SEX DIFFERENCES IN ANGIOTENSIN II-INDUCED HYPERTENSION AND KIDNEY INJURY: ROLE OF AT1A RECEPTORS IN THE PROXIMAL TUBULE OF THE KIDNEY

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Objective: Sex differences are widely recognized to play a critical role in cardiovascular, blood pressure and renal responses to the vasoactive peptide angiotensin II (Ang II) via activation of AT1 (AT1a) receptors. However, it is not known whether there are sex differences in the pressor and renal responses to Ang II in the absence of AT1a receptors in the proximal tubules of the kidney. In the present study, we tested the hypothesis that there are significant sex differences in Ang II-induced hypertension and kidney injury using male and female wild-type and proximal tubule-specific AT1a receptor knockout mice (PT-Agtr1a-/-).

Design and method: To test our hypothesis, twelve groups (n=8-12 per group) of adult male and female wild-type and PT-Agtr1a-/- mice were infused with a pressor dose of Ang II via osmotic pump for 2 weeks (1.5 mg/kg/day, i.p.) and simultaneously treated with or without losartan (20 mg/kg/day, p.o.) to determine the respective roles of AT1a receptors in extrarenal tissues or the proximal tubules of the kidney, respectively.

Results: Minor sex differences were found in body wt., heart wt., or kidney wt. between male and female wild-type and PT-Agtr1a-/- mice. Basal systolic, diastolic, and mean arterial pressure were approximately 13 ± 3 mmHg lower (P<0.01), while basal 24 h urinary Na+, K+, and Cl- excretion were significantly higher in male and female PT-Agtr1a-/- mice than wild-type controls (P<0.01) without significant sex differences between different strains. Both male and female wild-type and PT-Agtr1a-/- mice developed time-dependent hypertension (P<0.01), and the magnitudes of the pressor responses to Ang II were similar between male and female wild-type and PT-Agtr1a-/- mice (n.s.). Likewise, Ang II-induced hypertension was significantly attenuated in male and female PT-Agtr1a-/- mice (P<0.01). Furthermore, losartan attenuated the hypertensive responses to Ang II to similar extents in male and female wild-type and PT-Agtr1a-/- mice. Finally, Ang II-induced kidney injury was attenuated in PT-Agtr1a-/- mice (P<0.01).

Conclusions: In conclusion, the present study demonstrates that deletion of AT1a receptors in the proximal tubules of the kidney attenuates Ang II-induced hypertension and kidney injury without significant sex differences involved.

VERIFY AND EVALUATE FOUR SPOT URINARY METHODS FOR ESTIMATING 24-HOUR URINARY SODIUM EXCRETION RATE IN TIBETAN POPULATION

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Objective: To verify and evaluate four spot urinary methods for estimating 24-hour urinary sodium excretion rate in Tibetan population (Kawasaki method, Tanaka method, INTERSALT method and SH2 method).

Design and method: 323 subjects were selected from the Ganzi Tibetan Autonomous Prefecture of Sichuan Province, China. The morning second urine samples and 24 hours urine samples were collected. The concentrations of creatinine, sodium and potassium in the morning second urine samples and 24 hours urine samples were measured. To compare the mean deviation, correlation, and consistency between the measured values and estimated 24-hour urinary sodium excretion by Kawasaki method, Tanaka method, INTERSALT method and SH2 method.

Results: The average differences between the estimated values and measured values by Kawasaki method, Tanaka method, INTERSALT method and SH2 method were 124.86 mg/days, -937.58 mg/days, -1314.15 mg/days and -1747.436 mg/days, respectively. The correlation coefficient with the measured values was 0.434, 0.38, 0.273 and 0.348, respectively. The intraclass correlation coefficient was higher for Kawasaki method (0.473) than for Tanaka method (0.397), INTERSALT method (0.269) and SH2 method (0.348). The Bland Altman analysis showed 3.4%, 6.2%, 5.9% and 5.6% of the subjects’ estimated values exceeded the consistent boundary of ±1.96 for Kawasaki method, Tanaka method, INTERSALT method and SH2 method. When four spot urinary sodium methods used for evaluating the individual salt intake, the misclassification rate was more than 45%. Compared with the other three methods, the classification probability of Kawasaki method was 48.2%, while the misclassification probability of Tanaka, INTERSALT and SH2 methods was 72.1%, 75.5% and 74.6%, respectively. However, when individual’s salt intake was higher than 12.8 g/days, the probability of misclassification of Kawasaki method, Tanaka method, INTERSALT method and SH2 method was 20%, 90%, 97.5% and 97.5%, respectively.

Conclusions: When the Kawasaki method is used to evaluate the salt intake of Tibetan population, the deviation, consistency and reproducibility were better than Tanaka method, INTERSALT method and SH2 method. It was especially suitable for the evaluation of 24-hour urinary sodium excretion rate of people with high salt intake. It can be used to investigate the salt intake of Tibetan population in a large-scale epidemiological study.

CARDIOVASCULAR RISK FACTORS IN HYPERTENSION PATIENTS: VIEW IN 15-20 YEARS

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Objective: Introduction. According to the latest clinical research great attention to provide a study of the clinical conditions that contribute to increase the risk for cardiovascular complications. The combinations essential hypertension (EH) and mellitus diabetes (MD) causes the development of fatal and nonfatal cardiovascular events. Purpose. The aim of the study was to identify possible factors of MD in patients with EH the I-II stage with normoglycemia in a 15-20 year follow up.

Design and method: Methods. We examined 54 patients with EH I-II st. Reexamined were conduct in the same conditions in 15-20 years. All patient divided