

혈관미주신경성 실신 혹은 실신 전단계 증상을 경험한 환자에서 기립경사 검사로 평가한 베타-차단제의 효과*

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박승우 · 김덕경 · 이상훈 · 홍경표 · 박정의 · 이원로

= Abstract =

The Effect of Beta-blocker Assessed by Repeat Head-up Tilt Test in Adults with Vasovagal Syncope or Presyncope

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Background : Oral beta-blocker is initially used to prevent the symptoms in patients with vasovagal syncope or presyncope. But, beta-blocker treatment may actually cause worsening of symptoms in some patients. The purpose of the present study was to evaluate the efficacy of oral beta-blocker in preventing symptoms during repeat head-up tilt test in patients who had a positive response in initial head-up tilt test.

Method :

Patients. Among the 150 patients with unexplained syncope or presyncope who underwent head-up tilt test from October 1994 to January 1996, forty-three patients, who were taking beta-blocker and underwent repeat head-up tilt test, were included in this study.

Initial head-up tilt test. Each patient was tilted to the 70 degree upright position for 30 minutes. If the test was negative in the baseline tilt, intravenous isoproterenol was started at 1 µg/min and then increased by 1 µg/min every three minutes to a maximum of 5 µg/min while maintaining 70 degree upright position.

Repeat head-up tilt test. The test was repeated while each patient was taking atenolol. The repeat test was continued until reaching at the stage where each patient had a positive response in initial test.

Results :

1) In initial head-up tilt test, most(91%) of a positive response occurred during isoproterenol

provocation.

2) In repeat head-up tilt test on atenolol, thirty-four patients(79%) had a negative response. But, nine patients(21%) still had a positive response.

3) Nonresponsive group showed younger age and shorter time period to a positive response in initial head-up tilt test than responsive group.

Conclusion : It may be useful to assess the effectiveness of beta-blocker by repeat head-up tilt before deciding long term treatment, especially younger age group.

KEY WORDS : Head-up tilt test · Beta-blocker · Vasovagal syncope or presyncope.

서 론

(neurally mediated syncope
neurocardiogenic syncope)
(vasovagal syncope)
(head - up tilt test)

1,2)

- 가

3 - 5)

Cox 6)

- 가

-

. Natale 7)

- 가

8)

5
disopyramide

2

-

가

, 가

연구대상 및 방법

1. 대상 환자

1994 10 1996 1 16

, 가

150

-

43

2. 진단 목적의 기립경사 검사

9)

(1) , (2) intolerance to
isoproterenol, (3) heart rate>150 / , (4) isopro-
terenol 5 µg/min end points

5

, ,
.

, ()

(1) (vasodepressive type) -

80mmHg

(2)

(cardioinhibitory type) - 3

가 45 , iso -
proterenol 60

(3) (mixed type) -

가

3. Atenolol 투여 후 기립경사 검사

Atenolol 25mg 50mg(1 75mg) 1

9

isoproterenol

isoproterenol 5 µg/min

11 (25%)

(Table 1). 33 (77%)

4. 통계학적 분석

±

SPSS for Window

chi-square test, Student's t-test, Mann-Whitney U-Wilcoxon Rank Sum W test

p 0.05

(72%)

, 12

(Table 2).

2. 진단 목적의 기립경사 검사

결 과

1. 대상 환자의 임상적 특성

39 ± 14 (; 16 66)

, 가 20 , 가 23 .

40 (93%)

38 (88%)

4.5 ±

4.2 (; 1 20)

78.7 ± 105.2 (: 0.1 420)

Table 1. Patient characteristics() (n=43)

Characteristics	Value	Range or percent
Age(years)	39 ± 14	(16 - 66)
Men/women	20/23	
Presence of prodromal Symptoms	40	(93%)
Syncope	38	(88%)
Frequency of symptoms	4.5 ± 4.2	(1 - 20)
Duration of symptoms (month)	78.7 ± 105.2	(0.1 - 420)
Injury	11	(25%)
Mean ± SD		

Table 2. Patient characteristics() (n=43)

Associated factors	
Standing ± sitting	33
Micturition	1
Defecation	4
Combination	5
Underlying problem	
None	31
HT	6
NSVT	2
Others	4

HT : Hypertension,
NSVT : Nonsustained ventricular tachycardia

4 (9%)

39 (91%) isoproterenol

39.3 ± 8.3 (

; 2 51)

(Table 3). Isoproterenol

1 (3%) isopro-

terenol 1 µg/min , 7 (16%)

2 µg/min

, 13 (30%)

3 µg/min , 5 (12%)

4 µg/min , 13 (30%)

5 µg/min

3 µg/min

isopro-

terenol

(Fig. 1).

