies and there is limited systemic absorption.

Inhaled corticosteroids prevent asthma exacerbations in pregnancy and have been shown to be safe with no association with fetal malformations.
Management of asthma in pregnancy

- Pregnancy is a time to improve asthma care
- Encourage smoking cessation
- Ensure patient education regarding condition and adequate use of medications
- Ensure optimal control and response to therapy throughout pregnancy
- Manage exacerbations aggressively and avoid delays in treatment
- Manage acute attacks as in non-pregnant individual
- Offer a multidisciplinary team approach
Heart disease
Pre-pregnancy counselling

Issues in pre-pregnancy counselling of women with heart disease

- Risk of maternal death
- Possible reduction of maternal life expectancy
- Effects of pregnancy on cardiac disease
- Mortality associated with high risk conditions
- Risk of fetus developing congenital heart disease
- Risk of preterm labour and FGR
- Need for frequent hospital attendance and possible admission
- Intensive maternal and fetal monitoring during labour
- Other options – contraception, adoption, surrogacy
- Timing of pregnancy
Antenatal management

manage pregnant women with significant heart disease in a joint obstetric/cardiac clinic.

Routine physical examination should include pulse rate and pressure, blood pressure, jugular venous pressure, ankle and sacral oedema, and presence of basal crepitations.

Echocardiography is non-invasive and useful in its ability to serially assess function and valves, and an echocardiogram at the booking visit and at around 28 weeks is usual.

Hospital admission for bed rest will reduce the workload of the heart.

The use of anticoagulants during pregnancy is a complicated issue because warfarin is teratogenic if used in the first trimester, and is linked with fetal intracranial haemorrhage in the third trimester.
Markers
1 Prior episode of heart failure, arrhythmia or stroke
2 NYHA class II or cyanosis
3 Left heart obstruction
4 Reduced left ventricular function (EF 40 per cent.)
High-risk cardiac conditions
• Systemic ventricular dysfunction (ejection fraction 30 per cent, NYHA class III–IV)
• Pulmonary hypertension
• Cyanotic congenital heart disease
• Aortic pathology (dilated aortic root 4 cm, Marfan syndrome)
• Ischaemic heart disease
• Left heart obstructive lesions (aortic, mitral stenosis)
• Prosthetic heart valves (metal)
• Previous peripartum cardiomyopathy
Fetal risks of maternal cardiac disease

- Recurrence (congenital heart disease)
- Maternal cyanosis (fetal hypoxia)
- Iatrogenic prematurity
- FGR
- Effects of maternal drugs (teratogenesis, growth restriction, fetal loss)
Management of labour in women with heart disease

• Avoid induction of labour if possible
• Use prophylactic antibiotics
• Ensure fluid balance
• Avoid the supine position
• Discuss regional/epidural anaesthesia/analgesia with senior anaesthetist
• Keep the second stage short
• Use Syntocinon judiciously
Treatment of heart failure in pregnancy

Drug therapy may include diuretics, vasodilators and digoxin. Oxygen and morphine may also be required. Arrhythmias also require urgent correction and drug therapy, including adenosine for supraventricular tachycardias, and selective beta-adrenergic blockade may be required.

In cases of intractable cardiac failure, the risks to the mother of continuing the pregnancy and the risks to the fetus of premature delivery must be carefully balanced.
Risk factors for the development of heart failure
- Respiratory or urinary infections
- Anaemia
- Obesity
- Corticosteroids
- Tocolytics
- Multiple gestation
- Hypertension
- Arrhythmias
- Pain-related stress
- Fluid overload
Hypertensive disorders

Classification of hypertension in pregnancy
• Gestational hypertension
• gestational hypertension (no proteinuria)
• gestational proteinuria (no hypertension)
• pre-eclampsia (proteinuria and hypertension)
• Pre-existing hypertension and/or renal disease
• chronic hypertension (no proteinuria)
• chronic renal disease (hypertension and/or proteinuria)
• chronic hypertension with superimposed pre-eclampsia
• Unclassified hypertension and proteinuria
Definition
Hypertension is defined as changes of blood pressure recorded on at least two occasions:
• diastolic blood pressure 90 mmHg, or
• systolic blood pressure 140 mmHg.
Causes of chronic hypertension

