승모판 일탈 증후군의 증상에 따른 심박 변동성

신   영   우

Heart Rate Variability Related to Symptoms in Patients with Mital Valve Prolapse Syndrome

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ABSTRACT

Background and Objectives   Studies in patients with mitral valve prolapse syndrome (MVPS) have shown a variety of forms of autonomic dysfunction, which require further investigation. **Subjects and Methods**   The study group consisted of 29 male MVP patients, aged 23 ± 3 years, and 17 male healthy controls, aged 25 ± 2 years. The patients and the control subjects were matched for age and sex. All study subjects underwent a complete echocardiographic examination, and were free of other organic heart diseases and arrhythmia. In a prospective study, the heart rate variability (HRV) indices were calculated from 24-hour Holter recordings, obtained during normal daily activity, and plasma norepinephrine levels measured, and the data between the patients and the controls compared to quantify the autonomic activity. **Results**   The HRV indices were significantly greater in the patient than the controls, and revealed hypervagal and mixed type in 55.2 and 20.7% of patients, respectively. There was the greatest parasympathetic activity in the MVPS patients with presyncope or syncope. The MVPS patients with palpitation tended to show hypersympathetic activity, as in the mixed type. **Conclusion**   Our data suggests that MVPS patients exhibit autonomic dysfunction, mostly resulting from parasympathetic hyperresponsiveness. **(Korean Circulation J 2002;32(12):1078-1084)**

KEY WORDS   Electrocardiography, ambulatory   Mitral valve prolapse   Disorders of the autonomic nervous system.

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대상 및 방법

20~29 .

17

25± 2 .

29 23± 3 .

24 Holter ,

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SONOS 5500 ,

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2 mm

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2 mm .[4] 24

Holter cassette Del-
mar Avionics 750A Innovator

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17 norepinephrine .

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. 1) 24 (mHR). 2) 24
(SDNN). 3) 5
(SDANN). 3)
(rMSSD). 4)
50 ms
(pNN50). 5) rMSSD
(rMSSD- Dif) 7 30
9 30 , 7
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t- test ,

ANOVA Dunnett t- test(2 sided)

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Scheffe . p

0.05

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결 과

승모판 일탈 증후군의 심박 변동성

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79± 7 76± 8
(p 0.101), SDNN 146± 22 ms
179± 44 ms(p 0.003), SDANN 138± 24 ms
165± 44 ms(p 0.012), rMSSD 30± 5 ms 42±
13 ms(p 0.000), rMSSD- Dif 13± 9 ms 21±
13 ms(p 0.009) pNN50 9± 4% 18±
9%(p 0.000) , SDNN, SDANN, rMSSD, r- MS-
SD- Dif, pNN50

(Table 1).

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Table 1. Comparison of heart rate and heart rate vari-
ability indices between healthy subjects and patients
with mitral valve prolapse syndrome (MVPS)

Measure	Healthy subjects (n 17)	MVPS (n 29)	p
Mean HR (bpm)	79± 7	76± 8	.101
SDNN (ms)	146± 22	179± 44	.003
SDANN (ms)	138± 24	165± 44	.012
rMSSD (ms)	30± 5	42± 13	.000
rMSSD-Dif (ms)	13± 9	21± 13	.009
pNN50 (%)	9± 4	18± 9	.000

Values are means± SD. HR heart rate, SDNN the stan-
dard deviation (SD) of normal-to-normal R-R intervals,
SDANN SD of 5min averages of normal-to-normal R-
R intervals, rMSSD the root-mean square of the diffe-
rence of successive normal, R-R intervals, rMSSD-Dif
difference between night time and day time rMSSD,
pNN50 % of the differences between adjacent normal
R-R intervals > 50 ms

, SDNN, SDANN, rMSSD, rMSSD- Dif

pNN50 . 1

SDNN(p 0.003), SDANN(p

0.004), rMSSD(p 0.001), rMSSD- Dif(p 0.000)

pNN50(p 0.005)

. 2 SDNN(p 0.021),

rMSSD(p 0.015) pNN50(p 0.010)

. 3 pNN50(p 0.016)

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2 , 3

(Table 2).

29 22

. rMSSD- Dif 95%

18 ms

22 6

20.7% ,

16 55.2% .

55.2% 20.7%

(Table 3, 4).