27 (63%),

14 (32%)

2 (5%)

Table 3. Clinical findings during initial Head-up tilt

	Value	Range or percent
Positive response in the		
baseline tilt	4	(9%)
during isoproterenol	39	(91%)
Time to positive		
response(min)	39.3 ± 8.3	(2 - 51)
mean ± SD		

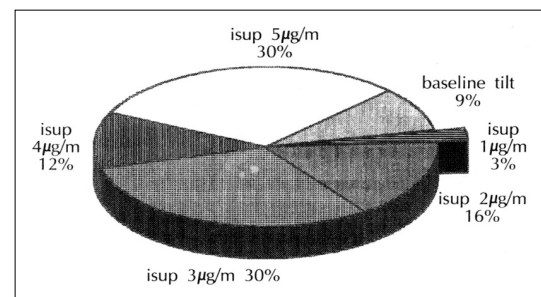


Fig. 1. Distribution of positive response in initial head-up tilt.

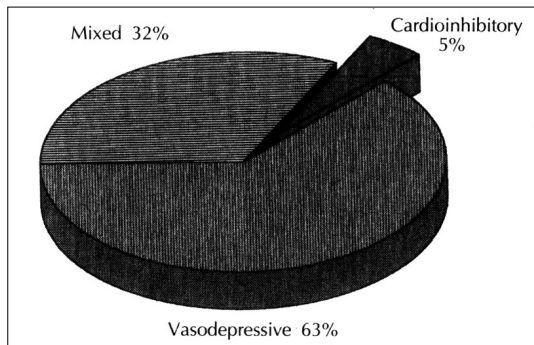


Fig. 2. Pattern of positive response during initial head-up tilt.

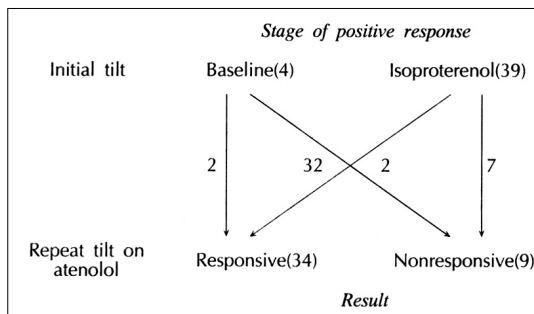


Fig. 3. Results of repeat head-up tilt test (n = 43).

(Fig. 2).

3. Atenolol 투여 후 기립경사 검사

Atenolol 24 ± 29 (; 3 165)

39

± 43 (; 3 255)

. 34 (79%)

9 (21%) atenolol

(Fig. 3).

9 7 (78%)

atenolol

가

atenolol

, 1

3 atenolol

2 , 1

1 atenolol

Mode of response	Initial tilt	Repeat tilt
Vasodepressive	5	5
Mixed	3	3
Cardioinhibitory	1	1

Fig. 4. Concordance of positive response in nonresponsive group (n = 9).

(Fig. 4).

9

atenolol

, 7

isoproterenol provo-

cation

, 3 atenolol
isoproterenol provocation

2
provocation

isoproterenol

1 atenolol

4. Atenolol에 반응하는 환자군과 반응하지 않는 환자군 사이의 비교

Atenolol

atenolol

(Table 4).

가 (Table 5).

