Intrapartum management

Elahe Zarean

Fellowship of Perinatology

Isfahan university of medical science

- The goal of intrapartum fetal heart rate monitoring is to prevent fetal death and neurologic injury.

- CTG monitoring should never be regarded as a substitute for good clinical observation and judgment, or as an excuse for leaving the mother unattended during labor.

situations of suspected fetal hypoxia/acidosis

- Excessive uterine activity
- Maternal pushing
- Supine position (stimulation of the sacral plexus by the uterine weight resulted in excessive uterine activity)
- Sudden maternal hypotension (epidural or spinal analgesia)

Limitations of cardiotocography

- Hypoxia/acidosis has not been documented shortly after a normal CTG tracing.
- Large percentage of cases with suspicious and pathological tracings do not have poor outcomes.

Limitations of cardiotocography

Observer disagreement in identification :

- Decelerations
- Variability
- Classification of tracings as suspicious and pathological

Continuous CTG

In all situations where there is a high risk of fetal hypoxia/acidosis:

- maternal health conditions (vaginal hemorrhage, maternal pyrexia)
- abnormal fetal growth
- epidural analgesia
- meconium stained liquor
- excessive uterine activity(induced or augmented labor)
- abnormalities are detected during intermittent fetal auscultation

DR C BRAVADO

DR = determine risk

C=contractions

BRA = baseline rate

V = variability

A = accelerations

D = decelerations

O = overall assessment

NICE	ACOG
Normal (a CTG where all of the following four reassuring features are present) • Baseline rate: 110–160 bpm • Variability: ≥5 bpm • No decelerations • Accelerations: present	Category I (category I FHR tracings include all of the following) • Baseline rate: 110–160 bpm • Baseline variability: 6–25 bpm • Late or variable decelerations: absent • Early decelerations: present or absent • Accelerations: present or absent

NICE	ACOG
Suspicious CTG where one of the following features is present and all others fall into the reassuring category: • Baseline rate - 100–109 bpm - 161–180 bpm • Baseline variability :<5 bpm for< 90 min – 50% of contractions - Single prolonged deceleration for up to 3 min • Accelerations - The absence of accelerations with an otherwise normal trace is of uncertain significance	Category II - Examples : • Baseline rate - Bradycardia not accompanied by absent variability – Tachycardia • Baseline variability - Minimal variability - Absent variability with no recurrent decelerations - Marked variability • Accelerations - Absence of induced accelerations after fetal stimulation • Periodic or episodic decelerations: - Recurrent variable decelerations accompanied by minimal or moderate baseline variability - Prolonged deceleration 2–10 min - Recurrent late decelerations with moderate baseline variability - Variable decelerations with other characteristics such as slow return to baseline, overshoots or shoulders

NICE	ACOG
Pathological: CTG with one or more of the following features or two or more features in the previous category) • Baseline rate - 180 bpm - Sinusoidal pattern ≥ 10 min • Baseline variability :<5 bpm for> 90 min 50% contractions for >30 min - Late decelerations for >30 min - Prolonged deceleration >3 min	Category III: • Absent baseline FHR variability and any of the following: - Recurrent late decelerations - Recurrent variable decelerations - Bradycardia • Sinusoidal pattern

	Normal	Suspicious	Pathological
Baseline	110–160 bpm	Lacking at least one characteristic of normality, but with no pathological features	<100 bpm
Variability	5–25 bpm	Lacking at least one characteristic of normality, but with no pathological features	Reduced variability, increased variability, or sinusoidal pattern
Decelerations	No repetitive[b] decelerations	Lacking at least one characteristic of normality, but with no pathological features	Repetitive[b] late or prolonged decelerations during >30 min or 20 min if reduced variability, or one prolonged deceleration with >5 min
Interpretation	Fetus with no hypoxia/acidosis	Fetus with a low probability of having hypoxia/acidosis	Fetus with a high probability of having hypoxia/acidosis
Clinical management	No intervention necessary to improve fetal oxygenation state	Action to correct reversible causes if identified, close monitoring or additional methods to evaluate fetal oxygenation [49]	Immediate action to correct reversible causes, additional methods to evaluate fetal oxygenation [49], or if this is not possible expedite delivery. In acute situations (cord prolapse, uterine rupture, or placental abruption) immediate delivery should be accomplished.

Table 2.3 Categorisation of fetal heart rate (FHR) features

Feature	Baseline (bpm)	Variability (bpm)	Decelerations	Accelerations
Reassuring	110–160	≥5	None	Present
Non-reassuring	100–109			
	161–180	<5 for ≥40 but less than 90 minutes	Early deceleration Variable deceleration Single prolonged deceleration up to 3 minutes	The absence of accelerations with an otherwise normal cardiotocograph is of uncertain significance
Abnormal	<100 >180 Sinusoidal pattern ≥10 minutes	<5 for ≥90 minutes	Atypical variable decelerations Late decelerations Single prolonged deceleration >3 minutes	

Categorisation of fetal heart rate traces

Category	Definition
Normal	All four reassuring
Suspicious	1 non-reassuring Rest reassuring
Pathological	2 or more non-reassuring 1 or more abnormal

Category **II** fetal heart rate pattern lasting **60 minutes** or **more** that was identified on initial presentation with persistently **minimal or absent variability** and **lacking accelerations**, even in the absence of decelerations, is suggestive of a previously compromised or injured fetus.

- If fetal well-being cannot be established by appropriate response to **scalp stimulation** or biophysical testing, the patient should be evaluated for the method and timing of delivery.

- An **emergency cesarean** delivery may **not benefit** fetus with previous severe compromise.

