

“ASSESSMENT OF CARDIOVASCULAR AUTONOMIC RESPONSE AT REST, AND DURING ACUTE MENTAL STRESS IN NORMOTENSIVE OFFSPRINGS OF HYPERTENSIVE PARENTS AND PREHYPERTENSIVES.”

BY

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ABSTRACT

Background: Autonomic nervous system dysregulation has been implicated in the development of hypertension with evidence of sympathetic hyperactivity and/or vagal withdrawal. Autonomic control of heart rate is impaired in offsprings of hypertensive parents and at increased risk of developing hypertension. Mental stress has been linked to several cardiovascular diseases, including hypertension. Normotensive with a family history of hypertension, prehypertensive and Hypertensive have all demonstrated an augmented pressor response to mental stress.

Objective: To understand the nature of change in Sympathovagal balance (SVB) in normotensive with parental history of essential hypertension and prehypertensive subjects using HRV at rest and during mental stress.

Methods: Male students (18-26yrs) were divided into 3 groups (n=25, each)

Group I- Normotensives (SBP: 100-119mmHg and DBP: 60-79mmHg) whose parents are normotensive;

Group II - Normotensives having at least one hypertensive parent;

Group III –Prehypertensives (SBP: 120-139mmHg and DBP: 80-89mmHg).

HR and BP were recorded after 10 minutes of rest, followed by 2 minute resting HRV. Then they were subjected to arithmetic mental stress for 2 minutes. HRV were recorded simultaneously, heart rate and BP was recorded at the end of 2 minutes.

Result: Data was analyzed by paired t-test and ANOVA. In all Groups there was significant increase in SBP, DBP and HR to mental stress but increase was more in Group 3 followed by Group 2 and Group 1. In HRV, time domain parameters, TP, HF nu, HFms² were significantly reduced in Group 3, while LF nu and LF/HF ratio were significantly increased to stress versus rest, while in Group 2, time domain parameters and HF nu were significantly reduced to stress compared to rest and Group 1.

Conclusion: Prehypertensive showed augmented pressor response to stress with increased sympathetic and decreased vagal activity, whereas vagal withdrawal was more than sympathetic activation in offsprings of hypertensive parents suggesting high chances of developing hypertension in their later life.

Keywords: Prehypertensive; Normotensive; family history of hypertension; blood pressure; heart rate variability; parasympathetic activity; sympathetic activity, mental stress.