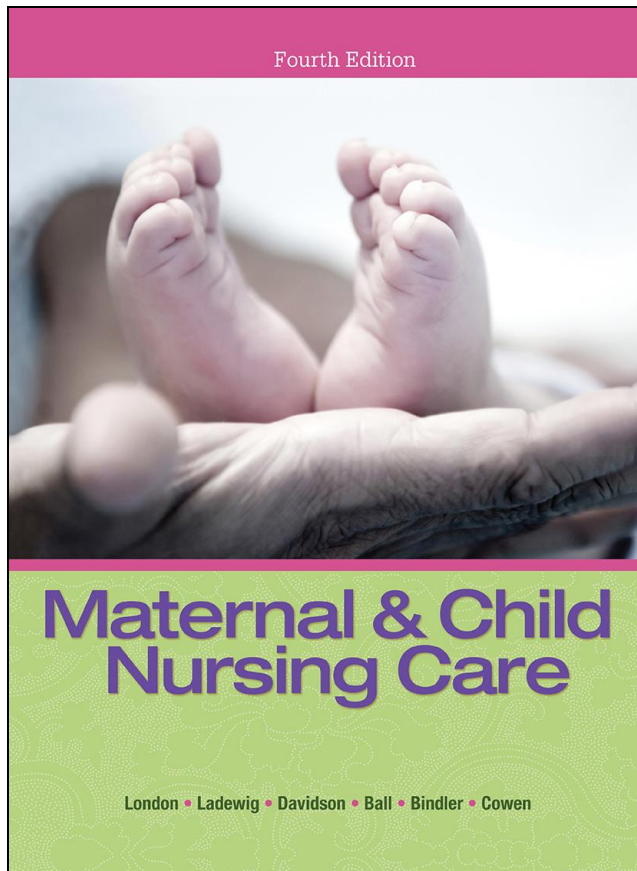


MATERNAL & CHILD NURSING CARE

FOURTH EDITION



CHAPTER 16

Pregnancy at Risk: Gestational Problems

Hypertension in Pregnancy

Learning Outcome 16-3

Describe the maternal and fetal-neonatal risks, clinical manifestations, and nursing care of a pregnant woman with a hypertensive disorder.

Classification of Hypertension in Pregnancy

- Preeclampsia-eclampsia
- Chronic hypertension
- Chronic hypertension with superimposed preeclampsia
- Gestational hypertension (only during pregnancy)

Chronic Hypertension

Defined as hypertension diagnosed:

- Before pregnancy,
- Before the 20th week of gestation,
- During pregnancy & not resolved postpartum

Gestational Hypertension

Diagnosis of gestational hypertension:

- BP \geq 140/90 mmHg detected for first time after mid pregnancy
- No proteinuria

Gestational Hypertension

If preeclampsia does not develop and:

- BP returns to normal by 12 weeks postpartum, diagnosis is transient hypertension
- BP remains high postpartum, diagnosis is chronic hypertension

If Proteinurea develops Preeclampsia is diagnosed

Preeclampsia

- Most common hypertensive disorder in pregnancy
- Complicates 2-7% of pregnancies
- Occurrence most common in the last 10 wks of pregnancy, during labour or 1st 48 hours after birth

Preeclampsia

- Increase in BP after 20 wks, accompanied by proteinuria
- Edema is not a sign anymore, as it is common
- Sudden edema is a warning sign to R/o preeclampsia



Preeclampsia

- Weight gain of 2kg/week or sudden weight gain over 1 or 2 days (due to sodium & fluid retention should raise the suspicion of preeclampsia)

Preeclampsia



Risk factors

- Age extremes: teenage pregnancy or >35 yrs old
- Primigravidas
- Hx of previous preeclampsia
- Diabetes, Rh incompatibility, large placenta, multiple gestation
- Obesity
- Smoking
- Black

Etiology

Unknown

“disease of theories”

Some theories include:

- Genetic susceptibility hypothesis
- Immune mal-adaptation to cardiovascular changes
- Intolerance of fetoplacental tissues hypothesis
- Placental perfusion or Ischemia Hypotheses
- Dietary deficiencies
- Abnormal trophoblastic invasion of uterine vessels

Pathophysiology of Preeclampsia

Normal pregnancy is a vasodilated state in which peripheral vascular resistance decreases 25%

Within the first weeks, the woman's blood pressure falls, largely due to a general relaxation of muscles within the blood vessels

Diastolic blood pressure drops 10 mm Hg at midpregnancy and gradually returns to pre-pregnant levels at term

Pathophysiology of Preeclampsia

Pathophysiologic abnormalities/changes in Preeclampsia

- Generalized vasospasm
- Activation of coagulation system
- Abnormal hemostasis
- Endothelial cell injury
- Abnormal hemodynamics
- Reduced uteroplacental blood flow

Pathophysiology of Preeclampsia

Spasm of vessels → Vessel stenosis → Higher periphery resistance → Elevated blood pressure



Injury of endothelial leukocyte →

- Proteinuria
- Edema
- Hypertension

Pathophysiology of Preeclampsia

- Hyperreflexia
- Decreased placental perfusion
- Increased viscosity of blood
- HELLP syndrome
 - **H**emolysis
 - **E**levated **l**iver enzymes
 - **L**ow **p**latelet count

Mild Preeclampsia

- Few if any symptoms
- Blood pressure elevated to $\geq 140/90$ mm Hg or higher
- Proteinuria ≤ 1 g in 24 hours (2+ dipstick)