고 안

가

Table 4. Comparison of clinical characteristics between responsive group and nonresponsive group

Characteristics	Responsive group(n=34)	Nonresponsive group(n=9)	p Value
Mean age(years)	42 ± 14	29 ± 13	<0.05
Sex(M : F)	17 : 17	3 : 6	NS
Underying disease(%)			<0.05
Episodes of symptoms	4.4 ± 3.7	5.2 ± 5.9	NS
Last episodes(months)	13.9 ± 33.9	3.9 ± 4.6	NS
Duration of symptoms(months)	47 ± 67	33 ± 26	NS
Response to initial tilt test			
syncope with isoproterenol	32(94%)	7(77%)	NS
vasodepressive type	22(64%)	5(55%)	NS
Time to a positive response in initial tilt test (min)	40.2 ± 8.6	36.0 ± 6.6	<0.05
Duration of beta-blocker treatment before repeat tilt test(days)	22 ± 22	31 ± 50	NS

mean ± SD : NS, not significant

Table 5. Comparison of hemodynamic values of initial head-up tilt between responsive group and nonresponsive group

Characteristics	Responsive group(n=34)	Nonresponsive group(n=9)	p Value
Supine systolic BP(mm Hg)	124.9 ± 17.6	118.2 ± 13.3	NS
Supine diastolic BP(mm Hg)	80.2 ± 12.0	76.8 ± 9.0	NS
Supine HR(beats/min)	69.3 ± 11.9	65.1 ± 10.0	NS
Standing systolic BP(mm Hg)	126.0 ± 17.1	118.2 ± 9.6	NS
Standing diastolic BP(mm Hg)	85.8 ± 12.6	81.2 ± 8.4	NS
Standing HR(bests/min)	74.3 ± 10.5	71.5 ± 10.0	NS
Peak systolic BP(mm Hg)	133.7 ± 18.0	125.6 ± 13.5	NS
Peak diastolic BP(mm Hg)	80.8 ± 12.8	77.7 ± 11.5	NS
Peak HR(beats/min)	126.1 ± 21.4	117.6 ± 23.8	NS

mean ± SD : NS, not significant, BP : blood pressure, HR : heart rate

가 . kg 0.2mg propranolol
가 90%
가가 Muller¹²⁾
kg 0.1mg
0.2mg metoprolol
86% Sra
10,11)
13)
1. 정주용 베타-차단제의 효과
kg 500mg esmolol 3
kg 300mg esmolol
metoprolol
esmolol 가
Cox⁶⁾

2. 경구용 베타-차단제의 효과

6% 28% 2,14 - 18) . Cox 6)
 propranolol 가 가
 - 가 가
 - atenolol, pro-
 pranolol, metoprolol, nadolol
 94%
 10%
 42%
 23%
 가
 가
 atenolol
 Cox 6) 가
 atenolol
 atenolol 가

3. 베타-차단제에 반응하는 환자군과 반응하지 않는 환자군의 특성

Sra 13) Lippman 19)
 isoproterenol provocation
 가 isoproterenol provo-
 cation
 . Leor 20)
 (>100 /)

isoproterenol provocation

가

isoproterenol
 provocation 가

4. 베타-차단제 외의 약물들

. Disopyramide negative inotropic effect
 anticholinergic effect
 21) . scopolamine
 vagal tone 가 가 22) . Fluoro-
 hydrocortisone salt retention volume expan-
 sion
 23) . theophylline, ephedrine,
 ergotamine hyoscyamine
 24,25) .
 가
 가 26) . Grubb 27)
 se -
 rotonin re - uptake inhibitor fluoxetine hydro -
 chloride

fluoxetine hy -
 drochloride ,

se -
 rotonin 가
 sertraline hydrochloride 28) fluoxetine hydro -
 chloride 가

5. 인공 심박조율기의 역할

. Petersen 29)

, Sra 30)

atenolol 25mg
50mg(1 75mg) 1
atenolol 가 .
결 과 :
1) :
4 (9%)
, 39 (91%) isoproterenol
6. 본 연구의 문제점
가 (placebo) 27 (63%), 14 (32%)
2 (5%)
2) Atenolol : Ate -
nolol 24 ± 29
. 34 (79%)
9 (21%) atenolol
가

7. 임상적 이용

3) Atenolol
: Atenolol

결 론 :

가

가

요 약

연구배경 :

가

감사의 글 _____

가

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nolol

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ate -

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