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Cardiovascular risk diagnostic controversies in pediatric metabolic syndrome

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The concept of metabolically healthy obesity has become popular recently. According to different data up to 70% of obese adolescents could be considered as metabolically healthy. On the other hand, obesity per se is not a benign condition and obese subjects are at risk in spite of normal metabolic profile. We hypothesized that detrimental cardiovascular changes together with exercise intolerance already exist in metabolically healthy obese adolescents. To test this hypothesis we examined 413 overweight and obese adolescents and divided them into metabolically healthy obese (MHO) and metabolically unhealthy obese (MUO) with no age and gender difference. We found the cardiovascular parameters are deteriorated in all obese vs. lean healthy (different degree of myocardial hypertrophy and dysfunction, thickening of carotid vessels and systolic hypertension). Meanwhile, obesity associated cardiovascular problems were present in both MHO and MUO. It established low sensitivity ($Se=0.28$) and low negative predictive value ($NPV=0.29$) of IDF metabolic syndrome criteria to screen obesity associated cardiovascular problems. The level of physical activity and exercise tolerance to the standard load were low in all obese vs. lean healthy with no significant difference in groups. After using more sensitive stratification criteria, adequate chronotropic reactivity revealed in MHO. Meanwhile, MUO were under the risk of exercise induced chronotropic incompetence together with inotropic (hypertensive) response. Thus, prognostic capability of current pediatric metabolic syndrome criteria is pretty low due to its sensitivity. Therefore obese adolescents not met diagnostic level for metabolic syndrome by IDF criteria could be falsely excluded from the cardiovascular risk group. Deranged exercise tolerance in MUO subjects reflects cardiovascular risk related response (hypertension, chronotropic incompetence and prolonged heart rate recovery).

Biography

Tetyana Chaychenko is a Consultant of the Endocrine Division of Kharkiv Regional Children Hospital. She has completed her PhD in Pediatrics, then was she was trained in Pediatric Endocrinology in home country and internationally. Her Postdoctoral study was devoted to pediatric metabolic syndrome (cardiovascular disorders and insulin sensitivity in overweight and lean children together with obesity related public health problems). Presently she is an active Investigator in clinical trials at pediatric endocrinology field. She has published more than 100 papers in the reputed journals.

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