

Waist Circumference-Related Performance of Tense Indices during Varying Pediatric Obesity States and Metabolic Syndrome

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Abstract : Obesity increases the risk of elevated blood pressure, which is a metabolic syndrome (MetS) component. Waist circumference (WC) is accepted as an indispensable parameter for the evaluation of these health problems. The close relationship of height with blood pressure values revealed the necessity of including height in tense indices. The association of tense indices with WC has also become an increasingly important topic. The purpose of this study was to develop a tense index that could contribute to differential diagnosis of MetS more than the indices previously introduced. One hundred and ninety-four children, aged 06-11 years, were considered to constitute four groups. The study was performed on normal weight (Group 1), overweight+obese (Group 2), morbid obese [without (Group 3) and with (Group 4) MetS findings] children. Children were included in the groups according to the recommendations of World Health Organization based on age- and gender dependent body mass index percentiles. For MetS group, MetS components well-established before were considered. Anthropometric measurements, as well as blood pressure values were taken. Tense indices were computed. The formula for the first tense index was $(SP+DP)/2$. The second index was Advanced Donma Tense Index (ADTI). The formula for this index was $[(SP+DP)/2] * \text{Height}$. Statistical calculations were performed. 0.05 was accepted as the p value indicating statistical significance. There were no statistically significant differences between the groups for pulse pressure, systolic-to-diastolic pressure ratio and tense index. Increasing values were observed from Group 1 to Group 4 in terms of mean arterial blood pressure and advanced Donma tense index (ADTI), which was highly correlated with WC in all groups except Group 1. Both tense index and ADTI exhibited significant correlations with WC in Group 3. However, in Group 4, ADTI, which includes height parameter in the equation, was unique in establishing a strong correlation with WC. In conclusion, ADTI was suggested as a tense index while investigating children with MetS.

Keywords : blood pressure, child, height, metabolic syndrome, waist circumference

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