P1-54

Can Electrocardiography Findings Indicate Cardiac Autonomic Dysfunction in Children Presenting with Vasovagal Syncope?

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Objective:
This study aims to determine the usefulness of electrocardiography findings as a sign of cardiac autonomic dysfunction in children presenting with vasovagal syncope.
Methods: This is a prospective review of 92 children presenting with vasovagal syncope and 50 healthy children who were matched with respect to age and sex. Fifty children presenting with syncope had negative head up tilt (HUT) test while 42 children presenting with syncope had positive HUT test. Comparisons were made according to the electrocardiography findings related with p-wave, QT interval, T-wave and heart rate variability.
Results:
The healthy controls, HUT test negative children and HUT test positive children were statistically similar in aspect of age, sex, height, weight and body mass index. When compared with the healthy controls, the HUT positive children had significantly slower heart rate ($p<0.05$), longer p minimum ($p<0.01$), longer p maximum ($p<0.01$), greater p-wave dispersion ($p<0.01$), longer QT minimum ($p<0.01$), longer QT maximum ($p<0.01$), greater QT dispersion ($p<0.05$) and longer T-peak-to-T-end intervals in V2, V3, V4, V5 and V6 leads ($p<0.01$, $p<0.01$, $p<0.05$, $p<0.05$ and $p<0.01$ respectively). The HUT positive children had significantly longer T peaks in V2, V5 and V6 leads than the T-peak-to-T-end intervals in V2, V5 and V6 leads of the HUT negative children ($p<0.01$, $p<0.05$ and $p<0.05$ respectively). When compared with the HUT negative children, the HUT positive children had significantly higher heart rate variability.
Conclusion:
Autonomic cardiac dysfunction may be predicted by ECG findings such as significantly greater p-wave dispersion, greater QT dispersion, prolonged T-peak-to-T-end intervals and increased heart rate variability in children with vasovagal syncope.
Keywords: children; electrocardiography; head up tilt test; vasovagal syncope