Cardiotocography Fetal Heart Rate Baseline Estimation Algorithm

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Abstract

Cardiotocography (CTG) is a simultaneous recording of fetal heart rate (FHR) and uterine contractions (UC) and it is one of the most common diagnostic techniques to evaluate maternal and fetal well-being during pregnancy and before delivery. FHR patterns are observed manually by obstetricians during the process of cardiotocographs analyses. For the last three decades, great interest has been paid to the fetal heart rate baseline and its frequency analysis, as a base for a more objective analysis of the cardiotocographs (CTG) tracings. Changes in the fetal heart rate pattern relative to contractions provide an induction of fetal condition. This paper proposed new algorithm for FHR baseline calculation.In this work, we present a method for estimating baseline as one of the most important features present in the fetal heart rate (FHR) signal. An algorithm based on digital Cardiotocogram (CTG) using Math Lab programming to estimate Fetal Heart Rate (FHR) baseline, the work in this paper rely on detection of baseline values which gives an indication of the fetal status and health condition. The results are compared with the opinion of experts (obstetricians) baseline estimation and one researcher in the same field of study. The obtained results shows slightly difference with the experts openion as a first step for further work to estimate the other parameters of the (CTG).

Keywords: Cardiotocogram (CTG), fetal heart rate (FHR), Baseline, uterine contraction (UC) and Electronic Fetal Heart Rate Monitoring (EFM)