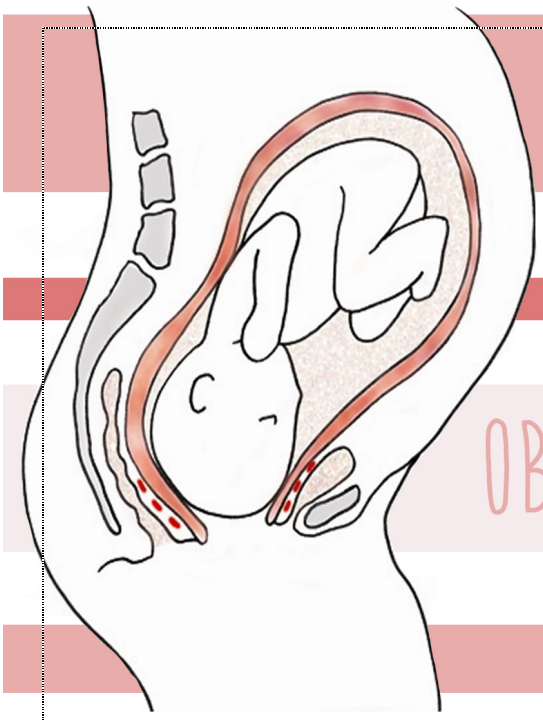

OBSTETRICS AND GYNECOLOGY

(8) Preterm labour
& Premature rupture of membranes

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Doctor's note Team's note Not important Important 431 teamwork

Objectives:

Not given.

Preterm labour

Definition:

Labour that occurs **after 24 weeks** but **before 37** completed week. (Any delivery that occurs before 24 weeks & the fetal weight is less than 500g is considered abortion not preterm labour)

Although it has an incidence of 10%, its contribution to neonatal morbidity and mortality is high ranges from 50 – 70%.

Etiology and Risk factors:

A] Idiopathic:

- Is the **commonest one.**
- Low socioeconomic class.
- Previous preterm labour. With one PTL (preterm labour) the relative risk in the next pregnancy is 3.9, it increases to 6.5 with two.
- Repeated spontaneous abortions.

B] Obstetrics causes:

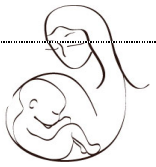
1- Multiple pregnancy (e.g. twins) is the commonest.

2- Premature preterm rupture of membrane.

3- Genital tract infection as bacteria vaginosis and **B streptococcus**.

4- Cervical incompetence. (a medical condition in which a pregnant woman's cervix begins to dilate (widen) and efface (becomes thin) before her pregnancy has reached term)

5- Uterine anomalies.



C] Iatrogenic causes:

Induction of labour or CS. (cesarean section) for obstetrics causes as PET (Pre-eclamptic toxemia), PLACENTA PREVIA and ABRUPTIO.

DIAGNOSIS

- Documented uterine contractions by history, physical examination & cardiotocography (CTG).
- Documented cervical changes as cervical effacement (thinning) of 80%, or cervical dilatation of **2 cm or more**.

MANAGEMENT

☛ Put the patient on CTG to confirm uterine activity.

☛ Assess cervical status, progress of labour (e.g. at 2:00am it's 2cm wide & by 4:00am it's 4cm) and presenting part (e.g. cephalic, breech).

☛ Vaginal swab for bacteria vaginosis and B streptococcus and give antibiotic.

☛ Hydrate the patient.

Maternal dehydration may trigger the secretion of ADH by the posterior pituitary. It is thought that oxytocin may also be released at the same time, bringing about uterine contraction before the optimum time. These uterine contractions, or uterine "irritability" (low intensity, high frequency contractions) of preterm labor are often treated with maternal hydration. Women at risk for preterm labor are encouraged to drink copious amounts of water throughout the day. And, if hospitalized for contractions, hydration with a bolus of IV fluid is often effective to "quiet" the uterus.

