

LINEAR AND NONLINEAR FETAL HEART RATE ANALYSIS OF NORMAL AND INTRAUTERINE GROWTH RESTRICTED FETUS AFTER VIBROACOUSTIC STIMULATION

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Objectives: This study was conducted to assess whether nonlinear statistics such as approximate entropy (ApEn) or correlation dimension (CD) would offer an advantage over standard linear statistics of variation in predicting outcome when applied to fetal heart rate data (FHR) provoked by vibroacoustic stimulation (VAS) between normal and uncomplicated intrauterine growth restricted (IUGR) fetuses. Methods: We analyzed each FHR time series for 20 min after a five-second VAS was given. We quantified the complexity of each FHR time series by ApEn and CD. Results: There were no significant differences in classical FHR parameters after VAS. However, the ApEn and CD of the uncomplicated IUGR fetuses were significantly lower than that of the normal fetuses. Conclusion: These results support the hypothesis that nonlinear statistics offered an advantage over standard statistics of variation in predicting fetal adverse outcome when applied to FHR data after VAS, especially IUGR fetuses.