- Idiopathic
- essential hypertension
- Renal disease
- polycystic disease
- diabetic nephropathy
- chronic glomerulonephritis
- nephrotic and nephritic syndrome
- Vascular disorders
- renal artery stenosis
- coarctation of the aorta
- Collagen vascular disease
- systemic sclerosis
- systemic lupus erythematosus
- rheumatoid disease
- Endocrine disease
- phaeochromocytoma
- Conn’s syndrome
- Cushing’s syndrome
- diabetes mellitus
Management of chronic hypertension

In mild cases (150/100 mmHg) there is no immediate indication to treat angiotensin-converting enzyme inhibitors, should be discontinued because of the fetal risk.

If the blood pressure is consistently noted to be 150/100 mmHg, antihypertensive medication will need to be introduced or recommenced. labetolol (alpha and beta-blocker), and nifedipine (calcium-channel blocker).

The obstetric management of pre-existing hypertension involves close monitoring for the development of superimposed pre-eclampsia, which may present with elevated blood pressure, new-onset or worsening proteinuria, as well as the development of FGR.
Risk factors for developing superimposed pre-eclampsia
- Renal disease
- Maternal age 40 years
- Pre-existing diabetes
- Multiple pregnancy
- Connective tissue disease, e.g. antiphospholipid syndrome
- Coarctation of the aorta
- Blood pressure 160/100 mmHg in early pregnancy
- Pre-pregnancy BMI 35
- Previous pre-eclampsia
- Antiphospholipid syndrome
Renal disease

Pre-pregnancy counselling

- Safe contraception until pregnancy advised
- Fertility issues if indicated
- Genetic counselling if inherited disorder
- Risks to mother and fetus during pregnancy
- Avoid known teratogens and contraindicated drugs
- Management of antihypertensives
- Low-dose aspirin for most pregnancies
- Need for anticoagulation once pregnant in some conditions
- Need for compliance with strict surveillance
- Likelihood of prolonged admission or early delivery
- Possibility of accelerated decline in maternal renal function
- Need for postpartum follow up.
## Stages of chronic kidney disease

<table>
<thead>
<tr>
<th>Stage</th>
<th>Description</th>
<th>Estimated GFR (mL/min/1.73m²)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Kidney damage with normal/raised GFR</td>
<td>90</td>
</tr>
<tr>
<td>2</td>
<td>Kidney damage with mildly low GFR</td>
<td>60–89</td>
</tr>
<tr>
<td>3</td>
<td>Moderately low GFR</td>
<td>30–59</td>
</tr>
<tr>
<td>4</td>
<td>Severely low GFR</td>
<td>15–29</td>
</tr>
<tr>
<td>5</td>
<td>Kidney failure</td>
<td>15 or dial</td>
</tr>
</tbody>
</table>
Effect of pregnancy on CKD

CKD stages 1–2 have mild renal dysfunction and usually have an uneventful pregnancy and good renal outcome.

Moderate to severe disease (stages 3–5) are at highest risk of complications during pregnancy and of an accelerated decline in their renal function.

Pre-eclampsia develops, maternal renal function often deteriorates further, but any other additional complications, such as postpartum haemorrhage or use of non-steroidal anti-inflammatory drugs, can critically threaten maternal renal function.
Effect of CKD on pregnancy outcome

• Fetal growth restriction (%) 25 40 65
• Preterm delivery (%) 30 60 90
• Pre-eclampsia (%) 22 40 60
• Loss of 25% renal function postpartum (%) 0 20 50
• End-stage renal failure after 1 year (%) 0 2 35
• Data adapted from Williams D, Davison JM. Chronic
Monitoring of patients with CKD during pregnancy

- Blood pressure
- Renal function
- Creatinine
- Urine
- Infection
- Proteinuria
- Full blood count
- Haemoglobin
- Ferritin
- Renal ultrasound
- Fetal ultrasound
- Anatomy
- Uterine artery Doppler 20–24 weeks
- Growth.