급성심근경색증 환자의 장기생존율 및 예후인자

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Long Term Survival Rate and Prognositc Factors of Acute Myocardial Infarction

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ABSTRACT

Background and Methods   To identify the long term survival rate and prognostic factors of acute myocardial infarction (AMI) in Korea, total 1139 patients who presented between Jan. 1980 and Dec. 1997 at Seoul National University Hospital were followed for an average of 115 months. 321 patients died during follow up periods, 238 patients were lost and 580 patients are alive till the end point of the study. **Results**   Overall survival rates (± standard error) were 88.2± 1%, 86.8± 1%, 85.3± 1.1%, 82.1± 1.2%, 79.6± 1.3%, 75.6± 1.5%, 73.1± 1.6%, 56.3± 2.5% at 1, 6, 12, 24, 36, 48, 60, 120 months. In univariate analysis, older, history of diabetes, higher degree of Killip class, higher peak creatine kinase level, residual ischemia on treadmill test or MIBI scan, lower ejection fraction on echocardiography or gated blood pool scan, more severe extent of coronary artery disease, lower HDL-cholesterol level at least 3 months after AMI proved as poor long term prognostic factors of AMI with statistical significance (p<0.05). Sex, body mass index, history of hypertension, hsitory of angina, history of infarction, infarct site on electrocardiography, existence of Q-wave, patency of infarct related arteries, total cholesterol level, HDL- and LDL-cholesterol at the time of AMI, total cholesterol and LDL-cholesterol at least 3 months after AMI did not show statistical significance (p>0.05). In multivariate analysis, old age and Killip class III versus I proved as independent poor long term prognostic factors of AMI with statistical significance (p<0.05) at combinations of age, sex, Killip class, existence of Q-wave, history of diabetes, ejection fraction on gated blood pool scan. **Conclusion**   The morthality of AMI is composed of two components. At acute phase, within 1 month, the mortality reaches to about 12%, and at chronic phase, after 1 month from AMI, mortality increases by 3% a year for 10 years. The other conclusion is old patients who have poor left ventricular functions show poor prognosis. **(Korean Circulation J 1999;29(1):14-21)**

KEY WORDS   AMI· Survival rate · Prognostic factor.

서 론

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²⁻¹⁵⁾   .

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¹⁶⁾   129
                    , Gwon
¹⁷⁾   404
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방법 및 대상

    1980   1   1997   12   18

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1   1,139
        .   ,   .
                            ,
            ,   ,   ,
(BMI Body Mass Index),   ,   (,
        ,   ,   ), Lipid profile(,
    3   )   ,   Killip
, Creatine kinase   ,   ,
    Q-   ,
    ,   ,
                    ,   MIBI
                .
        PTCA,

. Kaplan- Meier method
                                    1   , 6
            10   1
                    .

                                        , Cox

                    .
        , 80   84 , 85   89 , 90   94 , 95   97

                    .

결   과

            1,139   888 (77.9%)
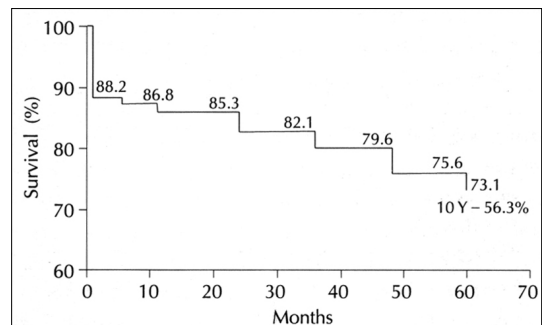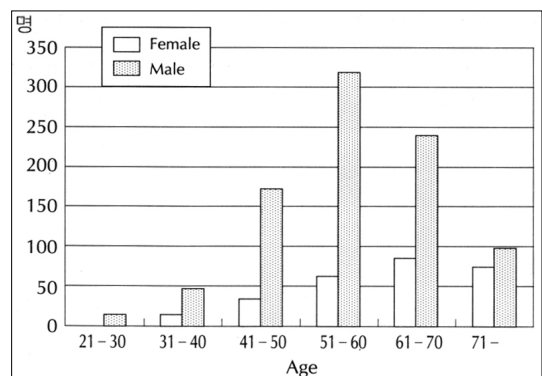   251 (22.1%)   3.5   1   .
                58   ,   57 ,   63

Fig. 1. Survival rate of AMI.

Fig. 2. Distribution of age and sex in patients with AMI.

6   .

115   , 321

                580   238   .

                        (±   )

1   88.2± 1%, 6   86.8± 1%, 1   85.3± 1.
1%, 2   82.1%1.2%, 3   79.6± 1.3%, 4   75.6±
1.5%, 5   73.1± 1.6%, 6   70.3± 1.7%, 7   67.4
± 1.8%, 8   64.5± 1.9%, 9   60.0± 2.2%, 10   56.3
± 2.5%   (Fig. 1).   1   11.8%
                3%   .

