

FETAL MONITORING IN LATE PREGNANCY ASSESSEMENT

BY

DR A/SALAM GERAIS, MBBS, MRCOG.

Department of Obstetrics and Gynaecology.

Khartoum

In the developed countries attention has now shifted to the area of perinatal morbidity after successfully reducing maternal and perinatal mortality to the lowest levels. In the Sudan, with our ten times incidence of maternal mortality, the battle is still towards improving this result, but this should not prevent us from improving our results of perinatal morbidity. Nowadays, obstetric practice is concentrating on the antenatal and intrapartum well-being of the fetus because adverse antenatal factors can affect the postnatal growth and development.

Small for dates infants have neonatal mortality rates four times that of the normal -weight infants. Mental retardation is another hazard if they manage to live; the incidence is 18 percent if the weight is more than two standard deviations below the mean weight (6)

Which pregnancies need monitoring? Recognition of such pregnancies is not easy. Clinical methods can detect only 30 percent. The fact that intra-uterine growth, retardation is associated with pathological complications of pregnancy such as pre-eclampsia, chronic renal disease, hypertension and so on is opposed by the occurrence of over 50 percent of IUGR in pregnancies uncomplicated by such pathological states. There are two groups who require antenatal monitoring. Patients with; (1) History of stillbirth or with a complicating factor known to be associated with IUGR e.g. PET, chronic renal disease, hypertension, diabetes mellitus, multiple pregnancy, anaemia etc. (2) Those who may be regarded as having normal pregnancy but whose fetuses are suffering from IUGR (50 percent).

METHODS OF MONITORING :

CLINICAL (a) Correct timing of the gestational age. (b) Weight gain. The ideal weight gain during pregnancy remains unsettled but it has a definite correlation with fetal well being.

A woman entering her pregnancy with less than 120 lbs and gaining less than 11 lbs is a high risk.

(c) Fundal height – Assessment of the fundal height is useful up to 36 weeks gestation. Uterine volume can be calculated from fundal height and abdominal girth.

(d) *Fetal Movements* :

Reduced fetal movements in the antenatal period is associated with development of intrapartum fetal distress. Three one-hour episode; morning , noon and evening. The sum is multiplied by four to provide a daily 12 hour figure. Pearson suggests that a DFMR less than 11 per x2 hours has a significant correlation with fetal jeopardy. This is a simple test requiring no facilities.

Ultrasonic Cephalometry :

Campbell (4) found out that the mean weekly increment falls from 3.09 mm at 25 weeks to 2.02 at 33 weeks and 1.23 at 39 weeks.

Urinary Oestrogens:

Both the fetus and the placenta are responsible for the production of oestriol. It can be estimated on 24-hour collection of urine from 30 weeks onwards.

Results of less than 8 mg/24 hours at 30 weeks and less than 12 milligrams at 40 weeks have a perinatal mortality of 24.3 percent compared to 1.6. percent in those with levels above this serial estimations is important. Steroids, Ampicillin and glycosuria can affect the result.

Plasma Oestriols

This obviates the need to collect a 24 hour sample but diurnal variation of up to 100 percent may occur and mitigate against this parameter.

HUMAN PLACENTAL LACTOGEIN HPL.

(Somatomammatotrophin)

Produced by the syncito-trophoblast. Estimated in maternal blood in an automated way. Levels of less than 4 mg./ml after 34 weeks indicate 75 percent risk.

AMNIOTIC FLUID:

- (a) The volume can be measured by dye dilution method . It usually decreases after 37 weeks.
- (b) Through amnioscopy meconium can be seen, indicating fetal distress requiring delivery (seven pencil)

In Rhesus affected pregnancies, the severity of the condition can be assessed by scanning. The amniotic fluid hence intra-uterine transfusion or immediate delivery.

Maturity can be assessed by staining the shed cells with Nile Blue Sulphate 10 percent. Lipid in the cells stain orange indicating maturity beyond 36 weeks.

Estimation of Lecithin/Sphingomyelin ratio in the amniotic fluid is widely used now to detect the maturity of the fetal lungs to prevent RDS if induction of Labour is anticipated. A ratio of 2 or above is considered safe. A simpler test the bubble or shake test which is a bed-side test done by mixing a sample of amniotic fluid with ethanol. A positive test is shown by the formation of a stable bubble.

STRESS TESTS:

- (a) Oxitocin Stress Test: Involves stimulation of uterine contractions using the fetal heart as a measure of the fetal response.
- (b) Maternal hypoxia – By allowing the mother to inhale 12 percent oxygen for 15 minutes. Fetal Tachycardia returns to pre-stress level within four minutes indicating an uncompromised fetus. If it takes more than eight minutes it indicates fetal hypoxia and urgent delivery needs to be undertaken.

In summary differentiation between pregnancies with normal fetal growth and those without is better made first before applying those tests, therefore clinical information like fundal height, weight gain and girth remain important.

Determination of true gestational age is important because implementation of these parameters depend on the duration of pregnancy. If laboratory tests are not available simple parameters like fetal movements and uterine volume are useful.

If facilities are available a combination of urinary oestriol and HPL would seem to provide the best prognostic index. No single reading from any test should be relied upon.

What is needed is not flooding the field by more tests but to concentrate on a few so that standardisation and accurate assessment of their value can be reached.

REFERENCES

1. BMJ Jan. 1977 leader (Predicting fetal death)
2. BERNARD, W.P. Logan, R.W. (1972) Journal of Obstetric & Gynaecology of British Commonwealth, 79, 1091.
3. Beasley J.M., Underhill, R.A. (1970) British Medical Journal, 404.
4. Campbell, S., Newman, G.B (1971) *ibid.* 78, 513.
5. Report, Royal College of obstetrics and gynaecology. Methods for monitoring the fetus in pregnancy and labour (CLYATON S.G., BEARD R.W.)
6. Rhodes P. (1973) British Medical Journal.