

## 발살바동 동맥류 파열의 임상적 고찰

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## Clinical Characteristics in Patients with Ruptured Aneurysm of Sinus of Valsalva

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## ABSTRACT

**Background :** Ruptured aneurysms of sinus of Valsalva are rare cardiac anomaly. Here, we analyze retrospectively patients operated on at our hospital during the last 10 years. **Methods :** Seventeen cases of ruptured congenital aneurysm of sinus of Valsalva (female : male = 10 : 7, mean age  $33.2 \pm 15.2$  year) were operated during the period of January 1989 through August 1998. A ruptured aneurysm of the sinus of Valsalva was diagnosed by transthoracic 2D echocardiography and multiplane esophageal echocardiography. The diagnoses were confirmed at operation. The majority (94.1%) arose from the right coronary sinus. The right ventricle was the most common chamber of rupture (76.5%). Ventricular septal defect was associated in 13 patients (76.5%), of which 8 (61.5%) were subarterial. Ventricular septal defect was more common in aneurysms arising from the right coronary sinus (81.2%). Aortic regurgitation was found in 5 patients (29.4%). One patient underwent aortic valve repair and one an arotic valve replacement. **Results :** There was no early operative death and no recurrence after the initial repair. Postoperative morbidities were few. There was one late sudden cardiac death 3 months post-surgery. In the majority, the long-term follow-up was uneventful. **Conclusion :** Surgery for ruptured aneurysm of sinus of Valsalva yields gratifying results, and it should be undertaken as soon as the condition is diagnosed. With recent developments, echocardiography may prove a substitute for cardiac catheterization and angiocardiography in future, and surgery could be undertaken with the help of echocardiography alone. (*Korean Circulation J* 2000;30(2):183-190)

**KEY WORDS :** Ruptured aneurysm of sinus of valsalva · Congenital heart disease · Transesophageal echocardiography.

서 론

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가

<sup>1)</sup>

10

대상 및 방법

1989 1 1998 8

21 가

17 , 10

4,816

0.35% . 17 15

, 2

17 가 7 (41%,  $29.2 \pm 11.1$  ), 가 10 (59%,  $36.0 \pm 17.6$  ) 1 : 1.4

11 66  $33.2 \pm 15.2$

(Fig. 1). 7 2 26 (

$10.8 \pm 10.6$  ) 10

100 (  $32.6 \pm 37.9$  )

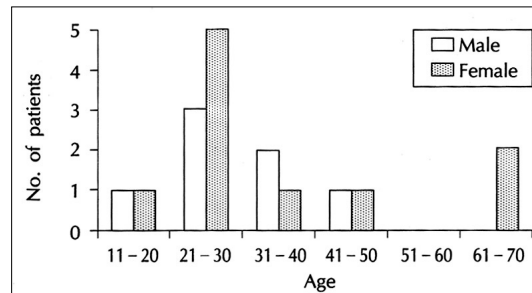


Fig. 1. Age distribution.

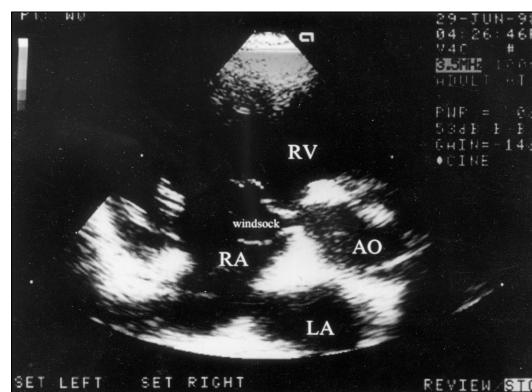


Fig. 2. Transthoracic echocardiogram shows windsock-like aneurysm originated from right Valsalva sinus into right atrium in right ventricle inflow view.

