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Does metabolic control of the disease relate to bone turnover markers in children with type 1 diabetes mellitus in Turkey?

Abstract:

This study aimed to evaluate the relationship between nutrition, metabolic control level, and bone formation biomarkers in children with Type 1 Diabetes Mellitus (T1DM). In this context, 34 children aged between 3 and 17 years who were diagnosed with T1DM and followed up at the Department of Pediatric Endocrinology, Gülhane Training and Research Hospital, Health Sciences University, Ankara, Türkiye, were included in the study. Blood samples were analyzed for glycated hemoglobin (HbA1c) and bone formation biomarkers, including osteocalcin (OC), procollagen type-1-N-terminal propeptide (P1NP), and alkaline phosphatase (ALP) levels. The degree of metabolic control was assessed according to the American Diabetes Association's recommendations: HbA1C<8% was considered “good metabolic control” and HbA1C>8% was considered “poor metabolic control.” Additionally, the dietary intake of individuals was evaluated. Higher levels of OC and P1NP were found in individuals with good metabolic control ($p < 0.05$). A positive correlation was observed between dietary calcium intake and P1NP levels ($p < 0.05$). Multiple regression analysis revealed that increasing HbA1c levels were associated with a decrease in osteocalcin levels ($p<0.05$). These findings reveal that metabolic control plays a decisive role in bone health. In conclusion, metabolic control plays an important role in the optimal development of bones and in maintaining bone health during childhood and adolescence. It may also be effective in reducing the risk of osteoporosis later in life.

Keywords: Type 1 diabetes mellitus, metabolic control, bone turnover, nutritional habits

Biography: I’m a dedicated dietitian currently pursuing a PhD in Nutrition and Dietetics at the University of Health Sciences with a 4.00 GPA. I actively participate in national and international conferences and have received specialized training in clinical nutrition, bariatric surgery, and sports nutrition. I have presented my research at both national and international scientific platforms and published in peer reviewed journals. As a member of the COST Action CUPID network, I engage in international collaboration. Committed to evidence-based practice, my goal is to contribute to public health and academic progress through interdisciplinary research and the advancement of nutritional science.