승모판 일탈 증후군에서 주증상에 따른 자율신경 활성도의 특성

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rMSSD-Dif와 자율신경 활성도와의 관계

rMSSD- Dif norepinephrine rMSSD

norepinephrine F 2.86

(p 0.09) F 3.34(p 0.05) J

, rMSSD norepinephrine

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rMSSD- Dif

, norepinephrine

rMSSD- Dif

, rMSSD

rMSSD- Dif

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9 5 ,

norepinephrine 350 pg/mL 4 3

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15 10

Table 3. Frequency of patients with mitral valve prolapse syndrome according to rMSSD and rMSSD-Dif

		rMSSD		Total
		33 ms*	< 33 ms	
rMSSD-Dif	18 ms†	16	0	16
	< 18 ms	6	7	13
	Total	22	7	29

Abbreviations as in Table 1. * 95% confidence upper bound for rMSSD in the healthy control, † 95% confidence upper bound for rMSSD-Dif in the healthy control

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rMSSD

95% 33 ms

Table 2. Comparison of heart rate and heart rate variability indices between healthy subjects and patients with mitral valve prolapse syndrome (MVPS) according to the chief symptoms

Measure	Healthy subjects (n 17)	MVPS		
		Group 1 (n 5)	Group 2 (n 8)	Group 3 (n 16)
Mean HR (bpm)	79± 7	72± 6	75± 9	78± 8
SDNN (ms)	146± 22	209± 54†	189± 60*	164± 24
SDANN (ms)	138± 24	200± 56†	171± 56	152± 26
rMSSD (ms)	30± 5	51± 12†	44± 15*	39± 12
rMSSD-Dif (ms)	13± 9	41± 8‡	14± 6	18± 9
pNN 50 (%)	9± 4	22± 8†	19± 11*	16± 9*

Abbreviations as in Table 1. Values are means± SD. Statistical significance versus healthy subjects, * p< 0.05, † p< 0.01, ‡ p< 0.001. Group 1 MVPS with near syncope or syncope, Group 2 MVPS with palpitation, Group 3 MVPS with chest pain

(Table 5, 6). [8]

고　　찰

Boudoulas [9]

14.3~58.3%

61.8~98.7% [11]

[10]

[12]

[13] [14]

24

[14]

R-R

R-R

. R-R

R-R　　　　　R-R

. SDNN　　　R-R

R-R

, SDANN

Table 4. Frequency of autonomic dysfunction in patients with mitral valve prolapse syndrome

Type of autonomic dysfunction	Criteria	No (%)
Hypervagal	rMSSD 33 ms	16/29 (55.2)
	rMSSD-Dif 18 ms	
Mixed	rMSSD 33 ms	6/29 (20.7)
	rMSSD-Dif< 18 ms	

Abbreviations as in Table 1

Table 5. Patterns of autonomic dysfunction in patient with mitral valve prolapse syndrome (MVPS) according to symptoms

Type of autonomic dysfunction	MVPS with near syncope (n 5)	MVPS with* palpitation (n 8)	MVPS with chest pain (n 16)
Hypervagal			
rMSSD 33 ms and rMSSD-Dif 18 ms	5	1	10
Mixed			
rMSSD 33 ms and rMSSD-Dif 18 ms	0	5	1
Subtotal	5	6	11

Abbreviations as in Table 1. * there are 3 out of 4 patients with norepinephrine 350 pg/mL in 17 MVPS who were measured plasma norepinephrine

Table 6. Values of rMSSD and rMSSD-Dif in patients with mitral valve prolapse syndrome (MVPS) according to symptoms

	MVPS with near syncope (n 5)	MVPS with palpitation (n 8)	MVPS with chest pain (n 16)
rMSSD (ms)	51± 13	44± 15	39± 12*
(95% confidence interval)	(35- 66)	(31- 57)	(33- 46)
rMSSD-Dif (ms)	41± 8	14± 6†	18± 9†
(95% confidence interval)	(31- 51)	(9- 19)	(13- 22)

Abbreviations as in Table 1. Values are means± SD, * p< 0.05 vs MVPS with near syncope, † p 0.000 vs MVPS with near syncope

R- R ,
. R- R   rMSSD   rMSSD   pNN50
pNN50   ,   ,   55.2%,
,   R- R   ,   23.5%   .
R- R
, pNN50   rMSSD   .
[14]
,   13~ 23%,   Kozlowski   [21]   ,
21.8~ 68.9%,   12.5~ 22.6%
[5][6]   [22]
,   ,
[14][15]   ,   norepinephrine
,   ,   ,   [23][24]   norepinephrine
.   [25]
10   [16]   norepinephrine
20~ 30   ,[1]   , 6   , isopro-
[7]   20~ 29   terenol
.

,   .[1] Lichodziejewska   [26]
,   63%   norepinephrine
[1][3][4]   ,
. Coghlan   norepinephrine
[17]   .
33%,   10%   norepinephrine   17   350 pg/mL
54%   ,   [27]   4   . rMSSD
rMSSD- Dif
.   [19]   Ewing   [18]   5
,   20.7%   .
,   rMSSD   rMSSD- Dif
,   [28]   rMSSD-
,   Dif   norepinephrine
52%,   rMSSD   rMSSD- Dif
4%,
8%   . Frisin-   .   rMSSD
ghelli   [20]   norepinephrine   rMSSD- Dif   J
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[1]   ,   norepinephrine

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요   약

배경 및 목적 :

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방 법 :

17 (25± 2)
29 (23± 3)

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24   Holter

,   norepinephrine

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결 과 :

,   55.2%

20.7%   .

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결 론 :

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중심 단어

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