Preterm Labor & PROM

429 OB/GYN Team

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Sources: Dr. Mashael Al-Shebaili's Lecture & BRS Obstetrics & Gynecology (Sakala)

Questions:http://ask.fm/TeamNotes429

PRETERM LABOR

DEFINITION

- Labor that occurs after 24 weeks but before 37 completed weeks
- Although it has an incidence of **10%,** its contribution to neonatal morbidity and mortality is high (ranges from 50 – 70%)

ETIOLOGY & RISK FACTORS

IDIOPATHIC

Most patients have no identifiable risk factors

Most common

- Low socioeconomic status & maternal age extremes (<16 or >40 yrs)
- **Previous preterm labor** (25% chance). *With one PTL the relative risk in the next pregnancy is 3.9, it increases to 6.5 with two*
- Repeated spontaneous abortions

OBSTETRIC CAUSES

- **Multiple pregnancy**
- **Short cervix**
- **Uterine anomalies**
- Premature preterm rupture of membrane.
- Cervical incompetence
- Hypertension, hemorrhage
- Polyhydraminos

Lifestyle:
- *Smoking*
- *Occupational fatigue/ heavy physical labor*
- *Poor nutrition*

Medical:
- *Renal disease*
- *Surgery*
- *Sepsis*
- *BACTERIAL VAGINOSIS (or other genital infect.)*

IATROGENIC CAUSES

IOL or CS for obstetrics causes as pre-eclampsia (PET), placenta previa and abruptio

DIAGNOSIS

1- Gestation age = 20-37 weeks
2- ≥3 contractions in 30 min (contractions must be of 30 sec duration)
3- Cervix dilated ≥2 cm/ change in cervical dilation & effacement

MANAGEMENT

- Put the patient on CTG to confirm uterine activity
- Assess cervical status, progress of labor and presenting part
- Vaginal swab for bacteria vaginosis and B streptococcus and give antibiotic
- Hydrate the patient

Confirm:
- *Gestational age*
- *Maternal & fetal well-being*

Rule out:
- *Ruptured membranes (by speculum exam)*
- *Contraindications to tocolysis*

TOCOLYTIC THERAPY

AGENTS

BETA AGONISTS

Ritodrine (Yutopar), Terbutaline

- Mechanism: Convert ATP → cAMP causing ↓ Ca^{++} → smooth muscle relaxation
- Side effects
  - Mainly **cardiovascular** e.g. increased heart rate and hypotension
    - Chest pain in 1-2% from myocardial ischemia
  - Rarely pulmonary edema (particularly with concurrent corticosteroids)
  - Increased liver and muscle glycogenolysis causing **hyperglycemia**. 2nd increase in insulin (+ ↑ renin) causes **hypokalemia**.

MAGNESIUM SULPHATE

- Mechanism: Compete with calcium for entry into the cell at the time of depolarization → ↓ intracellular Ca^{++} + smooth muscle relaxation
- Side effect:
  - Muscle weakness (also: fetal hypotonia)
  - Respiratory depression & arrest
  - Pulmonary edema

PROSTAGLANDIN SYNTHETASE INHIBITORS

Indomethacin

Side effects:

- Decrease fetal renal blood flow → **oligohydramnios**
- Premature closure of ductus arteriosus (leading to pul. Hypertension)
- Necrotizing enterocolitis
- Fetal intracranial hemorrhage?

CALCIUM CHANNEL BLOCKERS

Nifedipine

- Inhibits the inward current of calcium during the 2nd phase of the action potential of uterine muscle → smooth muscle relaxation
- Side effects:
  - Headache
  - Hypotension
  - Flushing
  - Tachycardia/myocardial depression

OXYTOCIN ANTAGONISTS

Atosipan (tractocil)

Side effects:

- Nausea, dizziness, headache, and flushing.
- Expensive drug

CONTRAINDICATIONS TO TOCOLYTIC THERAPY

- Severe PET
- IUGR
- Severe APH
- Fetal anomalies
- Chorioamnionitis
- Maternal heart disease

95% of patients have contraindications to tocolysis

CORTICOSTEROID THERAPY

- Reduces mortality, incidence of RDS, and intracranial hemorrhage
- Stimulate pnemocyte 2 cell to produce surfactant
- Statistically significant effect up to 34 weeks.
- Betamethasone (IM 12 mg given twice 24 hrs apart)
- **Optimal benefit is from 24h – 7 days** latency from administration to labor

