

가 , 가 .

가 ,

조절 목표 심박수

가

(Table 1 and Fig. 1).

가 Rawles ²⁾ 가 가

가

(Fig. 1). 가 가

가

심박수 조절(Rate Control)

90 100%가 140

100%가

가 90 140 73%가

가 70 90

가

가

Table 1. 심방세동에서 율동전환의 금기증

(1)	가 ;
1	(>6 cm) ,
(2)	;
	가 48
(3)	;
	가

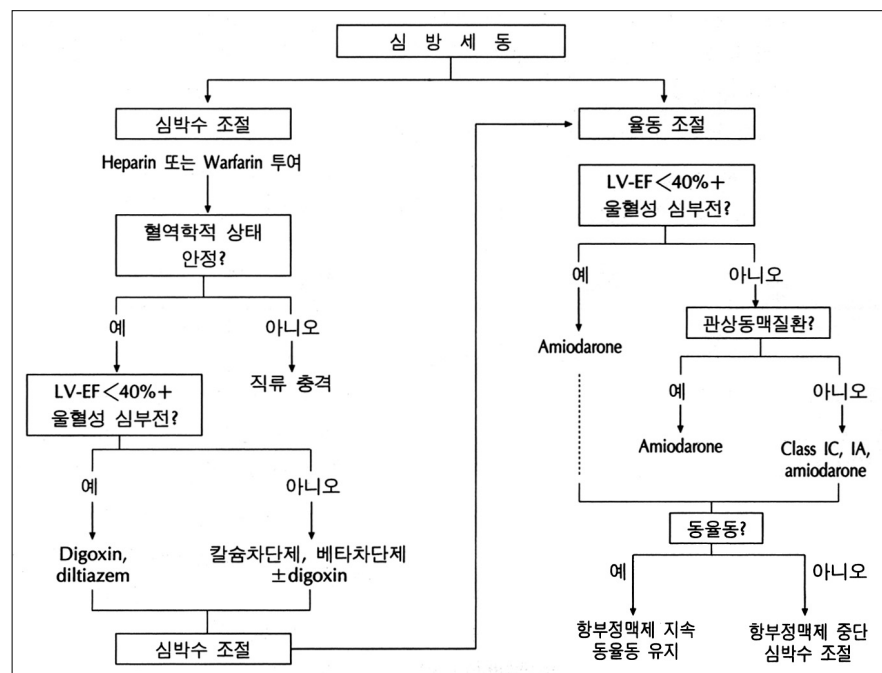


Fig. 1. 심방세동의 치료 체계도.

가 2 digoxin

가 가 diltiazem

심실반응의 조절 , WPW , digitalis

가 가

, digitalis, Class III (amiodarone, sotalol) procainamide, amiodarone, sotalol, lidocaine

verapamil 가 (Table 2).

(COPD),

(<100 mm Hg)

- digoxin 가 가

(Table 2).³⁾ 가

digoxin

가

가 .⁴⁾

가 가

가 .⁴⁾

verapamil 160 240 mg/day,

diltiazem 180 360 mg/day pro -

pranolol 80 240 mg/day (Table 2). (chemical cardioversion)

가 가 (electrical cardioversion),

. Digoxin

가 digoxin

(diltiazem) 1.1 7.0%

. Verapamil digoxin 0.4%

Table 2. 심방세동시 심박수 조절을 위한 약물 치료

1.		
Digoxin	0.75 - 1.0 mg IV or PO	0.125 - 0.25 mg qd PO or IV
Propranolol	0.15 - 0.20 mg/kg IV	20 - 80 mg q 6 hr PO or IV
Esmolol	0.5 mg/kg/min IV	50 - 300 μg/kg/min IV
Verapamil	5 - 10 mg IV	80 - 160 mg q 6 - 8 hr PO or 5 μg/kg/min IV
Diltiazem	20 mg IV	10 - 15 mg/h
2. WPW		
Procainamide	15 mg/kg (15 - 20 min)	2 - 6 mg/min
Amiodarone	5 - 10 mg/kg IV	1.0 mg/h for initial 6h then 0.5 mg/h IV or 100 - 600 mg PO
Sotalol	0.5 - 1.5 mg/kg IV	160 - 320 mg/day PO
Lidocaine	3 - 5 mg/kg (15 - 20 min)	1 - 4 mg/kg/min

APT T가 2 3 가 2 3 가 fleaprin 2 3 INR 2 3 가 3 3 . (, , digoxin) .

울동전환(cardioversion)

가

. Hohnloser ⁶⁾ quinidine sotalol

7

가

2 3

flecainide

(300 mg), propafenone(600 mg), amiodarone(800 mg) ⁵⁾

digoxin, verapamil, warfarin

(Table 4).

