

## 급성 뇌졸중 환자에서 24시간 활동혈압 측정의 의의에 대한 연구

이선미 · 강홍선 · 송정상 · 강경의 · 조정휘 · 김권삼 · 배종화

## Study of 24 Hour Ambulatory Blood Pressure Monitoring in Acute Stroke Patients

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## ABSTRACT

**Objective :** Appropriate evaluation of hypertension is important in the patients with a stroke because hypertension is a major cause of a stroke. Blood pressure may be falsely elevated or depressed immediately after a stroke, depending on the severity of neurological deficit, mobility, and physical activity, and the level of consciousness. To overcome this problem, ambulatory blood pressure monitoring (ABPM) has been proposed as a method of obtaining a more accurate clinical assessment. **Subjects and Methods :** The present study was performed in an acute stage of stroke patients to assess the manifestation of 24 hour ambulatory blood pressure, to observe the nocturnal blood pressure fall and to evaluate the relationship of blood pressure degree on admission and nocturnal blood pressure dip. Thirty four patients admitted within 24 hours after onset of acute stroke were involved in this study. 24 Hour blood pressure monitoring device was installed on an independent arm by oscillometric method as soon as brain imaging study was performed. ABPM readings were obtained each 30 minutes during daytime and each 1 hour during nighttime with electrocardiography. Each patients were classified as the presence or absence of hypertension. We examined nocturnal blood pressure dip and mean pressure of 24 hour ambulatory blood pressure. **Results :** 1) This study demonstrated that comparing daytime with nighttime 24 hour ambulatory blood pressure, 20 of 24 patients (83%) with acute stroke with hypertension, did not show nocturnal blood pressure dip, and there was sustained high nocturnal blood pressure in patients with acute stroke with hypertension. 2) There were significant differences between 24 hour ambulatory mean daytime blood pressure and mean nighttime blood pressure in patients with acute stroke without hypertension, so was lower in nighttime ( $p < 0.05$ ). 3) It is likely that in acute stroke patients with hypertension, patients with higher blood pressure on admission had more abnormality of nocturnal blood pressure dip. **Conclusion :** These results suggest that in patients with acute stroke, 24 hour ABPM is useful method to assess diurnal variation and evaluate hypertension in acute stage of stroke patients, and suggest that patients with acute stroke with hypertension trend to loss of nocturnal blood pressure dip. (**Korean Circulation J 1999;29(11):1212-1218**)

**KEY WORDS :** Ambulatory blood pressure monitoring · Acute stroke · Hypertension.

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서 론

대상 및 방법

가,<sup>1)</sup>  
<sup>2)</sup> 24 가  
<sup>3-4)</sup> 25%  
<sup>5-6)</sup> 24  
 (ambulatory blood pressure monitoring for 24 hours)

대 상  
 1998 5 1998 9  
 24 36  
 2  
 34 14  
 20 65.2±8.9 ( 62.3  
 ±6 66.3±8 )  
 ( )  
 24 30 2  
 2 가 24  
 13 (Table 1).  
 197±37 mg/dL( 184.3±32.6 mg/dL,  
 206.6±39.1 mg/dL)

<sup>7)</sup> 24

<sup>8-12)</sup> ,  
<sup>13)</sup>

<sup>14-16)</sup>

가

방 법

<sup>17)</sup> 24

Table 1. 뇌졸중 환자의 임상적 특징

	HTN (+)	HTN (-)
24 Sex (M : F)	9 : 15	5 : 5
Age (yrs)	66±8	63±9
36 Cerebral infarct	21	9
Cerebral hemorrhage	1	1
TIA	2	0
DM	9	4
Cholesterol (mg/dL)	193±37	196±21
Smoking	9	2

HTN : Hypertension TIA : Transient Ischemic Attack

oscillometric cuff  
 24 A & D company, Tochi -  
 kubo, Japan TM - 2425 recorder  
 TM - 2025 processor Windows  
 TM - 2425 analytic system

결 과

뇌졸중 환자의 임상적 특징

34

2.1 ± 1.2 ( )

6 10  
 30  
 10 6 1  
 2 cm  
 cuff oscillometric method

(Table 1). 34

, 13

고혈압의 유무에 의한 활동혈압 결과의 비교

24

144 ± 12 mmHg,

116 ± 9 m

mHg

(p<0.05).

(%) = (awake SBP - asleep SBP) /  
 awake SBP × 100

10%

(Dipper)

, 10%

(Non - dipper)

24

85 ± 8 mmHg,

71 ± 4

mmHg

가

(p<0.05)

(Table 2).

1997 JNC(Joint National Com -  
 mittee) 6 , 140/90  
 mmHg<sup>18)</sup>

145 ±

stage 1

12/140 ± 17 mmHg

가

140 159 mmHg

90 99 mmHg, stage 2 160 179 mm

.

(86 ± 8

Hg 100 109 mmHg, stage 3

vs 82 ± 11 mmHg).