TOCOLYTIC THERAPY

A] B-Adrenergic agonist (B-sympathomimetic agent)

Mechanism: Convert ATP into cAMP in the cell causing decrease of the free calcium ion. (we give this drug in through IV injection the hospital because it requires monitoring)

Side effects:

- **Mainly cardiovascular** as increased heart rate and hypotension
- Chest pain in 1-2% from myocardial ischemia.
- Rarely pulmonary edema particularly with concurrent corticosteroid therapy.
- Increased liver & muscle glycogenolysis causing hyperglycemia→ secondary increase in insulin causing hypokalemia.
- Most commonly used drug is Ritodrin hydrochloride (Yutopar)

B] Magnesium sulphate

Mechanism: Compete with calcium for entry into the cell at the time of depolarization so there is decrease of intracellular calcium. (You have to monitor the patient)

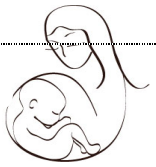
Side effect: (more serious than B-sympathomimetics)

- Warm and flushing
- Respiratory arrest
- Fetal hypotonia due to decrease calcium

C] Prostaglandin synthetase inhibitors

Side effects:

- Decrease fetal renal blood flow and cause oligohydraminose.
- Premature closure of ductus arteriosus, which lead to pul. Hypertension.
- Necrotizing enterocolitis.
- Fetal intracranial hag.
- Indomethacin is the most commonly used.



D] Calcium channel blockers

Nifedipine: Inhibits the inward current of calcium iron during the 2nd phase of the action potential of uterine muscle

Side effects:

1- Headache 2- Hypotension 3- Flushing
4- Tachycardia

E] Oxytocin Antagonist (very effective & used a lot in practice)

Side effects:

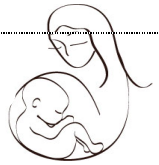
- Nausea, dizziness, headache, and flushing.
- Expensive drug. (nowadays it's available & not considered expensive)
- Atosipan (tractocil) is the most commonly used.

CONTRAINDICATIONS TO TOCOLYTIC THERAPY

1. Severe PET ("Pre-eclamptic toxemia")
2. IUGR (Intrauterine Growth Restriction)
3. Severe APH (Antepartum Hemorrhage)
4. Fetal anomalies (it has to be major anomalies, not minor like cleft lip)
5. Chorioamnionitis (inflammation of the fetal membranes)
6. Maternal heart disease

CORTICOSTEROID THERAPY

- ☛ Reduces **fetal** mortality, incidence of RDS (respiratory distress syndrome), and intracranial hemorrhage.
- ☛ Stimulate pnemocyte 2 cell to produce **surfactant**
- ☛ Statistically significant effect up to 34 weeks.
- ☛ Betamithasone IM 12 mg given twice 24 hours apart. (sometimes we give tocolytics to give time for the action of steroids)



☛ Optimal benefit is from 24h – 7 days.

LABOUR AND DELIVERY

☛ Should be in a well-equipped center with good SCBU (NICU)

☛ Continuous fetal monitoring

☛ Forceps and episiotomy for cephalic presentation

☛ Cesarean section C.S. for breeches if weight is less than 1500 grams.

Premature rupture of membranes (PROM)

Definition:

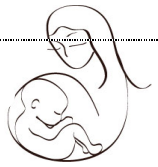
Rupture of the membrane before the onset of **labour** at any stage of gestation. (if it happens at term it's called PROM, if preterm it's called Preterm PROM)

Causes:

- In majority of cases no clear cause can be found.
- Vaginal infection, bacteria vaginosis and group B streptococcus. (infections weakens the membrane)
- Cervical incompetence.
- Abnormal membrane.

