

Editorial

Premature Birth

Premature birth is defined as birth of the baby before 37 completed weeks before the developing organs are mature enough to allow normal postnatal survival. It may be due to spontaneous preterm labour, induced preterm labour or preterm elective caesarean section due to some indications. Premature infants are at greater risk for short and long term complications, including disabilities and impediments in growth and mental development. A systematic review has estimated that proximately 12.9 million preterm births take place annually worldwide¹. It is an important cause of low birth weight and the top causes of death in infants worldwide.

Causes of premature birth:

In 50% cases the cause of preterm births is never determined. Labor is a complex process involving many factors. Primarily four factors are responsible for premature birth

1. Premature activation of myometrium causes premature labour
2. Premature activation of membrane causes rupture of the membrane- leads to premature labour.
3. Premature ripening of cervix in incompetent cervix leads to premature rupture of membrane and labour.
4. Indicated preterm delivery for foetal and maternal indications.

How to diagnose premature labour?

A. Tests to predict preterm labour

1. Placental alpha microglobulin-1 (PAMG-1) to predict imminent spontaneous preterm birth.
2. Fetal fibronectin (FFN) A positive test indicates an increased risk of preterm birth.
3. Ultrasonography of the cervix: A cervical length of less than 25 mm at or before 24 weeks of gestational age is indicator of cervical incompetence. The shorter the cervix the greater the risk.

B. Diagnosis of onset of premature labour:

There should be a) documented uterine contractions

(at least 1/10 minutes), b) Ruptured foetal membranes (may or may not) with contraction, or c) documented cervical change (Cervical length <1cm or cervical dilatation of more than 2 cm). Documented uterine contraction without cervical change is known as threatened preterm labour.

If membrane is ruptured following tests are to be done

1. Nitrazine paper test:- Yellow nitrazine paper turn into blue in presence of amniotic fluid.
2. Fern Test- Fluid from vagina is allowed to dry on a slide and checked under a low-power microscope. The presence of ferning indicates PROM.
3. USG:- It can help by detecting decreased liquor volume
4. Dye test by Indigo Carmine: If membranes are ruptured the blue dye should pass onto a vaginal tampon within 30 mins of USG-guided instillation of dye into the uterus.
5. Microscopic examination vaginal fluid for lanugo hair and fetal epithelial cells staining with Nile blue sulphate.
6. Fetal Fibronectin
7. Alpha-Fetoprotein- Detection of AFP by monoclonal antibody test in the vaginal secretion is an accurate test for PROM as it is present in amniotic fluid but absent in urine and vaginal secretions.
8. PAMG-1 (Placental alpha-microglobulin-1): Detection of trace amount of PAMG-1 in vaginal fluid has sensitivity of 99% at any gestational age².
9. CRP to detect any sign of infection.

Management of premature labour:

Management depends upon the status of labour and maternal and foetal condition. In case of early preterm labour and if there is no rupture membrane, no maternal infection or any foetal problem pregnancy can be continued with follow up.

Line of management in this case: Patient must be hospitalized

- A. Use of tocolysis: The majority of women in early preterm labour respond well to oral tocolysis. Commonly used drugs are (any one of the following drugs can be used)
1. Nifedipine at a dose of 30mg as loading dose followed by 20 mg every 6 hours is to be given to control uterine contraction. Drug should be continued till complete subsidence of contraction but in some cases continuous administration is necessary to prevent further contraction.
 2. Magnesium sulphate: 4 gm IV bolus over 20 minutes, followed by a 1 gm/hour maintenance dose for 24 hours or until delivery whichever occurred first.
 3. Ritordine (Beta adrenergic agents): 100 mg/minute and increased by 50 mg/minute until the contractions stop or toxicity develops. Maximum dose is 350 mg/minute.
 4. Indomethacin: 25-30 mg orally is starting dose followed by 25 mg orally every 4-6 hours and continued for 3 days.
- B. Corticosteroids: As any time delivery may occur to accelerate foetal lung maturity injection betamethasone 12 mg intramuscularly in two consecutive doses, 24 hours apart is to be given. Alternatively injection dexamethasone 6 mg IM or IV every 12 hours for four doses can be given.
- C. Rescue cerclage: Cerclage is given as a salvage measure in an emergency basis in the case of premature dilatation of the cervix >4 cm with exposed foetal membrane in the vagina. Average prolongation of pregnancy was 7 weeks 1 day and average neonatal survival 70% was reported following rescue cerclage³. It should be individualized with assessing risk benefit ratio.

In premature rupture of membrane (PROM):

Measures are to be taken to assess which patient need to be delivered and which patient may get benefit

from prolongation of pregnancy for a few days by giving tocolysis and steroids.

If there is no signs of amnionitis prolongation of pregnancy can be tried with tocolysis and steroid. If cervical dilatation is 4-5 cm then more than 50% of patients deliver within 48 hours despite aggressive tocolysis⁴. So at least to administer the doses of steroids to accelerate lung maturity, labour is to be delayed by applying tocolysis.

If there is signs of amnionitis, labour is to be allowed and measures are to be taken for quick delivery.

Line of management:

1. Broad spectrum intravenous antibiotics are to be started in the form of Ceftriaxone 2g 12 hourly or needs to be changed according to CS report of HVS.
2. If CRP positive it indicates intrauterine infection and pregnancy is to be terminated as early as possible.
3. If CRP negative FNF positive patient is to be treated by tocolysis and steroids for 48-72 hours to get the benefit of steroids.

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Editor

References:

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