CASE STUDY - INDUCTION OF LABOR

A G3, P2 patient at 41 weeks gestation is admitted for induction of labor. Assessment data reveals: cervix dilated 2 cm, 40% effaced, -2 station, cervix firm, and membranes intact. The patient's last baby was delivered at 40 weeks and weighed 9 pounds. The physician has ordered Prostaglandin administration the evening before Oxytocin in the morning.

1. What is the indication for induction of labor?

   Induction of labor may be medically necessary for an obstetric, fetal, or other medical indications or it may be elective

   - The intrauterine environment is hostile to fetal well-being (intrauterine fetal growth restrictions, isoimmunization)
   - SROM at or near term without onset of labor, also called premature rupture of the membranes (PPROM) is used
   - Post term Pregnancy
   - Chorioamnionitis (infection and inflammation of the amniotic sac)
   - Hypertension associated with pregnancy or chronic hypertension, both of which are associated with reduced placental blood flow
   - Placental abruption (large abruptions require immediate delivery)
   - Maternal medical conditions that worsen with continuation of the pregnancy (diabetes, hypertension, renal disease, pulmonary disease, heart disease, antiphospholipid syndrome)

2. Why did the physician order prostaglandins the evening before the induction?

   Cervical ripening is a process used to ripen (soften) the cervix and make it more likely to dilate with forces of labor. It is recommended for Bishop score of 4 or less.

   Prostaglandin is a drug that may be used to cause cervical ripening. It may be given intravaginal gel, an intracervical gel, time-release vaginal insert. Misoprostol is a prostaglandin E1 which can be used for both cervical ripening and induction of labor.

3. What tests or evaluation should be performed prior to the induction?

   Confirmation of fetal gestational age, waiting until 40 to 41 weeks

   Cervical assessment estimates whether the cervix is favorable for induction. The bishop scoring system is used to estimate cervical readiness for labor with five factors: cervical dilation, effacement, consistency, position, and fetal station.

4. What are the nursing considerations when administering an Oxytocin infusion?

   Assess FHR for at least 20 minutes for tachycardia, bradycardia, decreased variability, pathologic decelerations. Perform Leopold's maneuvers, vaginal examination. Observe UA for establishment of effective labor pattern: contraction frequency every 2 to 3 minutes, duration of 40 to 90 seconds. Observer for excessive contraction. Observe the uterus for firmness, height, and deviation. Observe for lochia. Assess for cramping, assess vital signs, monitor intake and output and breath sounds.

CASE STUDY - Diabetes in Pregnancy

A 30-year-old, G2, P1, is in her 10th week of pregnancy. Her first baby was stillborn at 32 weeks, so she is very worried about this pregnancy. Initial lab work obtained two weeks ago included testing for diabetes, due to the patient's history stillborn. The physician explains during the first prenatal visit there is a concern for diabetes due to an elevated glucose level. The nurse realizes patient education regarding diabetes, the effects of diabetes on both the patient and baby and how to manage diabetes it is essential.

1. Discuss maternal risks associated with diabetes and pregnancy.
    - Hypertension
    - Urinary Tract Infection – Increased bacterial growth in nutrient-rich urine
    - Ketoacidosis (Risk for mother and fetus) – Due to uncontrolled hyperglycemia or infection; most common in women with T1DM
    - Labor dystocia, cesarean birth, uterine atony with hemorrhage after birth – Hydramnios secondary to fetal osmotic diuresis caused by hyperglycemia; uterus is overstretched
    - Birth injury to maternal tissues (hematoma, lacerations) – Fetal macrosomia causing birth defects

2. Discuss fetal-neonatal risks associated with diabetes and pregnancy.
    - Congenital anomalies – Maternal hyperglycemia during organ formation in first trimester
    - Perinatal death – Poor placental infusion because of maternal vascular impairment, primarily in women with T1DM
    - Macrosomia (> 4000 g) – Fetal hyperglycemia stimulating production of insulin to metabolize carbohydrates; excessive nutrient transported to fetus
    - Intrauterine fetal growth restriction – Maternal vascular impairment
    - Preterm labor, premature rupture of the membranes, preterm birth – Overdistention of uterus caused by hydramnios and large fetal size of preterm gestation
    - Birth Injury – Large fetal size; shoulder dystocia or other difficult deliveries
    - Hypoglycemia – Neonatal hyperinsulinemia after birth when maternal glucose is no longer available (but insulin production remains high)
    - Polycythemia – Fetal hypoxemia stimulating erythrocytes production
    - Hyperbilirubinemia – Breakdown of excessive red blood cells after birth
    - Hypocalcemia – Maternal relative hyperparathyroidism
    - Respiratory distress syndrome – Delayed maturation of fetal lungs; inadequate production of pulmonary surfactant; slowed absorption of fetal lung fluid

3. What educational topics should be covered to assist the patient in managing her diabetes?
    - Diet – Recommendations are individualized during pregnancy. Approximately 40% to 50% of the calories should be high-fiber complex carbohydrates, 20% protein and up to 30% to 40% from fat. Intake should be distributed among three meals and two or more snacks.
    - Self-Monitoring of Blood Glucose levels – Common testing regimen requires obtaining fasting and 2 hours postprandial levels. Another includes testing six times per day: a fasting capillary glucose level, 1 to 2 hours after breakfast, before and after lunch, before dinner and at bedtime.
    - Insulin Therapy – The need to maintain rigorous control of maternal metabolism during pregnancy requires more frequent doses of insulin than usual.

