

The Evaluation of a Novel Cardiac Index derived from Anthropometric and Biochemical Parameters in Pediatric Morbid Obesity and Metabolic Syndrome

Authors : Mustafa Metin Donma

Abstract : Metabolic syndrome (MetS) components are noteworthy among children with obesity and morbid obesity because they point out the cases with MetS, which have the great tendency to severe health problems such as cardiovascular diseases both in childhood and adulthood. In clinical practice, considerable efforts are being observed to bring into the open the striking differences between morbid obese cases and those with MetS findings. The most privileged aspect is concerning cardiometabolic features. The aim of this study was to derive an index which behaves different in children with and without MetS from the cardiac point of view. For the purpose, aspartate transaminase (AST), a cardiac enzyme still being used independently to predict cardiac-related problems, was used. One hundred and twenty four children were recruited from the outpatient clinic of Department of Pediatrics in Tekirdag Namik Kemal University, Faculty of Medicine. Forty-three children with normal body mass index, forty-one and forty morbid obese (MO) children with MetS and without the characteristic features of MetS, respectively, were included in the study. Weight, height, waist circumference (WC), hip C (HC), head C (HdC), neck C (NC), systolic and diastolic blood pressure values were measured and recorded. Body mass index and anthropometric ratios were calculated. Fasting blood glucose (FBG), insulin (INS), triglycerides (TRG), high density lipoprotein cholesterol (HDL-C) analyses were performed. The values for AST, alanin transaminase (ALT) and AST/ALT were obtained. Advanced Donma cardiac index (ADCI) values were calculated. The formula for the index was $[(TRG/HDL-C) * (INS/FBG)] * [(WC+HC)/Height] * [(HdC+NC)/Height]$. Statistical evaluations including correlation analysis were done by a statistical package program. The statistical significance degree was accepted as $p < 0.05$. The index, ADCI, was developed from both anthropometric and biochemical parameters. All anthropometric measurements except weight were included in the equation. Besides all biochemical parameters concerning MetS components were also added. This index was tested in each of three groups. Its performance was compared with the performance of cardiometabolic index (CMI). It was also checked whether it was compatible with AST activity. The performance of ADCI was better than that of CMI. Instead of double increase, the increase of three times was observed in children with MetS compared to MO children. The index was correlated with AST in MO group and with AST/ALT in MetS group. In conclusion, this index was superior in discovering cardiac problems in MO and in diagnosing MetS in MetS groups. It was also arbiter to point out cardiovascular and MetS aspects among the groups.

Keywords : aspartate transaminase, cardiac, children, index, obesity

Conference Title : ICO 2024 : International Conference on Obesity

Conference Location : Istanbul, Türkiye

Conference Dates : March 11-12, 2024