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Inverse Salt Sensitivity in Normotensive Adults: Role of Demographic Factors

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Inverse salt sensitivity, a sodium induced reduction in blood pressure (BP), has recently been associated with increased incidence of hypertension. However, there is a paucity of data regarding the prevalence of inverse salt sensitivity (ISS). **PURPOSE:** The purpose of this retrospective analysis was to determine the prevalence of ISS in a cohort of normotensive adults and to determine if ISS is associated with any demographic characteristic(s). **METHODS:** Subjects included healthy, normotensive, and non-obese adults ($n=111$; age= 37 ± 13 yr) who participated in a controlled feeding study, consuming a low-sodium (LS, 20 mmol Na/d) and high-sodium (HS, 300 mmol Na/d) diet for 7 days each in a randomized order; diet compliance was assessed with 24-hr urinary sodium excretion (LS= 29.0 ± 23.6 mmol/d, HS= 240.5 ± 92.0 mmol/d, $p<0.0001$). On the final day of each diet, 24-hr ambulatory BP was assessed. Subjects were grouped based on change in 24-hr mean arterial pressure (MAP) from the LS to HS diet. ISS was defined as a reduction in MAP >5 mmHg, salt sensitive (SS) as an increase in MAP >5 mmHg, and salt resistant (SR) as a change in MAP between -5 and 5 mmHg. Group differences in sex, race, age, and BMI were evaluated using Chi Square or Fisher's exact tests. Group differences in mean age and BMI were assessed with a one-way ANOVA (mean \pm SD). **RESULTS:** Overall, 12.6% ($n=14$) were ISS, 72.1% ($n=80$) SR, and 15.3% ($n=17$) SS. Prevalence of ISS was not different with respect to sex (male [$n=57$]: 15.8% (9), female [$n=54$]: 9.3% (5), $p=0.30$), race (white [$n=84$]: 14.3% (12), black [$n=16$]: 6.3% (1), Asian [$n=11$]: 9.1% (1), $p=0.88$), or age (21-40 y.o. [$n=64$]: 15.6% (10), 41-60 y.o. [$n=47$]: 8.5% (4), $p=0.26$). However, prevalence of ISS tended to be higher in those with lower BMI (BMI < 25 [$n=71$]: 16.9% (12), BMI ≥ 25 [$n=40$]: 5.0% (2), $p=0.07$). There were no group differences with respect to mean age (ISS= 34 ± 13 yr, SR= 37 ± 12 yr, SS= 41 ± 14 yr, $p=0.29$), but SS had a significantly higher BMI than ISS and SR (ISS= 22.9 ± 2.8 kg/m², SR= 24.3 ± 2.6 kg/m², SS= 26.7 ± 3.6 kg/m², $p=0.0009$). **CONCLUSION:** In a normotensive cohort, we found that 12.6% of subjects were ISS. Furthermore, prevalence of ISS was not different with regards to sex, race, and age, but ISS may be associated with lower BMI. Future research is needed to further understand the ISS phenotype.

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