

Does obesity influence ventricular repolarization in children?

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Introduction: In last decades it's reported that ventricular repolarization changes lead to sudden cardiac death in obese individuals. In this study; our aim is to investigate the relationship between ventricular repolarization changes, echocardiographic parameters with antropometric measures and metabolic syndrome laboratory parameters in obese children.

Methods: The study involved 163 subjects with a mean age (\pm standart deviation) of 12.3 ± 2.7 years. A total of 81 individuals were obese (RBMI>120) and 82 were healthy non obese children (RBMI: 80-110). Anthropometric measurements of participants were performed and evaluated according to normograms. Obese patients were subdivided into two groups; metabolic syndrome (MS, n:25) and non metabolic syndrome obese (NMSO, n:56). Fasting plasma glucose, fasting insulin and lipid profile were performed. QT/QTc interval, QT/QTc dispersions on 12 lead ECG were measured and left ventricular systolic measurements were performed by echocardiography.

Results: Body weight, body mass index, relative body mass index and waist/hip circumference ratio, systolic and diastolic blood pressures were found statistically higher in obese children than control group. Systolic and diastolic blood pressure difference was significant only between MS and control groups. QT ve QTc dispersions were significantly higher in obese group regarding to healthy controls. Difference between QT ve QTc dispersions in MS group compared with NMSO ($p < 0.001$) and control group ($p < 0.001$) and in NMSO group compared with control group ($p < 0.05$) was statistically significant. QT ve QTc dispersions were influenced mostly by waist/hip circumference ratio. Left ventricular mass index was significantly higher and EF was lower in obese group than control group. Positive correlation between LVMI and QT and QTc dispersions was detected. Relation between EF and QT ve QTc dispersions was not significant.

Conclusions: QT/ QTc interval prolongation and increase in QT/QTc dispersions on ECG may be found at early ages and subclinical left ventricular systolic dysfunction may also be detected on echocardiography in obese children therefore further investigations are necessary for evaluation of probable rhythm disturbances.