

An Augmentative and Portable QTc-Observer(QTO-Q2) to Facilitate More Purposeful Outpatient Monitoring

Thomas Chee Tat Ho* and Xiang Chen

Signal Processing, Institute for Infocomm Research, Singapore

A tele-medical approach for monitoring and detecting prolonging QT-intervals via cellular equipments is proposed in this paper. Currently, the procedures for detecting Longed QT Syndrome (LQTS) involves taking a 1 time preliminary prognosis followed by a comprehensive long time hospital or laboratory bound monitoring; the latter is only conducted if and only if the former is tested positive. However, if the preliminary prognosis fails due to the absence of the symptoms during the instance of testing, the subject may be declared with a false clean bill of health. In this modern day and age where telemedicine is becoming a more important aspect of conventional medicine, it is sensible that the conventional methods be augmented with ambulatory long-term monitoring to better detect LQTS for people suspected of it. The QTc-Observer (QTO or Q2) is developed to monitor specifically QT intervals for the detection of LQTS. Built on top of the existing MobiCare System [1], the Q2 is connected to an all-day monitoring center for continuous observations by medical professionals. The electrocardiography (ECG) data is collected by a commercially available light and portable sensor. The data is forwarded onto the cellular phone for processing. The QT intervals with its corresponding RR-intervals are extracted for conversion to QTc intervals. The QTc intervals are plotted over time to form a trend line. The trend line formed over time is then analyzed for abnormalities. A sliding detection window is used to analyze consecutive segments for LQTS. Finally, a correlation measure is used to compare the trend lines in the consecutive windows for analysis.