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*Review Article*

# Medical problems during pregnancy

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Two decade ago many medical problems were contraindication for pregnancy but now due to advances in the field of Medicine and Gynaecology, pregnancy will result in excellent outcome both for mother and foetus. Despite most of these conditions, successful pregnancy requires important physiological adaptation.

Medical problems that interfere with the physiological adaptation of pregnancy increase the risk of poor pregnancy outcome.

**Common medical problems encountered during pregnancy**

***Hypertension pregnancy disorders***

Hypertensive pregnancy disorders complicate 10% of all pregnancies and cover a spectrum of conditions, namely preeclampsia, eclampsia, and chronic and gestational hypertension. Traditionally, hypertensive pregnancy disorders were considered not to have any long-term impact on mother's cardiovascular health; however recent studies consistently have supported the role of hypertension in pregnancy as risk factor for cardiovascular disease later in life.

In pregnancy cardiac output increases by 40% most of which is due to an increase in stroke volume. Heart rate increases by 10 beats per minutes during the third trimester. In the second trimester of pregnancy, systemic vascular resistance decreases and is associated with fall in blood pressure (BP).

During pregnancy, a BP of 140/90 mm Hg is considered to be abnormally elevated and is associated with marked increase in perinatal morbidity and mortality. In all pregnant women BP is to be measured in sitting position. In lateral recumbent position the BP is lower than recorded in sitting position. Diagnosis of pregnancy induced hypertension (PIH) requires two elevated BP readings at 6 hour intervals.

Hypertension (HTN) in pregnancy is usually caused by:

- Preclampsia
- Maternal age more than 35 years or less than 15 years
- Obesity
- Angiotensin Gene-235
- Antiphospholipid antibody
- Multiple gestation

**Monitoring of adverse effects of HTN on maternal systems**

Hypertension (HTN) affects various vital organs in the mother leading to their functional derangements. Serum uric acid is a good diagnostic and prognostic predictor in case of PIH if it is more than 5mg/dl then it is associated with poor perinatal outcome[1, 2].

**HELLP syndrome**

Hemolyses, elevated liver enzymes low platelet counts are seen in PIH. It is also seen in case of Disseminated Intravascular Coagulation leading to how filbrinogen levels and increase in Fibrin degradation products (FDP). They herald the onset of PIH so monitoring of foetal wellbeing is necessary. Ultrasonography should be performed every 3 weeks starting at 16 weeks. A ratio between femur length to abdominal circumference of 0.23 or more is suggestive of intrauterine growth retardation (IUGR). In PIH, there is asymmetric IUGR because of brain sparing effect. Hence in IUGR foetus the head circumference- abdomen circumference ratio remains the same (more than 1).

**Phehan calculated**

Doppler flow studies by calculating systolic diastolic ratio(S/D) which can predict hypertensive disease of pregnancy[3].

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**Prevention of pregnancy induced hypertension**

- Low dose aspirin
- Calcium supplementation
- Low dose Magnesium Gluconate(3gm/day) may efficiently prevent PIH.

Eclampsia convulsion are life threatening. IV Phenytoin sodium 900mg for treatment of Eclampsia Diazepam therapy is controversial and can cause apnea in fetus, persiststent depression and respiratory arrest in mothers. Magnesium sulphate is the time tested drug. Intravenous (IV) Infusion is better than Intramuscular (IM) injection. Magnesium sulphate prevents seizures by interacting with N Methyl dispersal (NMD), a receptor in CNS.

**Severe preeclampsia**

It is the presence of new onset of HTN and Proteinuria accompanied by CNS dysfunction, headache, blurred vision, seizures and coma. There is marked elevation of BP which increases by 160/110 and Proteinuria more than 5gm in 24 hr. Aggressive management reduces the risk. Intravenous Methyldopa, Intravenous Labetolol, or hydralazine to reduce BP are the drugs of choice. Alternative agents are calcium channel blockers. BP should be reduced slowly to prevent decrease in blood flow to foetus[4, 8].

**Classification of hypertensive disorders of pregnancy**

***Gestational HTN (6-7%)***

Gestational HTN is onset of hypertension without proteinuria after 20 weeks of gestation with resolution to baseline by 12 weeks of postpartum.

***Preeclampsia (5-8%)***

- HTN plus proteinuria
- 140/90 mm Hg on two occasions six hours apart
- 0.3 gm/dl in 24 hours or 1+ on urine analysis.

