ECG parameters in children and adolescents treated with second-generation antipsychotics: a 1-year prospective study

M. Lamberti[1,2], D. Italiano[2], L. Guerriero[1], G. D'Amico[3], R. Siracusano[1], M. Ingrassia[4], F. Cucinotta[1], A. Morello[2], E. Germanò[1], M.P. Calabrò[3], A. Gagliano[1], E. Spina[2]

[1]Division of Child Neurology and Psychiatry, Dept. of Pediatrics, University of Messina, Messina, Italy
[2]Dept. of Clinical and Experimental Medicine, University of Messina, Messina, Italy
[3]Division of Pediatric Cardiology, Dept. of Pediatrics, University of Messina, Messina, Italy
[4]Division of Psychology, Dept. of Humanities and Social Sciences, University of Messina, Messina, Italy

Introduction: Second-generation antipsychotics (AP) are increasingly prescribed in the pediatric population for the treatment of a number of psychiatric disorders. Second-generation AP may cause QT prolongation on the electrocardiogram (ECG), which predisposes patients to an increased risk of developing threatening ventricular arrhythmias. We performed a 1-year, open-label, prospective evaluation of ECG parameters in a population of children and adolescents treated with newer AP. **Methods:** Pediatric outpatients starting a treatment with a second-generation antipsychotic at the Unit of Child Neurology and Psychiatry of the University Policlinic of Messina, were consecutively included in a prospective cohort study. Patients underwent a standard ECG at baseline and after 3, 6, and 12 months from the beginning of antipsychotic treatment. ECG parameters, including mean QT (QTc), QT dispersion (QTd) and T peak- T end (TpTe) intervals duration, were compared at baseline and at 1-year follow-up. **Results:** 61 patients (54M/7F, mean age 11,9 $\pm$ 3,2 years, range 4–17 years) completed the 1-year observation. Thirty patients were treated with aripiprazole (mean dosage 7,4$\pm$3,1 mg/day), 26 with risperidone (mean dosage 1,5 $\pm$ 1 mg/day), 4 with clozapine (mean dosage 125 $\pm$ 50 mg/day) and 1 with quetiapine (100 mg/die). In our series, no patient exhibited pathological values of QTc or QTd or TpTe both at baseline and during the overall study period. Treatment with risperidone was associated with a slight increase of both mean QTc and QTd values from baseline to 12-month evaluation (408,4 $\pm$ 11,9 ms vs 411,2 $\pm$ 13,0 ms, p<0.05; and 40,0 $\pm$ 4,4 ms vs 44,7 $\pm$ 5,5 ms, p<0.001, respectively). Treatment with aripiprazole was not associated with mean QTc changes, nevertheless a small increase of QTd, (40,6 $\pm$ 6,5 ms vs 46,5 $\pm$ 7,2 ms, p<0.01) was observed. No change in TpTe values was found, but the TpTe/QTc rate significantly increased respect to basal values (0.208 $\pm$0.02 ms vs 0.215 $\pm$0.02 ms; p<0.01). **Discussion and conclusions:** In our series, the treatment with second-generation antipsychotics was not associated with clinically relevant modifications of ECG parameters in a pediatric population. Indeed, despite a slight increase in QTc values was observed, no patients exhibited pathological values of QTc or QTd or TpTe before and after 1 year of treatment. These findings support the relative cardiovascular safety of second-generation antipsychotics in pediatric age.