

Prediction of neonatal acidemia by computer analysis of fetal heart rate and ST event signals.

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ABSTRACT

Objective: The objective of the study was to evaluate the accuracy of computer analysis of fetal heart rate (FHR) and ST event signals in prediction of neonatal acidemia.

Study Design: One hundred forty-eight FHR tracings were evaluated to identify red alerts provided by the system, based on automated analysis of FHR and ST event signals, and compared with the occurrence of umbilical artery acidemia (pH $\leq$ 7.05).

Results: The presence of red alerts obtained sensitivity of 1.00 (95% confidence interval [CI], 0.56-1.00), specificity of 0.94 (95% CI, 0.89-0.97), positive predictive value (PPV) of 0.47 (95% CI, 0.22-0.72), negative predictive value (NPV) of 1 (95% CI, 0.96-1.00), positive likelihood ratio (PLR) of 17.6 (95% CI, 9.0-34.5), and negative likelihood ratio (NLR) of 0. When limiting analysis to red alerts that did not include ST data, sensitivity was 0.57 (95% CI, 0.20-0.88), specificity was 0.97 (95% CI, 0.92-0.99), PPV was 0.50 (95% CI, 0.17-0.82), NPV was 0.98 (95% CI, 0.93-0.99), PLR was 20.14 (95% CI, 6.3-64.2), and NLR was 0.44 (95% CI, 0.19-1.04).

Conclusion: Computer analysis of FHR and ST event signals provide higher accuracy in predicting neonatal acidemia.