***Chronic hypertension (CHTN 3-5%)***

- HTN prior to pregnancy
- Gestational HTN which doesn't resolve within 12 weeks of delivery

Pregnancy in chronic hypertensive can lead to IUG restriction. They should have thorough pre-evaluation before pregnancy. Find out the remedial cause for HTN. Serum Creatinine less than 1.5mg/dl is favourable. Renal function should be evaluated and ACE inhibitors to be avoided[1].

**Table 1:** Procedure for giving magnesium sulphate in PIH

| **1M** | **IV** |
|---|---|
| **Loading Dose:**<br>5gm deep in each buttock.<br>**Maintenance Dose**:<br>5 gm Intramuscular(IM) 6 hourly on alternate buttock.<br><br>**Monitoring of Dose:**<br><br>Observation of respiration and deep reflexes is essential for monitoring of the dose. If deep reflexes are depressed and respiration decreases the dose is to be reduced or stopped as per condition of the patient. | 1-3 gm/hr by continuous infusion pump.<br><br>May be mixed in 100 cc N/S.<br><br>If given by IV push make 20% solution, push 1gm/min.<br><br>40 gm Magnesium Sulphate in1000cc.<br><br>Ringer lactate run at 25-25ml/h(1-3g/h) |

**Superimposed preeclampsia (25% of CHTN)**

- Chronic HTN plus new onset proteinuria or other signs or symptoms of preeclampsia[17,18]

**Cardiac diseases**

Vulvular heart disease is the most common problem complicating pregnancy.

**Mitral stenoses**

It is most likely to cause death during pregnancy. Pregnancy induces increase in blood volume and cardiac output can cause pulmonary oedema. Pregnancy associated with long standing mitral stenosis may result in pulmonary HTN. Sudden death occurs when hypo volemia is allowed to occur. Control of HR, during labour and delivery minimizes the impact of tachycardia and ventricular filling on cardiac function; otherwise Atrial Fibrillation(AF) can occur.

- Digoxin and betablocker can be given.
- Balloon vulvoplasty can be done during pregnancy.

Mitral regurgitation (MR) and Aortic regurgitation (AR) are well tolerated during pregnancy. Mitral Valve Prolapse (MVP) and Aortic stenosis (AS) also does not present much problem. Limitation of activity or balloon vulvoplasty may be indicated.

If artificial valves are present with pregnancy, then warfarin should be stopped and Heparin is initiated prior to conception. Warfarin during first trimester of pregnancy causes foetal chondro dysplasia punctata and in second and third trimester may cause foetal optic atrophy and mental retardation[5].

**Prevention**

Avoid alcohol and other drugs during pregnancy. Doctors should be made aware that a woman is pregnant before prescribing any medications for her. A blood test should be done early in the pregnancy to see if the woman is immune to rubella. If the mother is not immune, she must avoid any possible exposure to rubella and should be immunized immediately following delivery.

Poorly controlled blood sugar levels in women who have diabetes during pregnancy are also associated with a high rate of congenital heart defects during pregnancy. There may be some hereditary factors that play a role in congenital heart disease. It is rare but not impossible for more than one child in a family to have a congenital heart defect[16].

Expectant mothers should receive good prenatal care. Many congenital defects can be discovered on routine ultrasound examinations performed by an obstetrician. The delivery can then be anticipated and the appropriate medical personnel (such as a pediatric cardiologist, a cardiothoracic surgeon, and a neonatologist) can be present, and ready to help as necessary. Such preparation can mean the difference between life and death for some babies.

- Congenital heart disease (CHD) in mother increases the risk of CHD in fetus.
- Prenatal screening of fetus for CHD should be done.
- Atrial septal defect (ASD) and Ventral septal defect (VSD) are to be tolerated if no pulmonary hypertension are present.

**Malaria and pregnancy**

***Prognostic indices***

Hyperparasetemia (more than 5% Erythrocytes are parasitized).

**Peripheral Schizontemia**

Peripheral leucocytoses i.e. more than 12000/ml. High CSF Lactate + low CSF Glucose

Low antithrombin level III creatinine increases than 3mg/ml. Blood urea more than 60mg/ml. PCV less than 20%, Hemoglobin less than 7gm%. Blood sugar decreases to 40mg%.

Puerperal Sepsis more common in malaria due to low immunity. Pregnant women with malaria should be promptly treated because it is dangerous both to mother and fetus. Cerebral Malaria should be distinguished from Preeclampsia.

Chloroquine Prophylaxis- 5mg/kg once a week for acute attack. 25mg/kg in divided doses for 3 days should be given.

On Chloroquine resistance--- Sulphadoxine Pyremethamine one tablet weekly for prophylaxis and 3 tablet stat for treatment are advised.

