ELECTROCARDIOGRAMS TRANSMITTED VIA FACSIMILE MAY NOT ALLOW ACCURATE INTERVAL INTERPRETATION

ACC Poster Contributions
Ernest N. Morial Convention Center, Hall F
Monday, April 04, 2011, 3:30 p.m. - 4:45 p.m.

Session Title: Pediatric Cardiology: Electrophysiology
Abstract Category: 41 Pediatric Cardiology
Session-Poster Board Number: 1132-441

Authors: Kanwal M. Farooqi, Scott R. Ceresnak, Katherine Freeman, Robert H. Pass, The Children’s Hospital at Montefiore, Bronx, NY, Albert Einstein College of Medicine, Bronx, NY

Background: Electrocardiograms (ECG’s) are routinely sent via facsimile by pediatricians and psychiatrists to pediatric cardiologists prior to prescribing stimulants for Attention Deficit Hyperactivity Disorder (ADHD) or clearing patients for competitive athletics participation. The validity of this method of transmission has not been established. We sought to determine if interval durations on an ECG are altered after transmission via facsimile.

Methods: Deidentified ECG’s were collected from 100 consecutive patients under the age of 21 years, evaluated at the cardiology clinic of the Children’s Hospital at Montefiore. The ECG’s were then faxed, and also electronically faxed (efax) and then printed. Two pediatric electrophysiologists (EP1 and EP2) interpreted the intervals on the original, faxed and efaxed ECGs, and these intervals (RR, PR and QT) were compared. A three-way analysis of variance to examine differences between raters, among ECG intervals and among methods (repeated factor) was performed. Because no interaction terms were significant, a Duncan’s multiple range test was used to evaluate where differences occurred among the three intervals and three methods, given these main effects were significant.

Results: The difference between raters EP1 and EP2 was not significant (p=0.6681). Although the interval measurements of the faxed and efaxed ECG’s were not significantly different from each other (p>.05), each was significantly different from the original across all three ECG intervals and both raters (p=0.0138). The RR interval, presumed least subject to interpretation due to the discrete start and ending points, yielded mean (SD) values for the original, faxed and efaxed methods of 0.6986 sec (0.2074), 0.6646 sec (0.1938), and 0.6838 sec (0.1935), respectively. For the QT interval, the mean (SD) values for the original, faxed and efaxed methods were 0.3370 sec (0.0524), 0.32134 (0.0466), and 0.3284 (0.0515), respectively.

Conclusions: Due to variability in paper speed in facsimile machines, transmission of an ECG via facsimile or efax may introduce significant distortion of the intervals. Alternative means of sending ECG’s for interpretation should be considered.