Different hemodynamic patterns in head-up tilt test in 400 pediatric cases with unexplained syncope

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Objectives: The purpose of this study is to assessment different hemodynamic patterns in head-up tilt test in 400 pediatric cases with unexplained syncope.

Methods: Head up tilt test was performed 400 pediatric patients with unexplained syncope. Blood pressure and heart rate were monitored simultaneously during 35-min (patients in 65° upright position) passive head up tilt test. According to their different hemodynamic patterns in head-up tilt test, subjects were divided into orthostatic intolerance (OI) response pattern, postural orthostatic tachycardia syndrome (POTS) response pattern, orthostatic hypotension (OH) response pattern, asymptomatic orthostatic hypotension (AOH) response pattern, vasovagal (VVS) response pattern, and normal response (NR) pattern. Vasovagal response pattern was consisted of vasodepressor (type 3), cardioinhibitory (type 2A, type 2B), and mixed (type 1) pattern. Age, sex, baseline heart rate, baseline blood pressure, duration of symptoms, and number of syncope were recorded in all groups.

Results: The ages of 400 pediatric patient included in the study were in a range from 5 to 18 years (mean 12.6 ±2.6 years). Two hundred sixty four (66%) were females and 136 (34%) were males. Two hundred seventy seven (65%) of subjects displayed the hemodynamic pattern of NR, 28 (%) OI response, 7 (%) OH response, 28 (%) AOH response, and 38 (%) VVS response. Vasovagal response pattern was consisted of 9 (%) type 3 response, 10 (%) type 2A response, 2 (%) type 2B response, and 17 (%) mixed (type 1) response. The most frequently abnormal monitored hemodynamic patterns were Orthostatic intolerance syndromes (OI, POTS, AOI). After that there was VVS. There were no statistically significant differences between the groups with regard to age, gender, baseline heart rate, baseline blood pressure, and duration of symptoms (p>0.05). The syncopal attacks of the children with VVS response group was significantly more frequent than that of the children with OI, POTS, and AOI (p<0.01).

Conclusions: We observed nine different hemodynamic patterns in head-up tilt test in 400 pediatric cases with unexplained syncope. The most frequently abnormal monitored hemodynamic patterns were Orthostatic intolerance syndromes.