If patient acutely ill, management to be done with quinine. Quinine is oxytocic can cause abortion in first trimester and premature labor in 3rd trimester. Major adverse effect of Quinine is hypoglycemia[10].

**Tuberculosis**

There is no doubt untreated tuberculosis (TB) presents great risk to a pregnant women and her fetus than does appropriate treatment of disease. Pregnant women with multi drug resistant have higher incidence of pulmonary complication and death. HIV individuals may get re-infected with resistant isolate after successful treatment of drug sensitive organism[7]. The issue of drug resistance

is a dilemma for the obstetrician who is also limited by the potential perinatal toxicity of antituberculous chemotherapy. If sputum is positive for mycobacterium TB, she may be advised to use a mask while handling an infant. Isoniazide (INH) therapy will protect the new born from infection.

**Epilepsy in pregnancy**

Controversy on the incidence of vaginal bleeding, premature labor, eclampsia and caesarian section rate are more with epilepsy. Convulsions can cause maternal injury from falls, fetal injury or abruptioplacenta miscarriage. Intracramial bleeding suppression of foetal heart and neonatal hemorrhage particularly if Vitamin K has not been given to mother, spontaneous abortion can occur.

**Gestational epilepsy**

Special syndrome of pregnancy when appears for the first time in pregnancy that is not related to Eclampsia Seizures may begin during pregnancy and may continue during puerperium altered thromboembolic state leading to thromboses of cerebral veins may be causative factor.

**Major malformation**

Classic Anti epileptic drugs (AED) like Phenobarbitone (PB), Phenytoin (PHT), Primidone (PRM) cause congenital heart defects cleft lip or palate to less extent skeletal defects, failure of closure of neural tube.

| | |
|---|---|
| Described with Carbamezapine (CBZ) | M. Deficiency |
| Valproic Acid (VPA) | Nail Hypoplasia |
| | Spina Bifida |
| | Hypospadias |

To prevent teratogenic effect of VPA- Pantothenate supplement in 1st trimester of pregnancy is recommended. Avoid barbi turates if history of cardiac malformation Folic acid supplement are given to prevent Neural tube defects.

By estimating α Foetoprotein in amniotic fluid, diagnosis of spina bifida can be done. Structural ultrasound may reveal major malformation.

Regular use of Multi Vitamins with folate and Vitamin K during last week of pregnancy prevents many side effects of AED therapy.

In Pregnancy the oestrogen induced increase in thyroxine binding globulin causes increase in circulating levels of $T_3$ and $T_4$. Normal range of circulating levels of free $T_4$, free $T_3$ and TSH remain unaltered during pregnancy. Thyroid gland increases during pregnancy. Incidence of maternal hypothyroidism is about 2 per 1000 pregnancy and generally well tolerated by pregnant women[6].

**Pregnancy and depression**

There are many reasons for the increased prevalence of depression during pregnancy. Most women welcome pregnancy but it is also a major physiological and psychological life event. Women who are coping with other more chronic life stressors may find the additional stress of pregnancy unmanageable. Pregnancy also carries specific demands that individual women may have difficulties with, such as impending motherhood if she has had poor parenting herself or is she has been sexually abused as a child[12].

The biological changes during pregnancy also have a direct effect on mood state. Concentration of female specific sex steroids are raised during gestation and modify parts of the brain involved in mood regulation. There is also gradual increase in hormone concentration within the cortisone stress system- the hypothalamic pituitary-adrenal (HPA) axis- over activity of which has been found in people with depression.

The reasons for the high rates of relapse during pregnancy in those with a history of affective disorder have not been examined. Though any major life event is associated with an increased risk of relapse in those with affective disorders, discontinuation of maintenance medication is probably a more specific and important contributory factor. A recent prospective study of women with a history of recurrent depression found that 68% of those who discontinued antidepressant medication conception relapsed compared with 26% of those who continued taking their medication without interruption[13, 14, 15].

**Table 2:** Choice of Anti Epileptic Drug (AED)

| Type of Seizure | 1st choice | 2nd choice |
|---|---|---|
| Absence fits | VPA/ESM(Ethosuximide) | BZP(Benjodiazepine) |
| Juvenile Myoclonic | VPA | PB |
| Tonic clonic grandmal | VPA | CBZ, PHT |
| Symptomatic | VPA, BZP | CBZ,PHT,PB |
| Partial/Focal | CBZ, VPA | PHT, PB |
| Unclassified | CBZ, VPA | PHT, PB |

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