ANTENATAL ASSESSMENT OF FETAL WELLBEING

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OBJECTIVE
To avoid fetal death

AIMS OF ANTENATAL FETAL MONITORING

• To ensure satisfactory growth and wellbeing of the fetus throughout pregnancy.
• To screen out the high risk factors that affect the growth of the fetus.

INDICATIONS FOR ANTEPARTUM FETAL MONITORING

• Pregnancy with obstetric complications
  • IUGR
  • Multiple pregnancy
  • Polyhydramnios
  • Oligohydramnios
  • Rhesus alloimmunisation

• Pregnancy with medical complications
  • Diabetes mellitus
  • Hypertension
  • Epilepsy
  • Renal or Cardiac disease
  • Infection (Tuberculosis)

• Others
  – Advanced maternal age (more than 35 yrs)
  – Previous still birth or recurrent abortion
  – Previous birth of a baby with structural or chromosomal abnormalities

PROCEDURES OF ANTENATAL EXAMINATION

• At first visit
  • Haemoglobin estimation
  • Routine examination of urine
  • HIV, HbsAg, VDRL
  • ABO and Rh grouping
  • Random blood sugar
  • TORCH (recurrent abortion or stillbirth)

• About 3% of liveborn infants have a major birth defect
• About 70% of fetal death occur antenatally
At subsequent visits
- Maternal weight gain e.g. preeclampsia/IUGR
- Blood pressure
- Assessment of the size of the uterus and height of the fundus
- Clinical assessment of excess liquor
- Documentation of the girth of the abdomen in the last trimester

Clinical
- Biochemical
- Biophysical
  - Fetal movement count
  - Cardiotocography
  - Non stress test
  - Fetal biophysical profile (BPP)
  - Doppler ultrasound
  - Vibroacoustic stimulation test
  - Contraction stress test

Fetal movement count
- Cardif count 10' formula: 10 movements in 12 hrs
- Daily fetal movement count (DFMC): 3 or 4 movements in one hour duration

Maternal perception of fetal movements may be reduced
- Fetal sleep
- Fetal anomalies
- Anterior placenta
- Hydramnios
- Obesity
- Drugs (narcotics)
- Chronic smoking
- Hypoxia

Fetal cardiography (CTG): a normal tracing after 32 wks would show base line heart rate of 110-150 beats per mins with an amplitude of base line variability 5-25bpm. There should be no deceleration or there may be early deceleration of very short duration

Non stress test (NST): In non stress test, a continuous electronic monitoring of the fetal heart rate along with recording of fetal movements is undertaken.
- Interpretation
  - Reactive: When two or more accelerations of more than 15 beats per minute above the base line and longer than 15 seconds in duration are present in a 20 mins observation (perinatal death is about 5 per 1000)
  - Non reactive: Absence of any fetal reactivity (perinatal death is about 40 per 1000)
**Biophysical profile scoring (Manning-1985)**

- Observation for 30 mins. Normal score = 2. Abnormal = 0

<table>
<thead>
<tr>
<th>parameters</th>
<th>Minimal normal criteria</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-stress test</td>
<td>Reactive pattern</td>
<td>2</td>
</tr>
<tr>
<td>Fetal breathing movement</td>
<td>1 episode lasting &gt;30 secs</td>
<td>2</td>
</tr>
<tr>
<td>Gross body movement</td>
<td>3 discreet body/limb movements</td>
<td>2</td>
</tr>
<tr>
<td>Fetal muscle tone</td>
<td>1 episode of extension with return of flexion</td>
<td>2</td>
</tr>
<tr>
<td>Amniotic fluid</td>
<td>1 pocket measuring 2 cm in two perpendicular planes</td>
<td>2</td>
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**BPP score**

<table>
<thead>
<tr>
<th>Score</th>
<th>Interpretation</th>
<th>Management</th>
</tr>
</thead>
<tbody>
<tr>
<td>8-10</td>
<td>No fetal asphyxia</td>
<td>Repeat testing at weekly interval</td>
</tr>
<tr>
<td>6</td>
<td>Chronic asphyxia</td>
<td>If &gt;36 wks — Deliver</td>
</tr>
<tr>
<td>4</td>
<td>Chronic asphyxia</td>
<td>If &gt;36 wks deliver, if &lt;32 wks repeat testing in 4-6 hrs</td>
</tr>
<tr>
<td>0-2</td>
<td>Certain asphyxia</td>
<td>Test for 120 mins — persistent score=4 — Deliver regardless of gestational age</td>
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**Summary**

- Birth defect may be chromosomal, genetic, multifactorial or teratogenic

Fetal surveillance
AFP, hCG, UA3
USG Congenital malformation
Cytogenetic

Clinical monitor+DFMR
Normal
Abnormal
Non reactive
Reactive
Manage as BPP score and Doppler report