Diagnosis:

- History of fluid loss per vagina. (sometime the pregnant women can't be sure whether it's vaginal fluid or urine)
- Visualization of amniotic fluid in the vagina by **sterile** speculum. (non-sterility predisposes the patient to infection)



- +Ve NITRAZIN test .Alkaline amniotic fluid turns yellow nitrazin reagent to blue colour. Blood, cervical mucus and alkaline urine give false +ve results. (nowadays there is a new product called amniosure which is better than nitrazine but more expensive)
- +ve fern test. (not done frequently, only in unequipped hospitals)
- USS (ultrasound): Marked decrease or absent liquor .
- USS (ultrasound): Confirm gestation age and exclude fetal anomalies. (USS also measures the weight of the baby)

Complications:

1- **Premature labour**: Amniotic fluid contains prostaglandins.

2- **Chorioamnionitis**: **The most serious complication** The amniotic fluid has bacteriostatic properties and acts as a mechanical barrier against infection. (can lead to maternal septecemia & fetal sepsis)

3- **Fetal sepsis**.

4- **Lung hypoplasia** if occurs around 24 weeks.

Management:

The management depends mainly on the **gestation age**:

A] 36 weeks or more → IOL (induction of labour).

B] < 36 weeks → expectant management, unless there evidence of chorioamnionitis. (expectant management means admitting the patient & keep an eye on her, & make sure there are no signs of chorioamnionitis.

Signs of CHORIOAMNIONITIS

1. Maternal pyrexia >38 C.
2. Tender irritable uterus.
3. Foul smelling vaginal discharge.

4. Fetal tachycardia.

EXPECTANT MANAGEMENT

- Rest **in hospital**.
- Early detection of Chorioamnionitis by checking WBCs & C-reactive protein twice-weekly. If chorioamnionitis is detect it early→ immediate delivery.
- High vaginal swab for culture.
- Prophylactic antibiotics for 10 days.

Rule of tocolytics:

1- Allow time for corticosteroids to work.
2- Contraindicated in the presence of infection.

If less than 34 weeks and there is no infection→ give tocolytics

Rule of corticosteroids:

Significant value for pregnancy less than 34weeks.

SURFACTANT

- Produced by pnemocyte type 2 cells.
- Consists mainly of phospholipids, neutral lipids, proteins and carbohydrates.
- Measured as a ratio (lecithin / sphyngomyelin) mature lung >2.
- Decreases alveolar surface tension, maintains alveoli open at a low internal alveolar diameter and decrease intra alveolar fluid.

Summary

Preterm labour : Labour that occurs **after 24 weeks** but **before 37** completed week. (Any delivery that occurs before 24 weeks & the fetal weight is less than 500g is considered abortion not preterm labour)

Etiology and Risk factors: 1- Idiopathic(most common) 2-Obstetrics causes: 3- Iatrogenic

DIAGNOSIS :1- Documented uterine contractions by history, physical examination & cardiotocography (CTG).

2- Documented cervical changes as cervical effacement (thinning) of 80%, or cervical dilatation of **2 cm or more**.

Management : **- P**ut the patient on CTG to confirm uterine activity. - **A**ssess cervical status, progress of labour and presenting part. - **V**aginal swab and give **antibiotic**. -**H**ydrate the patient.

A] B-Adrenergic agonist>> Side effects: Mainly cardiovascular **Tocolytic Therapy:**
B] Magnesium sulphate C] Prostaglandin synthetase inhibitors D] Calcium
E] Oxytocin Antagonist (very effective & used a lot in practice) channel blockers

Corticosteroid Therapy:

Reduces **fetal** mortality, incidence of RDS and intracranial hemorrhage+ Stimulate pnemocyte 2 cell to produce **surfactant**

Premature rupture of membranes (PROM):

Rupture of the membrane before the onset of **labour** at any stage of gestation.

Causes: No clear cause can be found (majority), Vaginal infection, Cervical incompetence, abnormal membrane.

Diagnosis: History of fluid loss per vagina./Visualization of amniotic fluid by **sterile** speculum./ +Ve NITRAZIN test./ USS (ultrasound)

Complications: Chorioamnionitis (The most serious complication)

Management:

- 36 weeks or more → IOL (induction of labour).
- < 36 weeks → expectant management, unless there evidence of chorioamnionitis.

