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P-Wave Dispersion: An Indicator of Cardiac Autonomic Dysfunction in Children With Neurocardiogenic Syncope by Melis Demir Ko¨se, O¨ zlem Bag˘, Barıs¸ Gu¨ven, Timur Mes¸e • Aysel O¨ ztu¨rk • Vedide Tavlı : Journal Review

Design: Prospective Trial with 150 children total; 50 with negative Head Up Tilt Test (HUTT), 50 with a positive HUTT and both with two previous syncopal episodes. As wells as, 50 healthy individuals designated as the control group. Exclusion criteria: history of cardiac structural abnormality or dysrhythmia.

Method: 12-lead ECG was taken in all patients and the P wave length evaluated in 3 different cardiac samples within the same lead, averaged out and designated P-wave Dispersion (PWD; difference between maximum and minimum P-wave duration).

Results: Significant increase in PWD in the HUTT positive group. Also noted but not studied was a decrease in mean heart rate in the syncopal group in comparison to the control.

Conclusion: **PWD was significantly increased in pts with HUTT +, suggesting that PWD may be an early sign of cardiac autonomic dysfunction and a tool for screening in pediatric patients with neuro-cardiogenic syncope**.

Syncope is a symptom that presents commonly and risk stratification and protocols have been established for years. The study mentions Orthostatic Intolerance Syndromes which include vasovagal syncope, orthostatic hypotension, and postural orthostatic tachycardia syndrome as common causes of syncope in pediatric patients. However in the pediatric population, syncope work-up remains a balance of attaining an adequate history and physical exam, extracting any hints of inherited pathologies, structural pathologies, and what many would call the “zebras” of medicine in light of syncope. Utilizing the H&P and attaining the most non-invasive approach possible, would suggest an algorithm that is slightly different from adults where rules like the San Francisco syncope rule do not apply. The AAFP does not suggest ECGs on all pediatric patients presenting with syncope but instead for those in which vasovagal is of high suspicion that a HUTT is adequate enough to make the diagnosis.[1] The study detailed above targets a non-invasive, quick (PWD algorithms could be programmed into ECGs as an ancillary reading) test to support clinical diagnosis. Studies have deemed HUTT as the gold standard in the evaluation of vasovagal syncope but the false positive and false negative rate begs for more sensitive and/or specific (sens 30-85 % // spec 90 %) means of diagnosing vasovagal syncope especially in pediatrics. Also according to the paper, children who present with a syncopal episode with normal ECG and unremarkable physical exam do not warrant further investigation.

Reference

- AAFP.org website who adapted with permission from Massin MM, Bourguignont A, Coremans C, Comté L, Lepage P, Gérard P. Syncope in pediatric patients presenting to an emergency department. J Pediatr 2004;145:227.