Chapter 18

PRETERM LABOUR

DEFINITION

Regular uterine contractions accompanied by progressive cervical dilation and/or effacement at greater than 20 weeks and less than 37 weeks 0 days gestation.

INCIDENCE

The incidence of preterm birth in Canada has increased from 6.3% (1981 to 1983) to 7.7% (2009). Only about 1 – 2% of pregnancies deliver before 34 weeks but it is these that have a more guarded prognosis. Neonates born at >34 weeks GA in tertiary centres have survival rates equal to those born at term. Long-term adverse neonatal sequelae occur mainly in those born at <34 weeks GA and particularly those born at less than 30 weeks GA. The importance of accurate dating cannot be overstated in the management of preterm labour. A difference of 10 days can change the chance of survival from near zero to 30% or from 30% to 55%. For this reason, accurate dates must be established and the EDB must be communicated effectively to the patient. By 20 weeks gestation, all pregnant women should know their EDB from accurate menstrual data and/or dating and 18 week ultrasound.

Etiology

Common causes of preterm labour include:

- Idiopathic
- Antepartum haemorrhage
- Preterm prelabour rupture of membranes (30-40% of preterm births)
- Spontaneous preterm labour with intact membranes (40-50% of preterm births)
- Chorioamnionitis
- Multiple pregnancy/polyhydramnios
- Incompetent cervix/uterine anomaly
- Maternal disease (preeclampsia, complicated insulin-dependent diabetes mellitus)
- Fetal anomaly
- Drugs, smoking, life style, stress

DIAGNOSIS

Dilemma
Interventions to stop preterm labour are not particularly effective—especially when not instituted early.

Solution
The solution to this dilemma has been to make the diagnosis based on a degree of uterine activity combined with a single cervical exam suggestive of early dilation and/or effacement. This approach facilitates early institution of therapy however, results in a significant over diagnosis of preterm labour. For this reason, up to 50% of those given the diagnosis of preterm labour, actually are not experiencing labour.

- Establish dates
  - Examine the prenatal record for dating U/S, clinical growth, review of menstrual history
- Evaluate the identified risk factors
- Evaluate contractions
  - History
  - Abdominal examination for uterine activity
  - Tocodynamometer—**DO NOT OVERESTIMATE ITS VALUE**
- Digital cervical exam
  - Sterile speculum exam alone should be done in preterm PROM
  - Defer digital exam if there is undiagnosed antepartum bleeding until localization of placenta has occurred

Predictors of Preterm Birth:
Fetal Fibronectin (fFN) is a glycoprotein whose presence in cervicovaginal secretions before 34 weeks gestation is associated with preterm labour and birth. The main benefit of assessing fFN has been shown to be its negative predictive value. A negative fetal fibronectin indicates a low probability of delivery within 7 days to 14 days, even in the presence of contractions. The chance of giving birth wihin 14 days of a negative fFN (in women with symptoms) is 1-5%. The chance of giving birth within 14 days with a positive test (in women with symptoms) is 17-41%.

MANAGEMENT OF PRETERM LABOUR
There is no evidence to suggest that bed rest is effective in preventing or arresting preterm labour.
No tocolytic alone improves the outcome of pregnancy. Tocolysis may allow for prolongation of pregnancy for the administration of glucocorticoids and transportation of the mother to a Tertiary Centre.