80 90%

가 ⁵⁾ 가

가 Class IA(quinidine, disopyramide), Class IC(propafenone, flecainide), Class III(amiodarone, sotalol) (Table 3).

가 가 가

quinidine, disopyramide, propafenone, flecainide, amiodarone, sotalol Class IA propafenone, fleca -

Table 3. 울동전환을 위한 항부정맥제의 용량 및 효과

()		
Amiodarone*	200 - 800 mg bid	67%
Quinidine	200 - 600 mg q 6 h	83%
Flecainide	100 - 200 mg bid	75%
Propafenone	150 - 300 mg tid	62%
Procainamide	500 - 1000 mg q 4 h	58%
Disopyramide	100 - 200 mg q 6 h	20%
Sotalol	160 - 480 mg bid	27%

*

Table 4. 울동전환과 심박수 조절에 사용되는 주요 항부정맥제의 상호작용

Quinidine	Digoxin	2	가
Propafenone	Digoxin	2	가
Amiodarone	Digoxin	2	가
	Quinidine, flecainide	1.2 - 1.3	
	Warfarin	PT 2 - 3	
Verapamil	Digoxin	2	가

III procainamide, quinidine, fleca- 3
inide, propafenone, amiodarone, sotalol

가

flecainide 1.5 mg/kg, propafenone 2.0 mg/kg,
amiodarone 5 mg/kg(10 30), sotalol
20 mg(5 20 20 mg 가 가
) . 가
가 .⁹⁾ Digitalis
propafenone, amiodarone, sotalol 가 가
digoxin 24 48
가 .¹⁰⁾

(DC shock) 심방세동의 재발 예방
(DC shock)
(electrical cardioversion) 가 6 30%
80 90%
. ⁷⁾ 가 .¹¹⁾
(deep sedation) 가
quinidine, flecainide, propafenone,
amiodarone, sotalol
quinidine flecainide
가 flecainide가
. Propafenone flecainide

.¹¹⁾ Amiodarone
가
100
200 mg/day 가
48 5%
. ⁸⁾ amiodarone flecainide, propafenone
100 J . 50% 가
50 J 200 J
5% 100 200 J .⁷⁾
25 J 360 J (Table 6).

Table 5. 심방세동의 직류 울동전환시 주의 사항

1.	48	3	3
2.	K 4.0 mEq/l , digoxin 2.0 ng/l 가		
3.			
4.	QRS (synchronize) T 가		
5.	25 J		

Table 6. 항부정맥제의 주요 부작용과 발생 빈도

			Torsade de pointes
Quinidine	+1	+2	+3
Procainamide	+1	+2	+2
Disopyramide	+4	+2	+2
Flecainide	+3	+3	+/-
Propafenone	+2	+2	+/-
Amiodarone	+/-	+1	+1
Sotalol	+2	+1	+3

가
quinidine, flecainide, propafenone amiodarone
Class III ibutilide
.¹²⁾

항응고요법

3
48
가
4 6%
가
24
가 1 2%
warfarin 1/3 1/4 , as -
pirin(325 mg/day) 1/2 .¹³⁻¹⁵⁾
가
Warfarin
, aspirin

Warfarin INR 5.0
(PT 2.5) 가
가 2.0 가
INR 2.0 3.0 가
INR 2.0 3.0
1.5% . 75
INR 1.5

Table 7. 심방세동에서 항응고요법

1.	
2.	
3.	60
4.	
1.	PT
2.	
3.	
4.	()
5.	

2.0 .¹⁶⁾ 가
60

aspirin(325 mg/day)

가 7

Warfarin 가
2 3 . PT가 INR 2 3
warfarin protein C S가
가 2
heparin . Warfarin
, amiodarone, propafenone, quinidine,
cimetidine, ranitidine, , NSAID
Warfarin
가
4 INR
1.5 가 .¹⁷⁾

심방세동의 특수한 임상 유형에서의 치료

개심실후 심방세동¹⁸⁾ 30%

(verapamil, diltiazem)
 (propranolol, esmolol) 가
 Digoxin 가
 400 600 mg theophylline
 , 24 24
 42%, 31%, 34% 가 2.5
 806 31
 20)
 Class
 IC, IA, III
 1 2
 500 600 mg theophy -
 lline 5 15 ng/ml 20)
 가
 가 가 심부전에 동반된 심방세동
 (sotalol 40 mg q 8 hrs, propranolol 10 mg q
 6 hrs) 19)
 심근경색후 심방세동
 가 가
 가
 renin - angiotensin 가
 verapamil, diltia -
 zem, 가
 가 am -
 amiodarone sotalol . Amiodarone iodarone
 sotalol 가 digoxin
 amiodarone . Digoxin
 sotalol 가
 Class I 21)

