Sinusoidal Slides

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Advanced Fetal Monitoring 2008
G1P0 36 wks with a low lying anterior placenta. GBS negative, prenatal labs are normal.

Cervix 1 cm, 80%, -1, vertex

Emergency C-section performed
Apgars 11, 45, 610
Resuscitation required at birth with volume expanders. Infant received blood transfusions, stabilized and was discharged in 4 days with no neurologic deficit.

This is a pathologic sinusoidal pattern that is tachycardic. Notice there are 1½ to 5 cycles per minute in a pathologic sinusoidal pattern, absent accelerations, and in this example, absent short-term variability. In this example there are 2 to 3 cycles per minute. The waveform of a sinusoidal pattern is NOT a series of accelerations.
In this example, not the unstable nature of the heart rate. It falls to a lower level and there appear to be multiple contractions although there may be a uterine reversal pattern. Also note that the sinusoidal pattern meets the criteria for 1½ to 5 cycles per minute and that some of the cycles are “pointed” at the bottom. This often occurs.

G₁P₀ 37 wks, admitted at 1835 for observation and early labor. No significant prenatal history. Cervix closed, -3, vertex 88/48, pulse 80, temp 36.6
Another sinusoidal pattern with a normal baseline rate.
Count the cycles per minute. You should see 2 to 2½. A sinusoidal pattern is found when a fetus is hypoxic, metabolically acidotic or asphyxiated. Note that some cycles are “pointed” at the bottom which does occur and this is still a pathologic or true sinusoidal pattern. Also note the average rate is 150 bpm.
Pt. observed overnight and discharged the next day. Instructed to return in 24 hours for NST.

A flat tracing is thought to be worse than a sinusoidal pattern.
It was unwise to send the patient home.
The most likely cause of the flattening of the tracing was severe fetal anemia, hypoxia, with the accumulation of adenosine which will cause flattening due to the suppression of the sympathetic nervous system.

Two Days Later: Nonreactive NST
Repeat C-section, partial abruption
Apgars 9° 9° 8°
Kleihauer-Betke: 2.4%
It is believed that the sine waves produced in a sinusoidal pattern are related to the fetal release of arginine vasopressin (antidiuretic hormone). ADH is related to fluctuations in the blood pressure and fetal heart rate. ADH is released when a fetus has volume depletion (e.g., severe anemia) and apparently may be released in cases of hypoxia, metabolic acidosis, or asphyxia.

Note the tachycardic rate between 190 and 200 bpm.
In this example, the bandwidth of the sinusoidal pattern changes. There are no accelerations.

This is a medical emergency requiring the presence of a surgeon with a plan for immediate delivery by cesarean section in light of the fact that the dilatation is only 1 cm. Assess the history of fetal movement.

Usually these fetuses move less or not at all due to their severe anemia, hypoxia, acidosis, or asphyxia. Inform the neonatal staff of your concern for fetal anemia, or acid-base disturbances so that they are ready to resuscitate the fetus. The neonate may need a blood transfusion.
RN noted FHT 150, variables of the V and W type, no accels, minimal variability.

Probably there is a build-up of adenosine as there is a loss of variability. Some researchers believe the presence of decelerations and the vagal response is better than no decelerations at all.
It is difficult to imagine an active fetus with this tracing.
Inform the physician of this report.
An ultrasound may be helpful to determine if the fetus is moving.

RN noted the patient had just eaten and the patient reported the baby was very active.
The RN assumed an active fetus meant the FHR was fine and assisted the patient to the bathroom.
The rest of the story:

The RN was unable to find the fetal heart rate, did a vag exam to check for a cord and called for help.

A second RN could not find the fetal heart rate and called for a doctor who was nearby on L&D. The MD performed a bedside ultrasound but could not determine a heart rate.

The RN took the patient to Radiology per the physician request for an ultrasound, which revealed no fetal cardiac activity.

At birth there were 3 loops of nuchal cord and a true knot in the cord.
Pathologic Sinusoidal

G₄P₂ 36 5/7 wks gestation w/Rh isoimmunization and 5 amniocenteses
this pregnancy (immigrant from Ethiopia)

Post bloody amniocentesis

This is a rare strip where only part of it was sinusoidal.
There is no clear name for this pattern. The changes in the fetal heart rate reflect changes in the fetal blood pressure with wide fluctuations.
C-section, Apgars 1°, 5°, 10°

Clot noted on placenta, no needle puncture on fetus or cord
Expired 30 minutes after delivery
This is 2 different images of 2 different fetuses. Note the similarity in the regularity of the cycles.
His is also 2 different fetuses. Again note the similarity in the number of cycles.