LABOR AND DELIVERY

- Should be in a well-equipped center with good SCBU (special care baby unit)
- Continuous fetal monitoring
- Forceps and episiotomy for cephalic presentation
- C.S. for breeches if wt. less than 1500 g

PREMATURE RUPTURE OF MEMBRANE

- *Occurs in 10% of all pregnancies*
- *30% of preterm deliveries*

- Rupture of the membrane before the onset of labor at any stage of gestation
- Most common cause of neonatal intensive care unit admissions

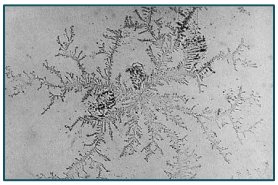
CAUSES

- In majority of cases no clear cause can be found
- Vaginal infection, bacterial vaginosis, group B streptococcus & STDs
- Cervical incompetence
- Abnormal membrane (local defects, serial damage from fetal growth/UCs, etc.)

DIAGNOSIS

Avoid digital cervical exam if not in labor

- **History** of fluid loss per vagina (sudden gush of fluid)
- Visualization of amniotic fluid in the vagina by sterile **speculum examination**
- **+ve nitrazine test**: Alkaline amniotic fluid turns yellow nitrazine reagent to blue color (Blood, cervical mucus and alkaline urine give false +ve results)
- **+ve fern test:** pattern produced when amniotic fluid dries in air
- Ultrasound: visualize decrease in amniotic fluid, confirm gestational age and exclude fetal anomalies.



OTHER

Differential:
Urine, vaginal discharge, bloody show

- Speculum exam: pooling of fluid in posterior fornix of vagina
- Rule out:
    - Cord prolapse
    - Gross cervical purulence
    - Vaginosis, chlamydia, GBBS, gonorrhea (culture/smear)

COMPLICATIONS

Amniotic fluid contains prostaglandins (induces labor) and has bacteriostatic effects.

ONSET OF LABOR

1- Term gestation: >90% go into labor within 24 hrs
2- Preterm: >50% go into labor within 24 hrs, and 80% within 1 week
3- Previable (<25 wks.): >50% go into labor within 1 week

MATERNAL INFECTION

- At term: infection increases with duration of PROM
- Manifestations: chorioamnionitis, endometritis, and sepsis

PERINATAL COMPLICATIONS

- With delivery:
    - Respiratory distress syndrome
    - Intraventricular hemorrhage
    - Patent ductus arteriosus
    - Necrotizing enterocolitis
    - Retinopathy of prematurity
    - Bronchopulmonary dysplasia
    - Death
- With conservative Rx:
    - Infection (ascending from maternal genital tract)
    - Deformations (from inability to move extremities)
    - Umbilical cord compression (from oligohydramnios)
    - Pulmonary hypoplasia (if gestational age <24weeks)
    - Death

MANAGEMENT

The management depends mainly on the gestation age:

- 36 weeks or more → Induction of labor (IOL)
- < 36 weeks → expectant management, unless there is evidence of chorioamnionitis.

CHORIOAMNIONITIS

- Maternal pyrexia >38 C
- Leukocytosis
- Tender irritable uterus
- Foul-smelling vaginal discharge.
- Fetal/maternal tachycardia

EXPECTANT MANAGEMENT

- Rest in hospital (danger of DVT)
- Frequent examination (uterine tenderness or vaginal discharge?)
- Frequent fetal heart rate monitoring
    - Variable decelerations = cord compression
    - Late decelerations = placental insufficiency
- Asses fetal lung maturity (vaginal fluid phospholipid surfactants analysis)
    - Betamethasone/dexamethasone administered if <32 weeks gestation
- Early detection of chorioamnionitis (immediate delivery) by twice weekly WBCS and C-reactive protein
    - High vaginal swab for culture
    - Prophylactic antibiotics for 10 days

ROLE OF TOCOLYTICS

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

ROLE 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.
- Lung maturity: Measured as a ratio (lecithin/sphingomyelin). Ratio >2 means the lungs are mature.
- Lung maturity profile includes
    - Phosphatidylcholine (lecithin): increases between 34-36 wks
    - Phosphatidylglycerol
    - Phosphatidylinositol
    - Phosphatidylethanolamine
- Surfactant: Decreases alveolar surface tension, maintains alveoli open at a low internal alveolar diameter and decrease intra-alveolar fluid.
- Administered (in rare cases because it is very expensive) to premature infants through endotracheal tube

MANAGEMENT SUMMARY