## 결 과

### 임상 증상 및 검사 소견

10 (58.8%), 2 (11.7%), 2 (11.7%), 1 (5.8%), 1 (5.8%)

1 (5.8%) . 14 (82.3%) , 3 (17.6%)

### New York Heart Association(NYHA)

class 4 (23.5%), class 가 10 (58.8%), class 가 2 (11.7%), class IV가 1 (5.8%)

가 9 (52.9%) 가 , 4 (23.5%) 4 (23.5%)

2 (11.7%), 1 (5.8%)

15 (88.2%)

(CT ratio>0.55) 가

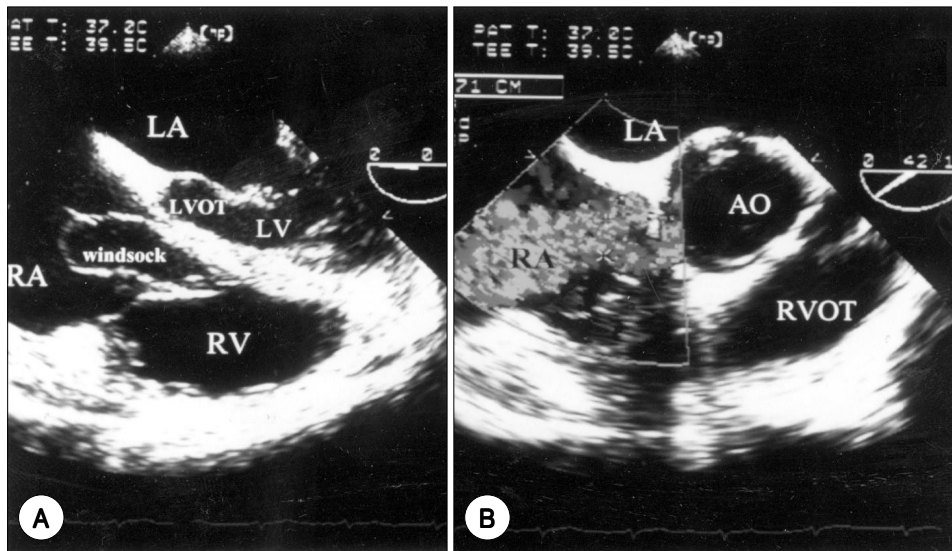
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9 (52.9%), 1 (5.8%), 1 (5.8%), 1 (5.8%), 4 (23.5%)

### 심초음파 소견

(transthoracic echocardiography) (Fig. 2), (multiplane transesophageal echocardiography) (Fig. 3).

13 , 12 가 , 8 , 3 , 1 . 1



**Fig. 3.** Transesophageal echocardiogram shows windsock-like aneurysm of sinus of Valsalva in horizontal view (A). Color jet from aorta into right atrium is observed (B).

2  
, 2  
(Table 1). 15 (windsock)  
2  
streptococcal viridans가  
(vegetation),  
(subarterial),  
1  
Qp/Qs = 1.8  
1990

**Table 1.** Findings at Echocardiography and surgery

Echocardiography (n = 17)		Surgery (n = 17)	
number	%	number	%
Sinus of origin			
RCS	14*	16	94.1
NCS	1	1	5.8
LCS	0	0	0.0
Chamber of rupture			
RV	11*	13	76.4
RA	3	3	17.6
LV	1	1	5.8
LA	0	0	0.0
Uncertain	2	RASV	

\*2 Cases were diagnosed by transesophageal echocardiography  
RCS = Right Coronary Sinus ; NCS = Noncoronary Sinus ;  
LCS = Left Coronary Sinus ; RV = Right Ventricle ; RA =  
Right Atrium ; LV = Left Ventricle ; LA = Left Atrium ;  
RASV = Ruptured Aneurysm of Sinus of Valsalva, RCS  
into RV

수술소견 및 결과

**Table 2.** Origin and cardiac chamber exit of the ruptured aneurysm

Origin	Cardiac chamber exit			Number of patients
	RV	RA	LV	
Right coronary sinus	13 (76.5%)	2 (11.7%)	1 (5.8%)	16 (94.1%)
Noncoronary sinus	0 ( 0.0%)	1 ( 5.8%)	0 (0.0%)	1 ( 5.8%)
Left coronary sinus	0 ( 0.0%)	0 ( 0.0%)	0 (0.0%)	0 ( 0.0%)
Total	13 (76.5%)	3 (17.6%)	1 (5.8%)	17 (100%)