180 mmHg

110 m

119 ± 9/107

mHg JNC 6

± 12 mmHg

가

(p<0.05).

mHg 135/85 m

72 ± 4/66 ± 6 mmHg

mHg , 120/75 mmH

Table 2. 급성 뇌졸중 환자에서 고혈압의 유무에 의한 활동혈압 결과 (I)

	24 hrs mSBP	24 hrs mDBP
HTN (+)	144 ± 12*	85 ± 8*
HTN (-)	116 ± 9	71 ± 4

Data : Mean ± S.D. (mmHg)

mSBP : mean systolic blood pressure

mDBP : mean diastolic blood pressure

HTN : Hypertension

\* : p<0.05 vs HTN (-)

통 계

paired t test

chi - test

(mean)

(standard deviation)

p 0.05

**Table 3.** 급성 뇌졸중 환자에서 고혈압의 유무에 의한 활동혈압 결과 (II)

	HTN (+)	HTN (-)
Day mSBP	145 ± 12	119 ± 9*
Night mSBP	140 ± 17	107 ± 12*
Day mDBP	86 ± 8	72 ± 4†
Night mDBP	82 ± 11	66 ± 6†

HTN : Hypertension

\* , † : p < 0.05 vs HTN (-)

mSBP : mean systolic blood pressure (mmHg)

mDBP : mean diastolic blood pressure (mmHg)

**Table 4.** 급성 뇌졸중에서 야간혈압 강하자와 비강하자의 환자 분포

	Dippers (n=9)	Non-dippers (n=25)
HTN (+)	4	20*
HTN (-)	5	5*
DM (+)	2	11

HTN : Hypertension \* : p < 0.05

(p < 0.05) (Table 3).

야간혈압 하강의 유무에 의한 활동혈압 결과

	Dippers (n=9)	Non-dippers (n=25)
Day mSBP	135 ± 19*	138 ± 15
Night mSBP	112 ± 16*	137 ± 20
Nocturnal SBP fall (%)	16 ± 4	0.9 ± 7
Nocturnal lowest SBP	101 ± 16	122 ± 18
Nocturnal lowest DBP	62 ± 8	70 ± 13

mSBP : mean systolic blood pressure (mmHg)

mDBP : mean diastolic blood pressure (mmHg)

\* : p < 0.05

**Table 5.** 급성 뇌졸중에서 야간혈압 하강 유무에 따른 활동혈압의 결과

	Dippers (n=9)	Non-dippers (n=25)
HTN	4	20*
Stage 1	4	4
Stage 2	3	9
Stage 3	1	11

HTN : Hypertension (JNC-VI classification)

p < 0.05 Chi test for trend

**Table 6.** 급성 뇌졸중환자의 입원시 측정된 혈압분류에 따라 활동혈압측정시 야간혈압 하강의 유무

	Dippers (n=8)	Non-dippers (n=24)
HTN	4	20*
Stage 1	4	4
Stage 2	3	9
Stage 3	1	11

HTN : Hypertension (JNC-VI classification)

p < 0.05 Chi test for trend

**Table 3.** 급성 뇌졸중 환자에서 고혈압의 유무에 의한 활동혈압 결과 (II)

	HTN (+)	HTN (-)
Day mSBP	145 ± 12	119 ± 9*
Night mSBP	140 ± 17	107 ± 12*
Day mDBP	86 ± 8	72 ± 4†
Night mDBP	82 ± 11	66 ± 6†

HTN : Hypertension

\* , † : p < 0.05 vs HTN (-)

mSBP : mean systolic blood pressure (mmHg)

mDBP : mean diastolic blood pressure (mmHg)

\* : p < 0.05

**Table 5.** 급성 뇌졸중에서 야간혈압 하강 유무에 따른 활동혈압의 결과

	Dippers (n=9)	Non-dippers (n=25)
Day mSBP	135 ± 19*	138 ± 15
Night mSBP	112 ± 16*	137 ± 20
Nocturnal SBP fall (%)	16 ± 4	0.9 ± 7
Nocturnal lowest SBP	101 ± 16	122 ± 18
Nocturnal lowest DBP	62 ± 8	70 ± 13

mSBP : mean systolic blood pressure (mmHg)

mDBP : mean diastolic blood pressure (mmHg)

\* : p < 0.05

**Table 6.** 급성 뇌졸중환자의 입원시 측정된 혈압분류에 따라 활동혈압측정시 야간혈압 하강의 유무

	Dippers (n=8)	Non-dippers (n=24)
HTN	4	20*
Stage 1	4	4
Stage 2	3	9
Stage 3	1	11

HTN : Hypertension (JNC-VI classification)

p < 0.05 Chi test for trend

입원시의 혈압정도와 야간혈압 하강과의 관계

	Dippers (n=8)	Non-dippers (n=24)
HTN	4	20*
Stage 1	4	4
Stage 2	3	9
Stage 3	1	11

HTN : Hypertension (JNC-VI classification)

p < 0.05 Chi test for trend

가

1

3-4)

19-22)

23)

10%

가

11,24,30-33)

34)

24-25)

24

( 26)

24

35)

36-38)

24

(

)

24

24

J - curve

39-41)

35)

24

24

(83%)

24

20

10%

27-28)

4

1

3

2

1

29)

가

가

24

25

stage

가

3 11  
결 론 :

1) , 2) 가 24

가

가 , 3) 가

가

요 약

중심 단어 :

목 적 :

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34

24

oscillometric cuff

30

1

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(83%) 24

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가

(p<0.05).

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12)

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