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Intrapartum fetal heart rate patterns in the prediction of neonatal acidemia.

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OBJECTIVE: This study was undertaken to correlate changes in the intrapartum electronic fetal heart rate patterns with the development of significant neonatal acidemia.

STUDY DESIGN: We identified 488 fetuses at a gestational age of >37 weeks' gestation who had continuous electronic fetal monitoring during labor for the last 2 hours and umbilical artery cord gas analysis performed at delivery. One investigator blinded to the cord gas outcome reviewed all 488 tracings using the National Institute of Child Health and Human Development guidelines for fetal heart rate monitoring. All fetal heart rate tracings with bradycardia were removed from further analysis. The patients were placed in six groups, depending on the absence or presence of normal variability (amplitude >5 beats) during the last hour of monitoring combined with the absence of decelerations or the presence of variable or late decelerations. The relationship between changes in variability and the outcome variables of pH and base deficit in the six groups was assessed with analysis of variance and chi(2) test. Significance was set at the P <.05 level.

RESULTS: Patients with normal variability and accelerations, even in the presence of late decelerations or variable decelerations, maintained an umbilical artery pH 7.0 or greater in more than 97% of cases. In the presence of minimal/absent variability (amplitude <5) for at least an hour, the incidence of significant acidemia (pH <7.0) ranged from (12%-31%).

CONCLUSION: The most significant intrapartum fetal heart rate parameter to predict the development of significant acidemia is the presence of minimal/absent variability for at least 1 hour as a solitary abnormal finding or in conjunction with late decelerations in the absence of accelerations. Urgent delivery should be considered in these cases after appropriate ancillary testing.