

ABSTRACT

Intracellular Sodium and Potassium and their Relationship to blood Pressure and Body Size

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In the present study twenty-seven essential hypertensive patients, thirty-five normotensives without familial hypertension and twelve normotensives with familial hypertension were studied cross-sectionally with regard to their age, sex, body mass index and -most important of all- the electrolyte (sodium and potassium) composition of their red and white blood cells.

The major aim of this study was to find out if there were differences between the above mentioned subject groups regarding the electrolyte composition (sodium and potassium) of their blood cells. Another aim of this study was to further characterize, through multiple regression analysis, the relationship between blood pressure, body mass index, and cell sodium and potassium.

Higher RBC-Na and WBC-Na were observed in essential hypertensives and normotensives with familial hypertension versus normotensive controls without familial hypertension. Normotensives with familial hypertension had WBC-Na and RBC-Na that were not significantly different from those in essential hypertensives. RBC-K was not significantly different between normotensives with familial hypertension, normotensives without familial hypertension and essential hypertensives. WBC-K was not significantly different between normotensives with familial hypertension and essential hypertensives. Normotensives with familial hypertension had significantly higher WBC-K than normotensives without familial hypertension and essential hypertensives.

Correlations that were significant in the combined normotensive-hypertensive group include: (i) The direct relationship between blood pressure (systolic, diastolic and mean) and RBC-Na and also WBC-Na. (ii) The inverse relationship between blood pressure (diastolic and mean) and RBC-K and WBC-K. (iii) The direct relationship between body mass index and WBC-Na and WBC-K. Correlations that were significant in the essential hypertensive group include: (i) The inverse relationship between blood pressure (diastolic and mean) and RBC-K and also WBC-K. (ii) The direct relationship between body mass index and WBC-Na.

Most of these results are compatible with the hypothesis that sodium is involved in the pathogenesis of essential hypertension.