

신성고혈압 흰쥐에서 측뇌실내 고장성식염 주입에 의한 승압효과

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Pressor Responses to Intracerebroventricular Infusion of Hypertonic NaCl in Renal Hypertensive Rats

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ABSTRACT

Background : The sodium concentration in the central nervous system may play an important role in cardiovascular function and body fluid regulation. The purpose of this investigation was to examine the effects of intracerebroventricular (ICV) infusion of hypertonic NaCl solutions on the cardiovascular responses in normotensive and 2-kidney, 1 clip (2K1C) renal hypertensive rats. **Methods :** 2K1C hypertension was made by clipping the left renal artery and were used 4 weeks later. Age-matched control rats received a sham treatment. Under thiopental (50 mg/kg, IP) anesthesia, both isotonic and hypertonic NaCl solutions (0.15 M, 0.6 M and 1.2 M) were ICV applied, while blood pressure and heart rate (HR) responses were continuously monitored. **Results :** Central administration of hypertonic NaCl solution caused an elevation in mean arterial pressure (MAP) and HR in both normotensive and 2K1C hypertensive rats. The response magnitude in the blood pressure was positively correlated to the NaCl concentration in normotensive rats, while the pressor responses to hypertonic NaCl were comparable regardless of the concentration of NaCl in hypertensive rats. Despite of the HR responses were similar in between two groups, the magnitude of the MAP increases were more elevated in hypertensive than in normotensive control rats. Isotonic NaCl solution, when centrally applied, caused an elevation in blood pressure only in hypertensive rats. **Conclusion :** These results indicate that the central sensitivity to sodium chloride is altered in 2K1C renal hypertensive rats. (**Korean Circulation J 1999;29(2):216-221**)

KEY WORDS : Hypertonic NaCl · Intracerebroventricular · Cardiovascular · Renal hypertension.

서 론

1)

가

가

가

2)3)

Na

: 1998 12 16

: 1998 3 15

: , 501 - 759

375

가

.

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4-7)

6)8)
 vasopressin clip
 가 9-11)
 가
 NaCl sensitivity 가가 12)
 혈압 및 심박수 측정
 thiopental
 (cannula) heparin(400 IU/ml)
 polyethylene tube(23 G)
 pressure transducer(Gould, p23Db)
 13) renin - angiotensin system physiograph (mean
 (RAS) arterial pressure, MAP) (diastolic pressure+
 가 가 가 sen - pulse pressure / 3)
 sitivity renin 가 가
 가 14) renin sensitivity 1 NaCl(Sigma, 0.15
 가 15) 1.2 M)
 RAS가 bregma 1.5 mm
 4)6)16) 0.6 mm
 RAS 4.5 mm 3 μ l/mim
 40
 가 (dye)
 RAS
 2 - kidney, 1 clip(2K1C)
 가
 통 계
 means \pm SEM
 Student's t - test
 p<0.05

대상 및 방법

결 과

실험동물

정상혈압쥐에서 혈압 및 심박수 변화

2K1C

150 200 g (Sprague - Dawley,) thi - 0.6 M NaCl 10 , 1.2 M
 opental(50 mg/kg, IP) NaCl 20 plateau
 0.2 mm silver clip 가
 0.15 M NaCl
 1
 4 가 가
 0.15 M NaCl

가 (Fig. 1).

신성고혈압쥐에서 혈압 및 심박수 변화

167 ± 3 mmHg
(109 ± 4 mmHg) ($p < 0.01$)

plateau
1.2 M NaCl 0.6 M 가

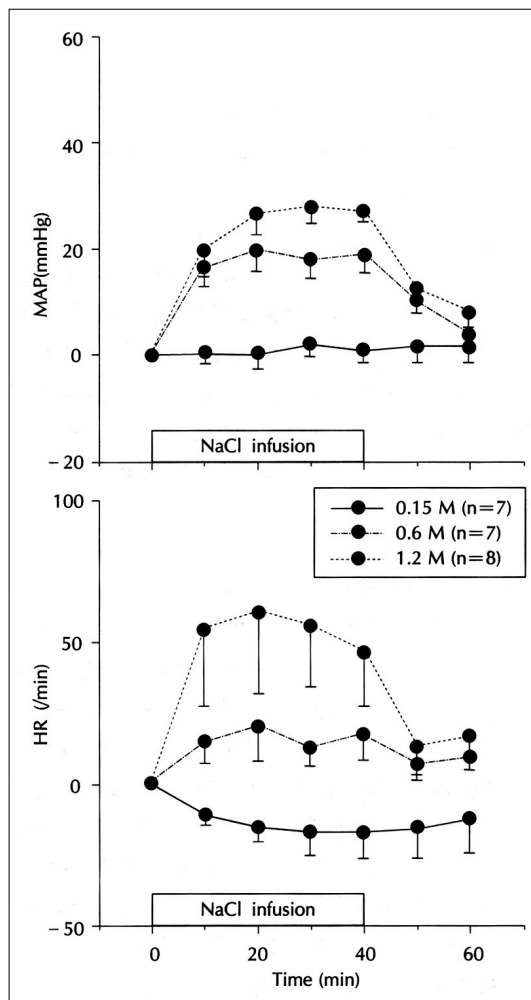


Fig. 1. Changes in mean arterial pressure (MAP) and heart rate (HR) to intracerebroventricular infusion of NaCl solution in normotensive rats. Each point represents mean \pm SEM. n ; number of animals.