- Slightly elevated liver enzymes
- Edema may present

continued on next slide

Severe Preeclampsia – Diagnostic Criteria

- May develop suddenly
- Diagnostic criteria
 - Blood pressure $\geq 160/110$ mm Hg on two occasions at least 6 hours apart during bed rest
 - Proteinuria ≥ 5 g in 24-hour urine collection

continued on next slide

Severe Preeclampsia – Diagnostic Criteria

- Diagnostic criteria
 - Dipstick urine protein measurement 3+ to 4+ on two random samples at least 4 hours apart
 - Oliguria with urine output \leq 500 ml in 24 hours

Severe Preeclampsia – Signs and Symptoms

- Visual (blurred vision, spots before eyes) or cerebral disturbances (frontal headache)
- Cyanosis or pulmonary edema
- Epigastric or right upper quadrant pain
- Impaired liver function
- Thrombocytopenia and/or evidence of hemolysis
- Intrauterine fetal growth restriction

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Severe Preeclampsia – Signs and Symptoms

- Possible signs or symptoms
 - Nausea
 - Vomiting
 - Irritability
 - Hyperreflexia
 - Retinal edema

Eclampsia

- Characterized by grand mal convulsion or coma
- May occur before onset of labor, during labor, or early in postpartum period
- Women may have one or more seizures

Management of Preeclampsia

- Mild preeclampsia
 - < 37 weeks gestation
 - Inpatient/outpatient management (home care)
 - worsening disease: delivery, magnesium sulfate

Management of Preeclampsia

- Mild preeclampsia
 - > 40 weeks gestation
 - delivery, magnesium sulfate
 - 37 - 39 weeks gestation
 - inducible cervix: delivery, magnesium sulfate
 - cervix not inducible: inpatient or outpatient management

Home care (outpatient) option

- Monitor BP, weight, urine protein daily
- Monitor fetal wellbeing: Nonstress tests (NSTs) from daily to twice per week
- Observe worsening signs

Management of severe preeclampsia

- Severe preeclampsia: RX is by delivery

Hospital care (Nsg care)

- Bed rest, quite room: to reduce seizures
- Measure BP at least 4 times/day
- Position on left side:
 - ✓ decrease pressure on vena cava
 - ✓ Increase venous return, circulation, placental perfusion

Hospital care (Nsg care)

- Weight daily
- Evaluate worsening signs: edema, persistent headache, visual changes, epigastric pain
- Check urine for protein daily

Hospital care (Nsg care)

- Fluids & electrolytes replacement: by oral fluids or IV line to KVO to correct hypovolemia & prevent circulation overload
- Intake / output record
- Balanced diet: moderate to high protein, moderate sodium intake

Hospital care (Nsg care)

- Medications:
 - ✓ Anticonvulsants: Magnesium Sulfate to prevent seizures
 - ✓ Antihypertensives: to sustain BP at least at 160/105 to 180/110
 - ✓ e.g. Hydralazine, Methyldopa
 - ✓ Corticosteroids: Dexamethasone for women if the fetus has immature lungs

Hospital care

Check fetal wellbeing by:

- Fetal movement record
- Nonstress (NST) test
- US to determine growth of baby
- Biophysical profile (BPP)
- Amniocentesis: check fetal lung maturity

Hospital Care

If seizure occur:

- Immediate Rx: protect from injury, give O2
- MgSO4 4-6 gm loading dose IV over 5 min to control convulsions
- Antihypertensives
- Sedatives i.e. diazepam only if convulsions were not controlled by MgSO4
- R/O pulmonay edema
- Strict intake/output record hourly
- Check S/S labour or bleeding due to abruptio

MgSO₄ Therapy

Read how to administer MgSo₄
Precautions
Nursing observations
Side effects
Antidote

Hospital Care

- Deep tendon reflexes (DTRs): check for hyperreflexia in patellar tendons:
- Clonus is a sign of neuromuscular irritability is the abnormal finding.
- Assess/ask: headaches & its location, visual disturbances

Complications

- Preeclampsia predisposes women to other serious complications:
 - Placental abruption
 - Acute renal failure
 - Cerebral hemorrhage
 - Disseminated intravascular coagulation
 - Circulatory collapse
 - DEATH

HELLP syndrome

- Undiagnosed pre-eclampsia progresses to cause-
 - H**aemolysis
 - E**levated **L**iver enzymes
 - L**ow **P**latelets
- Incidence- 0.1-0.6% of pregnancies
4-12% of pre-eclampsia

HELLP syndrome

Similar to preeclampsia with

- RUQ/epigastric pain
- Jaundice
- Disturbed LFT's
- BP mildly elevated
- Proteinuria +/-
- Malaise almost 100%
- Gastrointestinal symptoms
- Frequently misdiagnosed
- Treatment- ABC, admit, deliver

HELLP syndrome complications

- Abruptio (7-20%)
- Acute renal failure
- Hepatic hematoma
- Liver rupture
- Ascites
- Hemorrhage
- Fetal death
- Maternal death

Why mother dies?

- Intra-cranial hemorrhage is the largest single cause of death.
- Eclampsia is an important risk factor for maternal morbidity and even mortality.

Prevention

- Proper prenatal care
- Antihypertensive drugs
- Nutritional supplementation: Magnesium, Zinc, Calcium (effective), folic acid (effective)
- Aspirin: Significant benefit in reducing perinatal death & preeclampsia
- Fish oil: not effective
- Salt reduction: not effective

END