Objectives

1. Early diagnosis of preterm labour
2. Identify the cause of preterm labour and treat when possible
3. Attempt to arrest labour when appropriate
4. Intervene to minimize neonatal morbidity and mortality

TOCOLYTICS

No evidence for efficacy

- Fluids bolus
- Ethanol
- Sedation, narcotics
- Magnesium sulfate

Evidence for efficacy

- Oxytocin antagonists (Abosiban) (Atosiban)
  - Not currently available in Canada
- PG synthetase inhibitors (indomethacin)
  - Should not be used after 32 weeks gestation
- Calcium channel blockers (nifedipine)

Contraindications to Tocolysis

- Contraindications to continuing the pregnancy
  - Gestational hypertension with proteinuria or other medical indication
  - Chorioamnionitis
  - Mature fetus
  - Imminent delivery
  - IUFD or lethal fetal abnormality
  - Intrauterine growth restriction
  - Fetal sepsis
  - Significant antepartum hemorrhage
- Contraindications to specific tocolytic agents

Antenatal Glucocorticoid Therapy

The benefits of antenatal glucocorticoid therapy are now definitively established. Betamethasone and dexamethasone cross the placenta and induce enzymes that accelerate fetal pulmonary maturity. It takes 48 hours for the full benefit to be achieved. An incomplete course of steroid therapy may still offer worthwhile benefits.

When Should Steroid Therapy be Given?

- Lower gestation limit 24 weeks
- Upper gestation limit 34 weeks
- Prophylactic administration depends on diagnosis and risk, e.g. preterm previa and bleeding
- Repeated administration presently not routinely recommended although evidence is beginning to appear suggesting its safety[2].

Steroid Options

- Betamethasone 12 mg IM q 24h x 2 doses (or q 12h) - preferred
- Dexamethasone 6mg IV/IM q 12h x 4 doses (or q 6h)

Dexamethasone is less expensive and has no mineralocorticoid activity, which may be beneficial in situations where fluid overload is a concern.

CAUTION!

- Steroids should not be used in the presence of known chorioamnionitis or sepsis

Antibiotics

In the presence of threatened preterm labour < 37 weeks gestation, administer aqueous Pen G 5 x 10^6 units and repeat every 6 hours. If the woman has a penicillin allergy, and it is anaphalactic, use Vancomycin 1gm IV q12h. If it is a simple penicillin allergy, Cefazolin 1gm IV ADC q6h, can be used. (per GBS Guidelines).

Magnesium Sulphate Therapy

Antenatal magnesium sulphate therapy given to women at risk of preterm birth substantially reduced the risk of cerebral palsy in their child. There was also a significant reduction in the rate of substantial gross motor dysfunction. The regimen would include a loading dose of 4 gm given IV over 20 min followed by 1-2 g/hr IV. Magnesium sulphate must always be administered via a medication pump to avoid overdose.

MATERNAL TRANSPORT

This decision must be well considered and should be made in consultation between the physician in the referring centre and a physician at the proposed receiving centre. In making the decision, consider:

- Available level of neonatal and obstetrical care
- Available transport and skilled personnel
- Travel time
- Maternal and fetal health stable
- Risk of delivery en route
  - Parity, length of previous labour

[2] www.thelancet.com, vol 367, April 29, 2006, pp 1421-31.

- State of cervix
- Contractions
- Response to tocolytics

Every institution should have a transport protocol that includes:

- Copies of antenatal forms, lab results, ultrasounds
- Communication
  - With patient and family
  - With receiving physician re: indication, stabilization, mode of transport, expected time of arrival
- Appropriate attendant for transport
- IV access, indicated medication, appropriate equipment
- Assessment of patient immediately prior to transport

Method for Preterm Delivery

- Caesarean section is not indicated on basis of prematurity alone
- Prophylactic outlet forceps are not indicated on the basis of prematurity alone. Vacuum extraction is relatively contraindicated in assisting premature birth
- Routine episiotomy is not indicated
- Personnel skilled in neonatal resuscitation should be present at birth, if at all possible

REFERENCE

1. The Society of Obstetricians and Gynaecologists of Canada (SOGC), *Advances in Labour and Risk Management: ALARM Course Syllabus*, 22nd ed., Ottawa, 2015-2016.

2. John P Kinsella, Anne Greenough, Steven H. Abman, "Bronchopulmonary Dysplasia", *The Lancet*, vol. 367, April 29, 2006: pp 1421-31.