                        888   251
                50   (320 , 36%)
                        60   (84 , 34%)
                (Fig. 2).

                                (p< 0.05,
R.R   1.89)(Fig. 3).
6   ,   1   91.2%,   7
7.6%   ,

        ,   3%
6

            .

                (p< 0.05, R.R   1.05).
        (BMI)   66%,   29%,
    2%,   3%   (Table 1).
                        .

237 (21%)

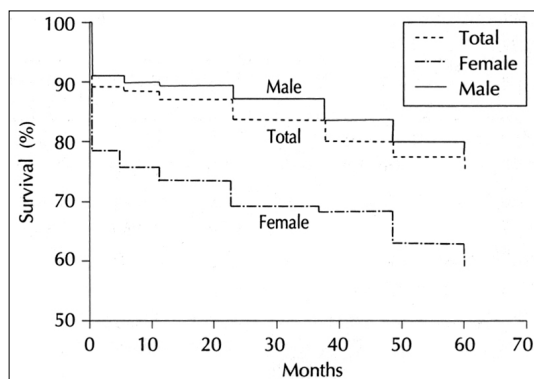   (p< 0.05, R.R   1.91),

Fig. 3. Comparison of survival rates between sex.

73 (6%)

(p< 0.05, R.R   1.55).

Table 1. Clinical features of AMI

Body mass index (BMI)	- 18.4	N= 20 (3%)
	18.5- 24.9	518 (66%)
	25.0- 29.9	228 (29%)
	30.0- 39.9	14 (2%)
Killip class	I	N= 820 (72%)
	II	161 (14%)
	III	84 (7%)
	IV	75 (7%)
Infarct site on ECG	Anterior	N= 646 (57%)
	Inferior	391 (34%)
	Ant Inf	46 (4%)
	Lateral	47 (4%)
	Others	10 (1%)
Infarct-Related artery	LAD	N= 408 (56%)
	LCx	90 (11%)
	RCA	223 (33%)
Previous DM		N= 237 (21%)
Previous HT		N= 455 (40%)
Previous angina		N= 423 (37%)
Previous MI		N= 73 (6%)
Q wave infarct		N= 151 (13%)
Extent of CAD on CAG	Normal	N= 36 (5%)
	1VD	367 (49%)
	2VD	186 (25%)
	3VD	159 (21%)

Table 2. Significant prognostic factors for AMI on acute phase

	Risk ratio	Confidence Interval Lower	Upper
Age (per year increase)	1.05	1.042	1.064
DM (present vs absent)	1.91	1.493	2.435
Previous MI (present vs absent)	1.55	1.062	2.257
Killip class (III vs I)	2.18	1.975	2.411
Treadmill test (positive vs negative)	3.23	1.326	7.872
Sex (male vs female)	0.53	0.417	0.680
EF by scan (per % increase)	0.97	0.953	0.984
EF by echo (per % increase)	0.95	0.938	0.970
Post-MI within 7 day cholesterol*	0.99	0.994	1.000
Post-MI after 1 month HDL-chol*	0.97	0.947	0.996

* per 1 mg/dl increase   p< 0.05 univariate analysis

455 (40%), 423 (3
7%) (Table 1)

24.4 pack year
(p< 0.05, R.R 0.95).
Killip class I 820 , II 161 , III 84 , IV 75
(Table 1),
class IV
creatine kinase

988 (87%) Q
(Table 1) Q

646 , 391 , 46
, 57 (Table 1)

(p< 0.05,
R.R 0.997), 3
HDL-
(p< 0.05, R.R 0.971) (Table 2).
768
, 367 (49%), 186
(25%), 159 (21%),
36 (5%) (Ta-
ble 1),
. 408 (56%),
90 (11%), 223 (33%)
(Table 1),

,
. 429
, 504

Table 3. Risk factors without prognostic significance on acute phase

	Risk ratio	Confidence Interval	Lower Upper
Body mass index	0.99	0.929	1.058
Hypertension (present vs absent)	1.02	0.814	1.287
Previous MI (present vs absent)	1.24	0.991	1.559
Peak CK level	1.00	1.000	1.000
Q vs non-Q infarct	0.82	0.559	1.127
No. of involved vessels	1.69	1.373	2.079
Patency on CAG (present vs absent)	0.92	0.647	1.309
Post-MI within 7 day HDL-Chol*	1.01	0.998	1.028
Post-MI within 7 day LDL-Chol*	0.99	0.995	1.004
Post-MI after 1 month Cholesterol*	0.99	0.994	1.002
Post-MI after 1 month LDL-Chol*	1.01	0.999	1.012

