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„High Frequencies in ECG and Response to Cardiac Resynchronization Therapy“

Abstract
Cardiac Resynchronization Therapy (CRT) is used to correct dyssynchronous activation of the left and right ventricle. While the benefit of CRT to heart failure patients with left bundle branch block is strong, there are still patients (30%) who do not respond to CRT. This may be connected to the fact that current CRT guidelines do not consider any direct measure of electrical dyssynchrony between the left and right ventricle.

In this presentation, I will introduce a new method with the potential to predict the effect of CRT. This fully automated method is based on the analysis of high-frequency components (above 150 Hz) of the QRS complex measured in a 12-lead ECG signal. The output of the presented method is Ventricular Electrical Delay (VED); the VED measures the delay between the activation of the left and right ventricle. The method was validated on the MADIT-CRT database and revealed a strong association between VED and MADIT-CRT endpoints.

Finally, the results achieved have shown that the presented analysis of high frequencies in an ECG signal could predict whether a patient may benefit from CRT or not.