Postmenopausal Hypertension and Sodium Sensitivity

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It has been well established that women generally have lower incidence rates of hypertension than men at similar ages and these differences may vary with age. It also has been observed in many studies that after menopause, blood pressure (BP) increases in women to levels even higher than in men. The lack of estrogens may not be suggested as the only component involved in the development of postmenopausal hypertension. Thus, in this mini-review, the possible mechanisms by which sex hormones may influence the BP are discussed. This review also examines the renal regulatory mechanisms for gender differences in BP and explores the effects of salt intake on BP (salt-sensitivity) in pre and post-menopausal women.

Estrogen has been shown to stimulate nitric oxide (NO) production, thus female sex hormones have a beneficial effect on BP control. Evidences that angiotensin type 2 receptor (AT2R) is up-regulated by estrogen support the favorable effects on BPs in women than men. The kidney plays an integral role in the regulation of arterial pressure through the mechanism of pressure-natriuresis, which has been shown to be modulated by the RAS. The prevalence of salt-sensitivity increases with age and low-salt diets has shown to help reduce systolic BP (SBP) and diastolic BP. While oral hormone replacement therapy has yielded only a neutral or minimal effect on the elevation of SBP, both the transdermal route replacement and a novel progestin with anti-aldosterone activity (drospirenone) has also shown to reduce SBP.

Key Words: Blood pressure, Gender difference, Hypertension, Postmenopause, Sodium excretion