Hypoxic–Ischemic event.

- Category I fetal heart rate pattern that converts to Category III
- Tachycardia with recurrent decelerations
- Persistent minimal variability with recurrent decelerations.

Pathologic CTG in first stage

- Silent pattern > 90 min
- Complicated variable deceleration
- Combined deceleration
- Prolonged bradycardia

Action : fetal blood sampling

pathologic CTG in second stage

- Baseline < 100 bpm
- Baseline tachycardia with reduced variability and severe variable and late deceleration

Action : delivery

conditions not forgot

- Meconium
- Infection
- abruption

Causes of category **II and III** tracings unrelated to fetal hypoxemia

- Fetal arrhythmias
- Fetal sleep cycle
- Technical factors
- Maternal heart rate artifact
- Drug effects
- Congenital anomalies
- Pre-existing fetal neurologic injury
- Maternal fever

Variable Deceleration

Typical:

- shoulders

Atypical :

- Overshoot
- Loss of primary shoulder
- Slow return to baseline (late component)
- Baseline returns to a lower level(after deceleration)
- Biphasic(W shape)
- loss of variability during deceleration

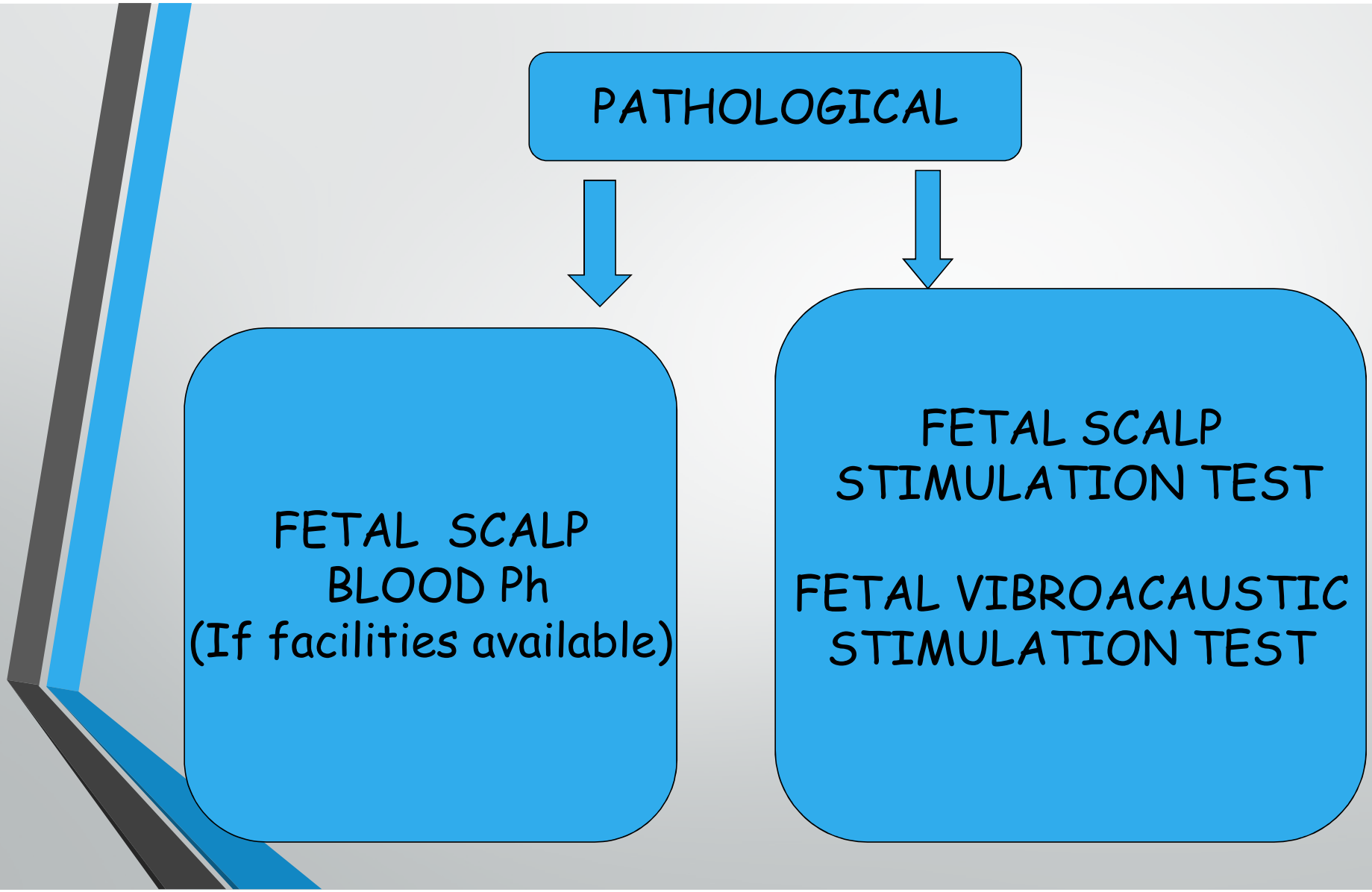
Red flags

- Loss of variability
- Complicated tachycardia

Complicated variable deceleration

Indicated fetal hypoxia :

- Tachycardia
- Lack of variability
- Slow return to baseline
- Large amplitude(to 6obpm or duration 6o second)
- Loss of pre and post shouldering
- Smooth overshoot


PATHOLOGICAL
FETAL SCALP BLOOD Ph (If facilities available)
FETAL SCALP STIMULATION TEST
FETAL VIBROACAUSTIC STIMULATION TEST