* per 1 mg/dl increase   p> 0.05 univariate analysis

Table 4. Independent prognostic factors for AMI on acute phase

	Risk ratio	Confidence Interval	Lower Upper
Age (per year increase) *	1.04	1.005	1.007
Sex (male vs female)	1.96	0.664	5.804
Killip class II vs I*	2.32	1.187	4.514
Killip class III vs I*	4.99	1.659	15.01
Killip class IV vs I	4.47	0.575	34.78
Q vs non-Q infarct	1.41	0.497	4.031
Chol (within 7 day)	1.01	0.997	1.001
HDL-Chol (after 1 month)	0.97	0.945	1.011

n= 439
*p< 0.05 multivariate Cox proportional hazard model *

Table 5. Significant prognostic factors for AMI after recovery

	Risk ratio	Confidence Interval	Lower Upper
Age (per year increase)	1.06	1.049	1.079
DM (present vs absent)	1.93	1.389	2.675
Peak CK level	1.00	1.000	1.000
Killip class	1.66	1.393	1.983
Treadmill test (positive vs negative)	3.81	1.486	9.749
EF by scan (per % increase)	0.97	0.958	0.990
EF by echo (per % increase)	0.97	0.954	0.993
HDL-Chol (after 1 month)	0.97	0.947	0.946
No. of involved vessels	1.68	1.341	2.112

p< 0.05 univariate analysis

Table 6. Independent prognostic factors for AMI after recovery

	Risk ratio	Confidence Interval	Lower Upper
Age (per year increase) *	1.05	1.018	1.087
Sex (male vs female)	1.28	0.522	3.119
Killip class II vs I	1.74	0.889	3.412
Killip class III vs I*	5.37	2.280	12.63
Killip class IV vs I	4.73	0.530	42.20
Q vs non-Q infarct	1.21	0.396	3.685
DM (present vs absent)	1.21	0.889	3.263
EF by scan (per % increase)	0.99	0.965	1.014

n= 350
*p< 0.05 multivariate Cox proportional hazard model

(p<0.05, R.R 0.97, R.R 0.95).

MIBI   . 159

74   ,

(p<0.05, R.R 3.23), 203   3

MIBI   107

,

.   PTCA

95   PTCA

,

95 98   . 207

urokinase   t-PA

,

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95 98   .

80 84 , 85 89 , 90 94 , 95 97

.

, Killip   ,

, 3 HDL

,

,   MIBI

, PTCA   ,

(Table 2)

, BMI,

, creatine kinase   , Q   3%

,   ,

,

(Table 3).

,

Killip   II   III   I

(Table 4).

134   1,005   200

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1   96.8±0.6%, 2   93.1±0.9%, 3

90.3±1.1%, 4   96.8±1.4%, 5   82.9±1.5%, 6
80±1.7%, 7   76.5±1.9%, 8   73.2±2.1%, 9   68.
1±2.4%, 10   63.9±2.7%   3%

.

,

, Killip class   ,

creatine kinase   ,

HDL-

,

,

,

MIBI

.   PTCA

(Table 5).

, Killip   III   I

(Table 6).

고 안

community base

Framingham   [18]   19%,

34%   Timolol[19]   Co-

mmolly[20]   1   10%

[1-15]   9.5   17%

1   3   5%

.   1

11.8%   1   13.2%

3%   . 1

8.8%, 22.4%

3%   .

Trappolini   [21]

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24   , 3

[22-24]

3

.   3

3   HDL-   .

Kaukola [25]   HDL-
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,   ,   (,   ),
3   HDL-   , Killip   18
[26-29]   Q

.   Q   방　법：
1980   1   1997   12   18

Karlson [30]   , Killip   ,   ,   ,
Q   1   1,139
(R.R 0.96).   ,
[31-37]

,   ,   ,   (BMI
,   . Body Mass Index),   ,   (,   ,
,   ), Lipid profile(,   3
)   ,   Killip , CK
,   ,   ,   Q-   ,
,
.   ,
,   ,   MIBI
.   .   PTCA,
.   1
.   , 6 , 12 , 24 , 36 , 48 , 60 ,
120   .
.   , Cox
,

결　과：

요　약   , Killip class   ,
creatine kinase   ,   3
연구배경：   HDL-
,
.   ,

, MI-

BI

. PTCA

BMI, , creatine kin-
ase , Q , ,

, CABG .

, , Killip , 3

HDL ,

, PTCA ,

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, Killip II III , ,

Killip III .

결 론 :

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1) (±)

1 88.2± 1%, 6 86.8± 1%, 1 85.3 ±
1.1%, 2 82.1± 1.2%, 3 79.6± 1.3%, 4 75.6 ±
1.5%, 5 73.1± 1.6%, 6 70.3± 1.7%, 7 67.4
± 1.8%, 8 64.5± 1.9%, 9 60.0± 2.2%, 10 56.
3± 2.5% .

2)

1 11.8%

1

3% .

3) 1 8.8%,

22.4% 1

3% .

4)

Killip II, III,

Killip III .

5) Q

, , Killip , ,

Q

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중심 단어 . . .

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1997 1998 (02-
1997- 283- 0) .

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