4. What classification (SGA, AGA, LGA) will this patient's baby most likely be classified as? Discuss your answer.
    - Fetal macrosomia (LGA) babies results when elevated blood glucose stimulates excessive production of fetal insulin, which acts as a powerful growth hormone.
    - With SGA babies, Impaired placental perfusion decreases supplies of glucose and oxygen delivered to the fetus this condition is called intrauterine growth restriction. Oligohydramnios may occur as the fetus conserves oxygen for the heart and brain.

CASE STUDY - Pregnancy Induced Hypertension

A single 17-year-old patient Gr 1 Pr 0 at 34 weeks gestation comes to the physician's office for her regular prenatal visit. The patient's assessment reveals BP 160/110, DTR's are 3+ with 2 beats clonus, weight gain of 5 pounds, 3+ pitting edema, facial edema, severe headache, blurred vision, and 3 + proteinuria.

Patient's history – single, lives with her parents, attending high school, works at local grocery store in the evenings as a cashier, began prenatal care at 18 weeks, has missed two of her regularly scheduled appointments for prenatal care, never eats breakfast, snacks for lunch and eats dinner after she gets off work at 10:00 pm.

1. What disease process is this patient exhibiting? What in the assessment supports your concern?

   Severe Preeclampsia – B/P of greater or equal to 160 mm Hg or greater than or equal to 110 mm Hg diastolic, severe HA, blurred vision, 3+ pitting edema, facial edema, 3 + proteinuria.

2. What in the patient's history places her at risk for Pregnancy-Induced Hypertension?

   First Pregnancy, never eats breakfast, only snacks for lunch, and only eats a full meal after she gets off work.

3. Describe how Pregnancy-Induced Hypertension affects each organ and how these effects are manifested.

   Circulation to all body organs including the kidneys, liver, brain, and placenta, is decreased.

   - Decreased renal perfusion reduces the glomerular filtration rate. Blood urea nitrogen, creatinine, and uric acid level rises
   - Reduced renal blood flow results in glomerular damage, allowing protein to leak across the glomerular membrane, which is normally impermeable to large protein molecules
   - Loss of protein from the kidneys reduces colloid osmotic pressure and allows fluid to shift to interstitial space. Which may result in edema and a reduction in intravascular volume
   - Reduced liver circulation impairs function and leads to hepatic edema and subscapular hemorrhage, which results in hemorrhagic necrosis.
   - Vasoconstriction of cerebral vessels leads to pressure induced rupture of thin-walled capillaries, resulting in small cerebral hemorrhage.
   - Decreased colloid oncotic pressure can lead to pulmonary capillary leakage that results in pulmonary edema
   - Decreased placental circulation results in infarctions that increase the risk for placental abruption and HELLP syndrome.
   - Thrombocytopenia – platelets less than 100,000 uL
   - Renal insufficiency – serum creatinine greater than 1.1 mg/dL
   - Impaired Liver Function – elevated blood concentration of liver transaminases
   - Pulmonary edema
   - Cerebral and visual symptoms

4. What will the patient's treatment consist of?

Severe preeclampsia requires inpatient hospitalization. Goals are to improve placental blood flow and fetal oxygenation, prevent seizures and other maternal complications.

- Patient is prescribed bed rest in a lateral position and her environment is kept quiet and EFM is indicated during the hospital stay.
- Antihypertensive medications are recommended to slowly reduce the women's B/P such as Labetalol, Hydralazine (Apresoline), Nifedipine. Caution with women who are taking Magnesium Sulfate as it can lead to hypotension.
- Anticonvulsant medication such as Magnesium Sulfate to prevent seizures are often first line drugs given, administered IV infusion.
- Blood pressure monitoring, respiratory rate, and pulse oximetry readings
- Daily weight
- Fetal Assessment

5. What is the drug of choice for this condition? What other medication(s) might be ordered for this patient?

- Antihypertensive Medications
  - Labetalol – Has less maternal tachycardia and fewer adverse effects; contraindicated in patients with asthma, heart disease, or CHF.
  - Hydralazine (Apresoline)- Higher dose are associated with maternal hypotension, headaches, and fetal distress.
  - Nifedine – May be associated with reflex tachycardia and headaches; because of mechanism of action, a synergistic effect with magnesium sulfate may result in hypotension and neuromuscular blockade.
- Anticonvulsant Medication
  - Magnesium Sulfate – Prevention and control of seizures in severe preeclampsia. Contraindicated in persons with myocardial damage, heart block, myasthenia gravis, or impaired renal function.

6. What are the Nursing considerations when administering the drug of choice? (Side effects & medication administration guidelines)

- Labetalol – Has less maternal tachycardia and fewer adverse effects; contraindicated in patients with asthma, heart disease, or CHF.
- Magnesium Sulfate – Prevention and control of seizures in severe preeclampsia. Contraindicated in persons with myocardial damage, heart block, myasthenia gravis, or impaired renal function.
  - Magnesium overdose includes flushing, sweating, hypotension, depressed DTRs, and central nervous depression, including respiratory depression
  - Monitor B/P closely. Assess respiratory rate above 12 breaths per minute, presence of DTRs, urinary output greater than 30 mL/Hr., place resuscitation equipment gluconate.
  - IV administration, IV loading dose is 4 to 6 g administered over 15 to 20 minutes. Continuing infusion to maintain control is 1 to 2 g/hr.
  - IM injection is painful and is administered 10 g (5 g in each buttock) followed by 5 g every 4 hours