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The effect of body mass index and insulin sensitivity on vasovagal syncope in adolescents

Babaoglu A., Yıldızlı E., Deveci M.
Kocaeli University Kocaeli Turkey

Background: We aimed to determine the effect of body mass index (BMI) and insulin sensitivity on adolescent with vasovagal syncope and to compare positive head-up tilt-table test (HUT+) results with negative (HUT-) results.
Methods: The study included 360 adolescents who were referred for HUT as a part of the diagnostic investigation of syncope. Patients were divided into four groups according to their BMI percentiles: <5p (underweight), 5-<85p (normal), 85-95p (overweight), and ≥95p (obese). Different indices of insulin sensitivity that are obtained by fasting serum glucose and insulin level were assessed. Fasting glucose and insulin levels (G0, I0), G0/I0 ratio, G0xI0, insulin resistance of homeostatic model assessment (HOMA-IR), quantitative insulin sensitivity check index (QUICKI) were calculated for each patient.
Results: The mean age of the patients was 13.7 years and 62% were female. The ratio of HUT+ was 57.2%. The prevalence of an HUT+ was not statistically different between BMI groups. However, the percent of HUT+ was higher in underweight patients. In contrast to boys, BMI, BMI p, and BMI SDS values were found statistically lower in girls with HUT+ than HUT-. However, none of the insulin sensitivity indices showed significant differences between patients with HUT+ and HUT-. The number of syncope episodes was not different between BMI groups. Moreover, it was not associated with insulin sensitivity indices.
Conclusions: In our sample, BMI are associated with HUT+ especially in young girls. However, insulin sensitivity has no effect on response to HUT. Low BMI could be one of the predisposing factors for vasovagal episodes. Further studies are required to better understand these results.