

Thyroid Stimulating Hormone in Relation with Cardiometabolic and Metabolic Syndrome Risks Among Obese Children

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Abstract : Thyroid dysfunction is a great health problem frequently observed in obesity. Thyroid stimulating hormone (TSH) governs the complicated network confined to glucose and fat metabolism. The close relations between obesity and the performance of TSH point out future potential health problems related to cardiometabolic risk (CMR) associated with cardiovascular diseases (CVDs) and metabolic syndrome (MetS). These matter particularly in childhood obesity. The aim of this study was to confirm the associations in pediatric age group between TSH and CMR, which may lead to CVDs and MetS in adulthood using the recently introduced cardiac and MetS indices. Three groups, being obese (OB), morbid obese (MO) and metabolic syndrome (MetS), comprise forty-seven, ninety-two and thirty-six children, respectively. Informed consent forms were taken from parents or participants. The study protocol was approved by Ethics Committee of the institution. Groups were constituted according to WHO body mass index percentiles tables prepared based upon age and gender. These percentiles for OB and MO groups were defined as between '95 and 99' and 'above 99', respectively. Third group had MetS components. Anthropometric measurements and routine laboratory tests were performed. Advanced Donma Cardiac Index (ADCI) and Diagnostic Obesity Notation Model Assessment Metabolic Syndrome Index (DMetSI) were calculated. Statistical analysis was performed. Same concentrations in three groups were obtained for each thyroid hormone; triiodothyronin and thyroxin. Thyroid stimulating hormone level was higher in MO than OB and in MetS than MO group. In MetS group, increased values were obtained for ADCI and DMetSI compared to values calculated for MO group ($p < 0.001$). In the same group, there were positive correlations between TSH and ADCI as well as DMetSI. Such correlation was not observed in OB or MO group. The associations found between TSH and two indices, ADCI and DMetSI, in MetS group, but not in OB or MO group, suggested that the consideration of TSH as well as these two indices during the evaluation of children from MetS point of view, may point out the potential cardiometabolic risk and contribute much to the correct diagnosis of the syndrome.

Keywords : cardiometabolic, metabolic syndrome, obese children, thyroid stimulating hormone

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