

The Effect of Metilpheniydate, Risperidone and Combination Therapy on ECG in Children With Attention-Deficit Hyperactivity Disorder

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Introduction Attention-deficit hyperactivity disorder (ADHD) is a common neurodevelopmental disease in children for which the most commonly preferred medication is with metilpheniydate and/or risperidone. However, concerns regarding the adverse effects of both drugs have increased recently. The aim of this study is to investigate ventricular repolarization on electrocardiogram (ECG) in a pediatric population receiving methylphenidate (MPH), risperidone (RIS) and combined therapy.

Methods A total of 215 patients between 6–12 years with ADHD/conduct disorder receiving methylphenidate, risperidone and combined therapy for minimum 3 months and an untreated ADHD group (n=76) were consecutively included in the study. Seventy healthy children in the same age group were enrolled as a control group. In the study, twelve lead ECG parameters including mean QT, corrected QT (QTc), T-peak to T-end (TpTe) intervals, TpTe dispersion and TpTe/QT ratio were compared.

Results Mean systolic and diastolic blood pressure values were found to be significantly higher in the MPH group compared to the untreated ADHD, combined therapy group and the healthy control group ($p<0.05$). QT interval, and QTc, TpTe interval, TpTe dispersion and TpTe/QTc ratio values for groups receiving RIS, MPH and combined therapy were found to be significantly higher than both the control and untreated ADHD groups. Moreover, in the combined therapy group TpTe and TpTe/QTc values were higher than the single drug administration groups ($p<0.05$). TpTe and TpTe/QT ratio was significantly higher in the RIS group compared to that of the MPH group. ($p<0.05$).

Conclusion In conclusion, TpTe and TpTe/QT ratio was found to be higher in the combination therapy group compared to the monotherapy group. It was also higher in the RIS group compared to the MPH group. These results suggested that combined therapy of these drugs had a more prominent impact on the T wave and RIS could be strongly associated with it.