

INTRAPARTUM MONITORING OF THE FETUS

By DR HAMID A/RAHMAN NAEIM, MBBS, MRCOG

Department of Obstetrics & Gynaecology

University of Khartoum

Throughout the history of obstetrics, emphasis had been changing. The main concern at first was the safety of the mother, when that was fairly achieved, the emphasis changed to the fetus. A living baby would be a marvellous achievement. Modern obstetrics, having achieved, within limits, both those objectives, is concerned with the quality of the fetus. Life has become complicated and stressing, and to bring up and look after a handicapped child is catastrophic for the family. Many factors can cause fetal brain damage during labour such as Anaesthesia and birth trauma.

Monitoring main contribution is to provide the attending physician with more precise information which is not available by the standard clinical methods of monitoring such as hearing with the fetal stethoscope and feeling the uterine contractions. There is a confirmed significant relationship between abnormal foetal heart rate patterns, foetal acidosis, hypoxia, and poor condition at birth. Nowadays, reliable instrumentation is available, so less trauma and other hazards are expected to occur. The development of ultrasound has facilitated external monitoring of the foetal heart rate early in labour without the need to rupture the membranes and introduce the foetal scalp electrodes.

CANDIDATE PATIENT :

Ideally, some form of monitoring should be available to every patient. This is because unanticipated complications might occur any time during normal labour as every labouring patient is a potential emergency. The patients who fall within the lowest risk group, external monitoring is the minimum which should be provided, under ideal conditions.

Those who fall within the highest risk group should have internal monitoring and facilities for foetal blood sampling when indicated by the development of events.

Monitoring is a written record of the foetal heart rate and the intensity and frequency of uterine contractions, together with an electronic show of the foetal ECG. This is advantageous over mere listening and palpation and might be analogous to the situation where an ECG is done instead of mere listening to the heart sounds with a normal stethoscope.

DESCRIPTION:

- A. Heart Rate Recording, both graphically and electronically as described before.
- B. Acid-base state of the fetus to be done when the heart rate either abnormally decelerates or accelerates below or above the normal range 120-160 beats/minute. The PH, Po₂ are a measure of asphyxia' or hypoxia.

HEART RATE:

There are three major heart rate patterns.

1. Early deceleration (Type 1 dip.) This is due to vagal stimulation due to pressure on the head, fontanelle, carotid sinus or eye ball. It is not very significant but should alert the physician to the possible potential danger. It starts at the beginning of the uterine contraction and ends before the contraction finishes.
2. Type II dips (late deceleration) This reflects foetal bradycardia, It commences during a uterine contraction and persists for 30-60 seconds after the contraction has finished. It is related to placental insufficiency, reflecting a decreased placental blood flow and hence foetal anoxia.
3. Variable deceleration: This is inconsistent and is correlated with occlusion of the umbilical cord. It is not very significant but should draw the attention and give the warning for more care.
4. A newly recognised pattern is the loss of base line irregularity i.e. the beat to beat variation. It is due to the inter-play between the sympathetic and parasympathetic control of the foetal heart rate.

INTERPRETATION OF RESULTS :

Having started monitoring a patient, one must act according to results. Persistent occurrence of type II dips is an indication to do a fetal scalp sample. Serial estimations of the foetal PH, PO₂ is more significant than a single result. A PH of 7.2 or less, is frank acidosis, and, as we know, glycolysis stops at about a PH of 6.8. Similarly the heart rate and acid-base monitoring should be considered as complementary. A practical point to remember in interpreting a low PH of the fetal blood is that maternal acidosis due to starvation from vomiting or lack of nutrition during labour might be reflected on the foetus. Should such a maternal condition be suspected, a blood sample from the maternal venous system should be taken simultaneously and PH determined. Many a time, with treatment of the maternal condition, foetal condition improves and hence unnecessary intervention postponed. With progressive lowering of foetal

PH to the zone of 7.25 then immediate delivery has to be considered. The mode of delivery will depend on the state of dilation of the cervix and feasibility of vaginal delivery.

SIGNIFICANCE OF MONITORING :

Monitoring will allow the physician to have a good insight of the foetal state during labour. Many unnecessary caesarean sections would be avoided. Nowadays, with the newly introduced policy of active management and acceleration of labour with syntocinon infusion, foetal monitoring during labour is vital. Though syntocinon or prostaglandin induced contractions mimic physiological uterine contractions, yet the danger of foetal distress or rupture of the uterus is more likely than in the case of spontaneous physiological labour. Hence a continuous knowledge of the foetal heart rate, frequency and intensity of uterine contractions is vital. Every descent obstetric unit where induction or acceleration of labour is practical should have a complete monitoring system, which is not after all, very costly.

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