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The Effect of Dietary Calcium Intake on Plasma Renin Activity and Parathormon in Deoxycorticosteron Salt Hypertension

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Abstract: The effects of diets containing 2% and 4% calcium (Ca) on deoxycorticosteron (DOC) salt hypertension were studied in 29 male rats weighting 210-260 g. Rats were categorized into four groups: Group I: control rats (6), group II: DOC hypertensive group (n=8), group III: DOC-low Ca diet (2% CaCl₂) (8) and group IV: DOC-high Ca diet (4% CaCl₂) (n=7). During the six weeks follow up period, indirect systolic blood pressure (SBP) was highest in group II while it was found to be less increased in group III and IV. Weight increase was lowest in group IV (P<0.005 versus 3 other groups). There was no relationship between blood pressure (BP) and plasma renin activity (PRA), parathormon (PTH), ngiotensin II (All), serum Ca, serum phosphorus, urine Ca and final body weight. Serum Ca level was lower in group II as compared to group III (P<0.006). PTH was lower in group III and IV than other groups but the differences were statistically nonsignificant. PRA was found suppressed in group IV and group II compared to control and group III (Control vs group II p=0.014, control vs group IV p=0.006, group III vs group IV p=0.01). However, the decrease in PRA was more important in group IV than group III. Left heart weight was greater in group IV than group II (p = 0.033) while right heart weight was not different among the groups. Kidney weight showed an increase in group II and group III, when compared with controls (p=0.009, p=0.045 respectively). As a result, at uninephrectomized DOC-salt treated hypertension model in rats, the increase in BP was less prominent in Ca supplemented diet and this effect continued during the study period. In this hypertension model with suppressed PRA, we can state that a decrease in PTH which suggests the suppression of parathyroid gland, may affect BP.

Key Words: Calcium, hypertension, parathormon.

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