

## 전기생리학검사에서 발견된 심방세동의 임상적 의의

중앙보훈병원

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**목적:** 전기생리학검사에서 유발된 심방세동 환자들을 추적관찰하여 심방세동의 발생여부와 관련성을 조사하였다. **대상 및 방법:** 이전 심방세동 병력 없이 전기생리학검사에서 심방세동이 유도된 167명에서 총 265번의 심방세동이 발생하였다. 2010년 8월부터 2016년 10월까지 평균 397일동안 (IQR: 46-813일) 이들을 추적 관찰하며 심방세동이 새로 나타나는지 여부에 따라 두 개의 그룹으로 분류하였다. 현저한 관막질환이 있는자는 제외하였다. **결과:** 167명중 10%(17명)에서 심방세동이 나타났다. 심방세동이 새로 나타난 그룹은 평균 나이가 높으며 ( $54.1 \pm 13.5$  vs  $41.0 \pm 15.8$ ,  $P=0.02$ ), 심근증 (17.6% vs 0.7%,  $P=0.003$ ), 심계항진으로 전기생리학검사 시행한 경우 (41.2% vs 13.3%,  $P=0.01$ ), 발작성심실상성빈맥으로 전기생리학검사 시행한 경우 (41.2% vs 76.7%,  $P=0.004$ ), 12유도 심전도에서 PR간격 연장된 경우 ( $174.3 \pm 42.1$  msec vs  $154.0 \pm 22.5$  msec,  $P=0.02$ )에서 높은 비율을 보였다. 전기생리학검사와 심방세동발생 개수( $2.2 \pm 1.6$  vs  $1.5 \pm 1.0$ ,  $P=0.04$ ) 및 이소프로테레놀의 사용으로 인한 심방세동의 유도(60.5% vs 30.8%,  $P=0.001$ )는 심방세동 그룹에서 더 높았다. 다변량분석에 의하면 추적관찰동안 심방세동의 발생 위험도의 유의한 증가는 과도한음주자 (HR 10.75,  $P=0.01$ ), 1인당 심방세동 숫자가 높은 환자 (HR 1.87,  $P=0.003$ ) 이소프로테레놀사용시 발생한 심방세동 환자 (HR 2.96,  $P=0.004$ ), 소크 후에 즉시 재유도된 심방세동 환자 (HR 3.66  $P=0.046$ ) 로 나타났다. **결론:** 이전 심방세동 병력없이 전기생리학검사에서 심방세동이 유도된 환자들 중에서 우리는 향후 심방세동이 다시 발생할 수 있는 고위험군을 예측할 수 있다.