RV = Right Ventricle ; RA = Right Atrium ; LV = left Ventricle

**Table 3.** Associated cardiovascular lesions

Associated lesion	No of patients (%)
Ventricular septal defect	13 (76.5)
Subarterial	8 (47.0)
Perimembranous	5 (29.4)
Aortic regurgitation	5 (29.4)
Mild	2 (11.7)
Moderate	1 ( 5.8)
Severe	2 (11.7)
Tricuspid regurgitation	1 ( 5.8)
Pulmonary stenosis	1 ( 5.8)
RVOT obstruction	2 (11.7)
Infective endocarditis	1 ( 5.8)
PFO	1 ( 5.8)

RVOT= Right Ventricular Outflow Tract

PFO = Patent Foramen Ovale

가 3 (17.6%), 13 (76.5%), 1 (5.8%) (Table 2).

13 (76.5%) dacron

5 (29.4%) 2 (11.7%)

1 (5.8%)

, 2 (11.7%) 1 (5.8%)

1 (5.8%)

2 , 1 , 1 ,

(Table 3).

1

16 NYHA

class I

186

1 3

고 찰

1831 James Hope

1840 Thurnham <sup>2)</sup> 1957 Li -  
Ilehei

<sup>3)</sup> 가 <sup>4-6)</sup>  
0.31 3.5%

, Chu

5

가 가 <sup>7-9)</sup> 1962

Sakakibara 4가

<sup>10)</sup>

<sup>11)12)</sup>

가

, Marfan ,

가 <sup>7)13)</sup>

2 3 <sup>13)14)</sup>

<sup>15)16)</sup> 20 30  
가 1.4

33.2 ± 15.2

<sup>17)18)</sup>

<sup>1)19)</sup> His <sup>20)</sup>

<sup>21)</sup>

가 <sup>1)</sup>

. Nowicki

45.6%

가

Korean Circulation J 2000;30(2):183-190

36.8% 22

17.6% 13)

14 (82.3%)가 14 26)

, 3 (17.6%)가 3

NYHA

class 가 60 70% 14)22)

Class 가 10 (58.8%) 가

class 2 (11.7%), 1 (5.8%)

가 23)

2 4

가

30 50% 8)10)13)14)27)

가

가

가 8)

가 16

가 9 (52.9%) 4 (23.5%) 13(81.2%) 가

8 (47.0%)

가 13)23)

15 (88.2%)가

가 가

가 9 (52.9%) 가 23)

5 (29.4%)

2

2 1

가 24)

가 1

가

75% 28 - 30)

가

가 8)

가 31 - 34)

25) 17

13 (76.5%) (aortic root)

3 (17.6%) , 1 (5.8%) (aortic sinus)

, 1 (5.8%) 35)

14)

Hwang 36)

가 ,

43)

가 ,

45 (dehiscence), ,

70

15 44)

13 가 2 1 3

16

17 2 가  $23.6 \pm 31.1$

2 3 3.5% 2)11)12)

1 1

11 streptococcal viri -

dans가 3)12)13)

1 48

요 약

2

연구배경 :

2

10

가 17

1990 방 법 :

1989 1 1998 8

가 21 가

12)29)30)37 - 39) 17 ( 7 , 10 , 33.2 ±

15.2 ) , , , ,

(IVUS), 3 40 - 42)

24)

1 결 과 :

1) (64.7%), (11.7%),

(11.7%), (5.8%), (5.8%)

, (52.9%)  
 (23.5%) (23.5%) ,  
 (11.7%) (5.8%) .  
 2)  
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 . 13  
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 3) 가 16 (94.1%)  
 , 13 (76.5%) 2 (11.7%)  
 1 (5.8%) . 1 (5.8%)  
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 4) 13 (76.5%),  
 5 (29.4%),  
 2 (11.7%), 1 (5.8%),  
 1 (5.8%), 1 (5.8%),  
 1 (5.8%) .  
 5)  
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 16  
 3

결 론 :

중심 단어 :

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