

DO WE UNDERSTAND CARDIOVASCULAR ISSUES IN CHILDREN AND ADOLESCENTS WITH METABOLIC SYNDROME?

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The cardiovascular functional assessment with metabolic syndrome has been reported with many aspects in adult patients. On the contrary, in children and adolescents patients, the metabolic syndrome and other combined issues have not been much investigated. In general, the concept of metabolic syndrome has not been often implicated in pediatric age group, yet. Instead, specific metabolic disease could be diagnosed in case of metabolic pathway problem. However, recently, the importance to inspect metabolic issues including obesity has been emphasized in children and adolescents.¹⁻⁴⁾ The potential cardiovascular functional alteration might be the high priority to be considered for these patients, especially for their healthy growth and development.⁵⁻⁸⁾

For detail evaluation of cardiac function, conventional echocardiographic measurement, tissue Doppler echocardiographic data and strain imaging should be assessed with regional myocardial analysis.^{9,10)} In children and adolescents, their standard values have been established according to their age and body surface area, the measurement data with metabolic syndrome could be compared.

In this study, relative ventricular systolic and diastolic functional decrement was noticed in metabolic syndrome group compared to the control group, which is similar to the previous published studies in adults.¹¹⁾ The tissue Doppler echocardiographic E' velocity demonstrated negative correlation with body mass index (BMI), fat %, fat mass, significant positive correlation with high-density lipoprotein-cholesterol. Significant correlation was observed at global longitudinal strain with insulin, homeostasis model of assessment for insulin resistance index and triglyceride, global circumferential strain with weight, waist circumference, fat mass, BMI, and fat %, left ventricular mass with alanine aminotransferase and glu-

cose. However, the study individuals are just between 14 to 15 years old without specific symptom, their echocardiographic measurements and laboratory data are continued to change with growth. If the yearly follow-up data will be acquired, we would better interpret the characteristics with metabolic pathway issues in this challenging period.

Moreover, all the other categories of metabolic syndrome, such as dyslipidemia, diabetes, micro-vascular or macro-vascular disease, mitochondrial disease, should be respectively clarified with the children's growth.¹⁻³⁾

Meanwhile, the interesting point of these results is quite parallel to the reports in adult metabolic syndrome patients. Even though, the myocardial function has been preserved within normal range, it would be vulnerable with progress of the underlying metabolic pathway issues. Nevertheless, the growing children and adolescents have much various unique factors for their metabolism rather than grown-up adults, the pattern of cardiovascular characteristics revealed comparable with some metabolic deterioration. According to the results of this study, left ventricular mass index, strain and strain rate are practical values for assessment of ventricular function in children and adolescents metabolic syndrome. These parameters should be recommended to measure for the routine echocardiographic examination in these patients group, so that we might predict their subtle cardiovascular functional alteration over time.

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