Signs Of Chorioamnionitis:

1- Maternal pyrexia >38 C. **/ 2-** Tender irritable uterus **/ 3-** Foul smelling vaginal discharge **/ 4-** Fetal tachycardia.

MCQ's : "From pre test"

1. A 30-year-old G_1P_0 with a twin gestation at 25 weeks presents to labor & delivery complaining of irregular uterine contractions & back pain. She reports an increase in the amount of her vaginal discharge, but denies any rupture of membranes. She reports that earlier in the day she had some very light vaginal bleeding, which has now resolved. On arrival to labor and delivery, she is placed on an external fetal monitor, which indicates uterine contractions every 2- 4 minutes. She is afebrile & her vital signs are all normal. Her gravid uterus is non-tender. The nurse calls you to evaluate the patient. Which of the following is the most appropriate first step in the evaluation of vaginal bleeding in this patient?

a. Vaginal examination to determine cervical dilation
b. Ultrasound to check placental location
c. Urine culture to check for urinary tract infection
d. Labs to evaluate for disseminated intravascular coagulopathy
e. Apt test to determine if blood is from the fetus

2. A 32-year-old G_2P_{0101} presents to at 34 weeks of gestation, complaining of regular uterine contractions about every 5 minutes for the past several hours. She has also noticed the passage of a clear fluid from vagina. A nurse places the patient on an external fetal monitor & it demonstrates a reactive fetal heart rate tracing, with regular uterine contractions occurring about every 3-4 minutes. On sterile speculum examination, the cervix is visually closed. A sample of pooled amniotic fluid seen in the vaginal vault is nitrazine-positive. On examination: temperature 38.8°C, pulse 102 bpm, BP 100/60 mmHg, & her fundus is tender to deep palpation. WBC of 19,000. The patient is concerned because she had previously delivered a baby at 35 weeks who suffered from respiratory distress syndrome (RDS). Bed-side sonogram indicates oligohydramnios & a fetus whose size is appropriate for gestational age & with a cephalic presentation. Which of the following is the most appropriate next step in the management of this patient?

a. Administer betamethasone.
b. Administer tocolytics.
c. Place a cervical cerclage.
d. Administer antibiotics.
e. Perform emergent cesarean section.

Answers:

1. b

The concern with this patient who presents with a twin gestation & symptoms of bleeding, cramping, & increased vaginal discharge is preterm labor. Intravenous hydration is appropriate because dehydration can be a cause of premature contractions & uterine irritability. Urinary infections can be associated with uterine contractions, & therefore a urinalysis & urine culture should be obtained. Infection caused by group B streptococci can be associated with preterm labor, so a culture to detect this organism should be obtained. Before performing a digital examination on this patient to determine her cervical status, an ultrasound should be performed to rule out placenta previa in light of the history of vaginal bleeding.

2. d

This patient with premature rupture of membranes (PROM) has a physical examination consistent with an intrauterine infection or chorioamnionitis. Chorioamnionitis can be diagnosed clinically by the presence of maternal fever, tachycardia, and uterine tenderness. Leukocyte counts are a nonspecific indicator of infection because they can be elevated with labor and the use of corticosteroids. When chorioamnionitis is diagnosed, fetal and maternal morbidity increases and delivery is indicated regardless of the fetus's gestational age. In the case described, antibiotics need to be administered to avoid neonatal sepsis. Ampicillin is the drug of choice to treat group B streptococcal infection. Since the fetal heart rate is reactive, there is no indication for cesarean section. Augmentation with Pitocin should be instituted as indicated.
There is no role for tocolysis in the setting of chorioamnionitis, since delivery is the goal. There is also no role for the administration of steroids, since delivery is imminent. In addition, steroids are indicated at 32 weeks gestational age or less only with PROM. A cerclage (cervical stitch) would be placed in a pre-viable pregnancy where an incompetent cervix is diagnosed in the absence of ruptured membranes.

For mistakes or feedback

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