

Changes in the ST-interval segment of the fetal electrocardiogram in relation to acid-base status at birth.

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OBJECTIVE: To assess the occurrence of ST-interval segment changes of the fetal electrocardiogram (ECG) and cardiotocographic (CTG) abnormalities preceding acidemia at birth.

DESIGN: Case-control study.

SETTING: University hospital labour ward.

SAMPLE: Newborns with severe cord artery metabolic acidemia (pH < 7.00 and lactate > or = 10 mmol/l; n= 24), moderate metabolic acidemia (pH 7.00-7.09 and lactate > or = 10; n= 48), acidemia (pH 7.00-7.09; n= 52), pre-acidemia (pH 7.10-7.19; n= 265), and controls (pH > or = 7.20; n= 117).

METHODS: Monitoring traces were assessed blinded to outcome.

MAIN OUTCOME MEASURES: CTG and ST changes.

RESULTS: Any ST event occurred significantly more often among cases with severe (79%) and moderate (75%) metabolic acidemia than among controls (50%). The difference was restricted to baseline T/QRS rises and to the second stage of labour, during which any event only occurred significantly more often among cases with severe metabolic acidemia (62%) than among controls (38%). ST events coincided with abnormal CTG patterns in 67, 44, 40, and 28% of cases with severe and moderate metabolic acidemia, acidemia, and pre-acidemia, respectively, and in 12% of controls. ST events with intermediary CTG were similarly frequent in the case groups (0-6%) as in the controls (4%). The ST guidelines stated intervention in 96, 62, 73, and 49% of case groups and 23% of controls.

CONCLUSIONS: Only two of three cases with severe and less than half of cases with moderate metabolic acidemia were preceded by ST events coinciding with CTG abnormalities. It is therefore important to intervene for long-lasting, rapidly deteriorating or marked (preterminal) CTG abnormalities, also in the absence of ST events.