심실반응이 느린 심방세동

REFERENCES

- 1) Guiraudon GM, Klein GJ, Sharma AD, Yee R. *Surgery for atrial flutter, atrial fibrillation, and atrial tachycardia, In Cardiac Electrophysiology. Zipes DP, Jalife J, Philadelphia, WB Saunders Co;1990. p.916.*
- 2) Rawles JM. *What is meant by a "controlled" ventricular rate in atrial fibrillation? Br Heart J 1990;63:157.*
- 3) Berns E, Naccarelli GV. *Diagnosis and management of patients with primary atrial arrhythmias, In Cardiac Arrhythmias: A Practical Approach. Naccarelli GV, New York, Futura Publishing Co;1991. p.178-97.*

theophylline

. Theophylline

- 4) Kerr CR, Wa JAY, Leather RA. *Trends in management of atrial fibrillation*, In *Cardiac Arrhythmias: The Management of Atrial Fibrillation*. Campbell RWF, Janse MJ, Berlin, Springer-Verlag;1992. p.70 – 6.
- 5) Members of the Sicilian Gambit. *Antiarrhythmic Therapy: A Pathophysiologic Approach*; 1994. p.188-90.
- 6) Hohnloser SH, van de Loo A, Baedeker F. *Efficacy and proarrhythmic hazards of pharmacologic cardioversion of atrial fibrillation: Prospective comparison of sotalol versus quinidine*. *J Am Coll Cardiol* 1995;26:852.
- 7) Stanton MS, Miles WM, Zipes DP. *Atrial fibrillation and flutter*, In *Cardiac Electrophysiology*. Zipes DP, Jalife J, Philadelphia, WB Saunders Co;1990. p.735-42.
- 8) Yurchak PM, McGovern BA. *Supraventricular arrhythmias*, In *The Practice of Cardiology*. Eagle K, Haber E, DeSanctis, Austen WG, 2nd Ed, Boston, Little, Brown and Co;1989. p.150-4.
- 9) Myerburg RJ, Kessler KM, Castellanos A. *Recognition, clinical assessment, and management of arrhythmias and conduction disturbances*, In *The Heart*. Schlant RC, Alexander RW, 8th Ed, New York, McGraw-Hill Inc;1994. p.725-8.
- 10) Campbell RWF. *An organized approach to a disorganized atrial arrhythmia*, In *Cardiac Arrhythmias: The Management of Atrial Fibrillation*. Campbell RWF, Janse MJ, Berlin, Springer-Verlag;1992. p.77-86.
- 11) Crijns HJGM, Van Gelder IC, Lie KI. *Benefits and risks of antiarrhythmic drug therapy after DC electrical cardioversion of atrial fibrillation or flutter*. *Eur Heart J* 1994;15 (suppl A):17.
- 12) *Acute hemodynamic effects of intravenous ibutilide in patients with or without reduced left ventricular function*. *Am J Cardiol* 1997;80:458.
- 13) Atrial Fibrillation Investigators. *Risk factors for stroke and efficacy of antithrombotic therapy in atrial fibrillation, analysis of pooled data from five randomized controlled trials*. *Arch Intern Med* 1994;154:1449.
- 14) Singer DE. *Anticoagulation to prevent stroke in atrial fibrillation and its implications for managed care*. *Am J Cardiol* 1998;81:35.
- 15) The Stroke Prevention in Atrial Fibrillation Investigators. *The stroke prevention in atrial fibrillation study: Final result*. *Circulation* 1991;84:527.
- 16) Alberts GW. *Atrial fibrillation and stroke*. *Arch Intern Med* 1994;154:1443.
- 17) Kearon C, Hirsh J. *Management of anticoagulation before and after elective surgery*. *N Engl J Med* 1997;22:1506.
- 18) Waldo AL. *Atrial fibrillation following open heart surgery: Mechanism and treatment*, In *Atrial Fibrillation: Mechanisms and Therapeutic Strategies*. Olsson SB, Allessie MA, Campbell RWF (eds), Armonk, NY, Futura Publishing Co., Inc.;1994. p.211.
- 19) Nystrom U, Edvardsson N, Berggren H, Pizzarelli GP, Radegran K. *Oral sotalol reduces the incidence of atrial fibrillation after coronary artery bypass surgery*. *Thorac Cardiovasc Surg* 1993;41:34.
- 20) Alboni P, Paparella N. *Pharmacologic therapy of symptomatic atrial fibrillation with a slow ventricular response*, In *Atrial Fibrillation: Mechanisms and Therapeutic Strategies*. Olsson SB, Allessie MA, Campbell RWF (eds), Armonk, NY, Futura Publishing Co., Inc.;1994. p.157.
- 21) Crijns HJ, Van den Berg MP, Van Gelber IC, Van Veldhuisen DJ. *Management of atrial fibrillation in the setting of heart failure*. *Eur Heart J* 1997;18 (suppl C):C45.