	NOAF- (N=150)	NOAF+ (N=17)	P value
Female	44 (29.3)	6 (35.3)	0.59
Age (years)	$41.0 \pm 15.8$	$54.1 \pm 13.5$	0.002
BMI (kg/m <sup>2</sup> )	$24.0 \pm 3.4$	$23.8 \pm 3.0$	0.87
Smoking, current	37 (24.7)	5 (29.4)	0.77
Alcohol	89 (46.0)	10 (58.8)	0.55
Heavy Alcohol	3 (2.0)	2 (11.8)	0.08
HTN	19 (12.7)	5 (29.4)	0.07
DM	11 (7.3)	0 (0.0)	0.61
PCI/CABG	4 (2.7)	2 (11.8)	0.42
Stroke/TIA/SE	2 (1.3)	2 (11.8)	0.05
Cardiovascular	1 (0.7)	3 (17.6)	0.003
Purpose of EPS: Palpitation	20 (13.3)	7 (41.2)	0.01
Purpose of EPS: PSVT	115 (76.7)	7 (41.2)	0.004
Purpose of EPS: AT	12 (8.0)	2 (11.8)	0.64
Purpose of EPS: AFL	1 (0.7)	1 (5.9)	0.19
Purpose of EPS: VT/VPC	2 (1.3)	0 (0)	1.00
CHADS-VASc	$0.7 \pm 0.8$	$1.1 \pm 1.6$	0.46
PR interval (msec)	$154.0 \pm 22.5$	$174.3 \pm 42.1$	0.02
	Univariate analysis	Multivariate analysis	
	HR (95% CI)	HR (95% CI)	P value
Female	1.33 (0.40-3.60)	1.55 (0.30-6.84)	0.55
Age	1.05 (1.01-1.08)	1.02 (0.98-1.07)	0.38
BMI	0.99 (0.86-1.14)	0.93	
Heavy alcoholics	5.07 (1.15-22.37)	10.75 (1.78-64.88)	0.01
HTN	1.98 (0.89-5.66)	0.20	
CHADS-VASc score	1.22 (0.88-1.67)	0.23	
Cardiovascular	17.11 (4.67-62.71)	<0.001	
Purpose of EPS: palpitation	3.4 (1.29-8.96)	0.01	1.02 (0.15-6.82) 0.99
Purpose of EPS: PSVT	0.28 (0.11-0.74)	0.01	0.35 (0.05-2.69) 0.30
Purpose of EPS: AT/AFL	2.12 (0.51-7.39)	0.24	
PR interval	1.03 (1.01-1.04)	0.001	1.01 (0.99-1.03) 0.43
LVEF	0.94 (0.90-0.99)	0.03	1.03 (0.93-1.13) 0.61
LA volume index	1.07 (1.03-1.12)	0.001	1.03 (0.97-1.10) 0.31
AF number (per patient)	1.35 (1.02-1.78)	0.04	1.87 (1.25-2.81) 0.003
	Univariate analysis	Multivariate analysis	
	HR (95% CI)	HR (95% CI)	P value
AF duration	1.00 (0.99-1.01)	0.57	
Induction: spontaneous	1.4 (0.71-2.78)	0.34	
Induction: catheter manipulation	0.04 (0.00-6.23)	0.22	
Induction: pacing	1.05 (0.53-2.09)	0.89	
Pacing site: atrium	1.36 (0.30-6.25)	0.69	
Pacing cycle length	0.99 (0.98-1.00)	0.14	
Isoproterenol	2.68 (1.40-5.15)	0.003	2.96 (1.42-6.17) 0.004
Amount	0.76 (0.43-1.34)	0.35	
Iso-AF interval	0.96 (0.92-0.99)	0.01	
Termination: spontaneous	0.65 (0.33-1.28)	0.21	
Termination: DC cardioversion	1.19 (0.56-2.51)	0.65	
Maximum external shock	0.99 (0.97-1.00)	0.12	
Immediate re-induction after shock	3.65 (1.12-11.92)	0.03	3.66 (1.03-13.06) 0.046

## Successful Transcatheter Aortic Valve Replacement for Severe Aortic stenosis with Bicuspid AV

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A 74 year-old man visited our hospital for dyspnea (NYHA III). He had a medical history of hypertension, diabetes mellitus, and stable angina. Physical examination showed regular heart beat with systolic ejection murmurs. Twelve-lead electrocardiogram (ECG) showed ST-segment depression on lateral leads and third degree atrioventricular block. Transthoracic echocardiogram revealed severe aortic valve stenosis (AS) with peak velocity through the aortic valve was 4.2 m/sec and the mean pressure gradient was 40.3 mmHg. The aortic valve area calculated by continuity equation was 0.66 cm<sup>2</sup>. Furthermore, bicuspid aortic valve (AV) with calcification, raphe at 2 O'clock was suspected. His final diagnosis was severe aortic stenosis (AS) with bicuspid aortic valve, so considering his STS score (4.026) we recommended surgical aortic valve replacement. However, he refused open heart surgery, so we decided to perform transcatheter aortic valve replacement (TAVR). Computed tomography (CT) revealed bicuspid aortic valve with 87.3mm annulus perimeter. It was suitable size for Evolute R 31, but considering bicuspid AV, we derived another perimeter (78.6mm) in perpendicular plane, which was suitable for Evolute R 29. TAVR procedure was conducted under general anesthesia. Before TAVR procedure, we performed percutaneous coronary intervention (PCI) for tight lesion at the middle left anterior descending artery (LAD) and proximal right coronary artery (RCA). Initially, we performed pre-dilatation (23\*40mm) and angiogram revealed also Evolute R 29 was suitable for this patient. Then, we implanted Evolute R 29 under fluoroscopy and adjusted slightly upper level of conventional implantation height. Final aortography showed trivial paravalvular leakage and TEE also showed trivial amount of paravalvular leakage. Post procedure ECG showed complete AV block for 2 days, so we implanted permanent DDD pacemaker. Finally, his symptom was dramatically improved and discharged without any complication.