0.15 M NaCl
20

0.15 M NaCl 가
(Fig. 2).

고장성식염 주입에 의한 최대 혈압 및 심박수 변동치 비교

0.15 M NaCl 가

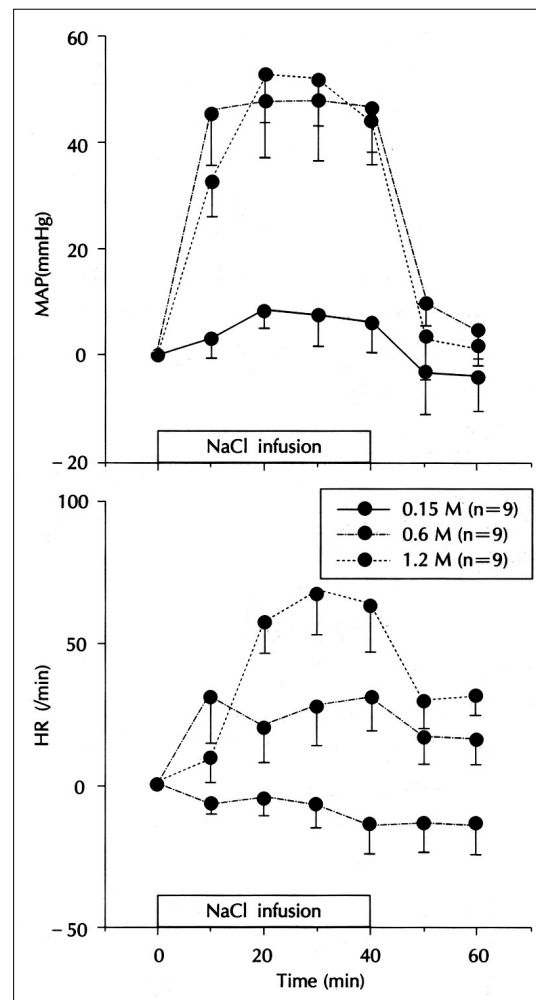


Fig. 2. Changes in mean arterial pressure (MAP) and heart rate (HR) to intracerebroventricular infusion of NaCl solution in 2-kidney, 1 clip hypertensive rats.

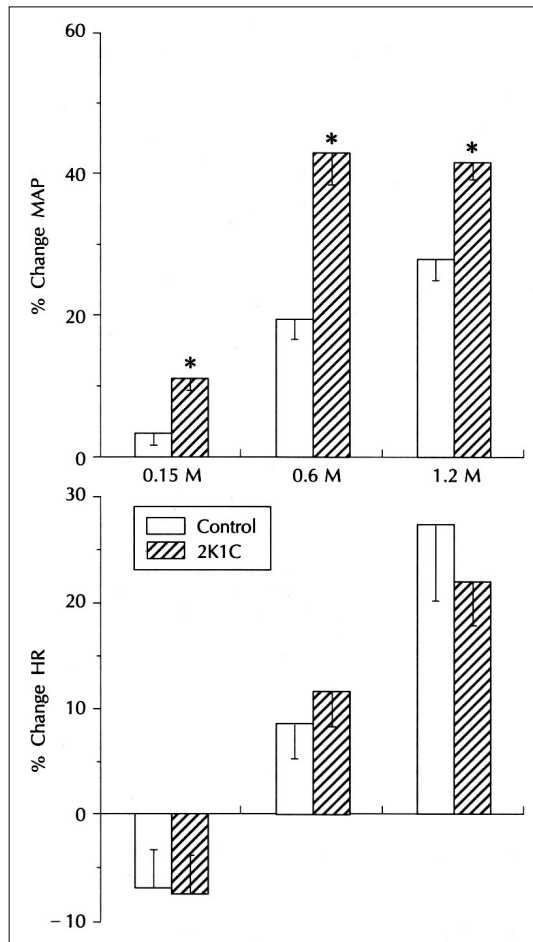


Fig. 3. Percent changes in maximal mean arterial pressure (MAP) and heart rate (HR) during the intracerebro-ventricular infusion of NaCl solution in normotensive (control) and 2-kidney, 1 clip (2K1C) hypertensive rats. Each point represents the mean \pm SEM obtained from 7 to 9 experiments.

0.6 M 1.2 M NaCl 가
0.15 M NaCl

가
(Fig. 3).

고 안

(feedback)

가

17)

가

18)

9 - 11)

가

19)

가

12)

17)

RAS

가

12)

0.15 M 1.0 M NaCl
Appenrodt 12)

가

0.6 M

가

WKY Wistar rat 가

6)

가

가가

가

29)

가

10)12)17)

vasopressin⁷⁾¹¹⁾ sensitivity 가

RAS⁴⁾⁶⁾ 가

Kawano⁷⁾ vasopressin 가

Na

RAS 가

vasopressin Na

Na

가

RAS⁶⁾¹⁶⁾가 가

Na

가

20) 3

21-23)

24)25)

가 2K1C

Na

sensitivity가 가

Na sensitivity

요 약

연구배경 :

가

15)

Na

renin 가

14)26)

RAS

2 -

가

sensitivity Ca ,

kidney, 1 clip(2K1C)

가

방 법 :

clip 4

15)

sensitivity가 renin

27)28)

renin Na sensitivity

sensitivity

15)

결 과 :

1)

가

2) 1.2 M NaCl 0.6 M NaCl

가

가

3) 가

4)

결 론 :

sensitivity가 Na
가

중심 단어 :

1997

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