

## Association of Zinc with New Generation Cardiovascular Risk Markers in Childhood Obesity

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**Abstract :** Zinc is a vital element required for growth and development. This fact makes zinc important, particularly for children. It maintains normal cellular structure and functions. This essential element appears to have protective effects against coronary artery disease and cardiomyopathy. Higher serum zinc levels are associated with lower risk of cardiovascular diseases (CVDs). There is a significant association between low serum zinc levels and heart failure. Zinc may be a potential biomarker of cardiovascular health. High sensitive cardiac troponin T (hs-cTnT) and cardiac myosin binding protein C (cMyBP-C) are new generation markers used for prediagnosis, diagnosis, and prognosis of CVDs. The aim of this study is to determine zinc as well as new generation cardiac markers profiles in children with normal body mass index (N-BMI), obese (OB), morbid obese (MO) children, and children with metabolic syndrome (MetS) findings. The association among them will also be investigated. Four study groups were constituted. The study protocol was approved by the institutional Ethics Committee of Tekirdag Namik Kemal University. Parents of the participants filled informed consent forms to participate in the study. Group 1 is composed of 44 children with N-BMI. Group 2 and Group 3 comprised 43 OB and 45 MO children, respectively. Forty-five MO children with MetS findings were included in Group 4. World Health Organization age- and sex-adjusted BMI percentile tables were used to constitute groups. These values were 15-85, 95-99, and above 99 for N-BMI, OB, and MO, respectively. Criteria for MetS findings were determined. Routine biochemical analyses, including zinc, were performed. High sensitive-cTnT and cMyBP-C concentrations were measured by kits based on enzyme-linked immunosorbent assay principle. Appropriate statistical tests within the scope of SPSS were used for the evaluation of the study data.  $p < 0.05$  was accepted as statistically significant. Four groups were matched for age and gender. Decreased zinc concentrations were measured in Groups 2, 3, and 4 compared to Group 1. Groups did not differ from one another in terms of hs-cTnT. There were statistically significant differences between cMyBP-C levels of MetS group and N-BMI as well as OB groups. There was an increasing trend going from N-BMI group to MetS group. There were statistically significant negative correlations between zinc and hs-cTnT as well as cMyBP-C concentrations in MetS group. In conclusion, inverse correlations detected between zinc and new generation cardiac markers (hs-TnT and cMyBP-C) have pointed out that decreased levels of this physiologically essential trace element accompany increased levels of hs-cTnT as well as cMyBP-C in children with MetS. This finding emphasizes that both zinc and these new generation cardiac markers may be evaluated as biomarkers of cardiovascular health during severe childhood obesity precipitated with MetS findings and also suggested as the messengers of the future risk in the adulthood periods of children with MetS.

**Keywords :** cardiac myosin binding protein-C, cardiovascular diseases, children, high sensitive cardiac troponin T, obesity

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