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Letter to the Editor

Insight into relation between autonomic function and hypertension

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To the Editor,

I was very glad to read Erdogan et al. article [1]. Prehypertension confers higher cardiovascular risk [2] and was included in JNC VII to encourage patients and clinicians to intervene and prevent/delay development of hypertension [3]. Studies have shown beneficial effect of diet and lifestyle modification among prehypertensives [4,5].

This study [1] has used heart rate recovery (HRR) as a simple tool to test autonomic nervous system (ANS) function. Thus, HRR can serve as a good screening test among normotensives and prehypertensives. I commend the authors for this simple but innovative work. Attenuated HRR can predict endothelial dysfunction in coronary artery disease patients [6].

This study [1] also shows that autonomic dysfunction precedes the development of hypertension. There are hardly few studies which have assessed the autonomic function of prehypertensives. Normotensives with reduced heart rate variability (HRV) are at greater risk of developing hypertension [7]. Borderline hypertensives have increased sympathetic and decreased parasympathetic activity that correlates significantly with renin release [8].

A small study population and the lack of a larger control group are the two major limitations of this study as acknowledged by the author [1]. The sample size of each of the groups was not calculated based on any prior published data.

Another limitation of this study [1] is the lack of data on the family history of hypertension among the subjects tested. A landmark study demonstrated decreased parasympathetic activity in normotensive subjects with a positive family history of hypertension [9]. They are also characterized by altered cardiovascular morphology [10] along with significantly different autonomic function [11].

The study [1] has not looked into the interaction of the autonomic function with the renin–angiotensin system, and other biomarkers. Angiotensin II may contribute to activation of sympathetic activity and suppression of parasymathetic activity [12]. High Plasma Renin Activity (PRA) is an independent determinant of diminished vagal activity [13]. Review on interaction between endothelium and ANS has shown that decreased HRV is associated with endothelial dysfunction [12]. Nitric oxide acts as a sympatholytic agent [14]. Reduced HRV triggers subclinical inflammation [15,16]. Inflammatory markers increase the incidence of prehypertension suggesting that prehypertension might be a pro-inflammatory condition [17]. Oxidative stress impairs endothelial function [18]. Vitamin E, antioxidant, reduces catechalamine levels and improves HRV [19].

Further studies are warranted to unravel the effect of biomarkers on autonomic function and a specific targeted therapy towards them to prevent development of hypertension. Probably integration of various risk factors rather than reliance on a single risk factor will be an efficient approach to implement when screening large populations as a basis for preventive interventions.

The author of this manuscript has certified that she complies with the principles of ethical publishing in the International Journal of Cardiology (Shewan and Coats 2010;144:1-2).

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