นิพนธ์ต้นฉบับ

Immediate outcome of unstable angina patients in the intensive care unit, Chulalongkorn Hospital.

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This prospective study was designed to elucidate the immediate outcome of patients with unstable angina in the intensive care unit, Chulalongkorn Hospital. There were 95 cases of unstable angina, 60 cases were male and 35 cases were female. Their ages ranged from 33 to 84 year (mean age 59.5 ± 10.4 years). Acute myocardial infarction (AMI) developed in 14 patients (14.74%), 9 were Q infarction and 5 were non-Q infarction. Of 14 case with AMI, 6 (42.9%) had complications. However, there were no deaths in this study.

In conclusion, this study showed that the patients with unstable angina have a high incidence of AMI and of acute complications but no fatalities.

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เกิดภูมิ มีนาภินันท์, เดือนฉาย ชยานนท์. ผลลัพท์ที่เกิดขึ้นในผู้ป่วยอันสเทบัล แอนไจนา ขณะอยู่รักษาในไอซียู โรงพยาบาลจุฬาลงกรณ์. จุฬาลงกรณ์เวชสาร 2533 เมษายน; 34(4): 369-375

ได้ทำการศึกษาผู้ป่วย unstable angina ในโรงพยาบาลจุฬาลงกรณ์ เพื่อติดตามผลที่จะเกิดขึ้น ขณะรักษาตัวในห้องไอซียูพบว่าในผู้ป่วย 95 ราย ที่รับไว้เป็นชาย 60 คน, หญิง 35 คน อายุระหว่าง 33 ถึง 84 ปี (เฉลี่ย 59.5 ± 10.4 ปี) เกิดกล้ามเนื้อหัวใจตายเฉียบพลัน 14 ราย (14.74%) โดยแบ่งเป็นชนิด Q infarction 9 ราย และ non-Q infarction 5 ราย ปรากฏว่าใน 14 รายนี้ มีโรคแทรกซ้อนเกิดขึ้นถึง 6 ราย (42.9%)

โดยสรุป ผู้ป่วย unstable angina ที่ทำการศึกษาในครั้งนี้มีอุบัติการณ์ของกล้ามเนื้อหัวใจตาย และมีโรคแทรกซ้อนสูง แต่ไม่มีรายใดเสียชีวิต

The term "unstable angina" is said to be present when angina pectoris first begins, angina pectoris has been present for less than 6 weeks; angina pectoris is increasing in frequency and duration; angina pectoris is provoked with less than usual stimuli or angina occurs at rest. Patients with such complaints are considered to be in jeopardy of having a coronary event such as myocardial infarction or sudden death within a few days, weeks or months.[1,2] Many synonyms were used for unstable condition such as impending myocardial infarction,[2] coronary failure[3], the intermediate coronary syndrome[4], etcetera.

This prospective study was intended to discover the natural history of patients with unstable angina in the intensive care unit (ICU), Chulalongkorn hospital.

MATERIALS AND METHODS

All patients who fulfilled the inclusion and exclusion criteria were recruited for the study. They stayed in ICU, department of medicine, Chulalongkorn hospital for three days or more and then were transferred to the wards. They were monitored for electrocardiogram (ECG), and vital signs. Their venous bloods were sent for cardiac enzymes on 3 consecutive days, and a standard 12-leads ECG were done for 3 consecutive days or as necessary such as whenever cardiac arrhythmia developed. Conventional therapy with nitrates, beta-blockers and calcium antagonist were prescribed in addition to analgesics.

The outcome was measured in terms of mortality rate, nonfatal myocardial infarction (NFMI) and acute complications. Interviews and physical examinations were performed on the first day of admission.

The unstable angina patients must fulfill all of the following criteria.

Inclusion criteria

History criteria : Pain[5]

1. Angina pectoris of new onset (less than 6 weeks)
   - 1A. on effort
   - 1B. at rest
2. Crescendo angina (increased duration, frequency of pain or decreased response to treatment)
   - 2A. on effort
   - 2B. at rest

Physical examination criteria

There were no clinical signs of congestive heart failure (CHF), cardiac arrhythmia, shock or hypotension on the first day of admission.

ECG criteria

The attack of pain was not associated with new or persistent Q wave on admission.

Exclusion criteria

1. Missed diagnosis
2. The patient who had any complications before admission such as cardiac arrhythmia, left ventricular dysfunction etcetera.

Criteria for acute myocardial infarction (AMI)

Requires two or more of the following :

1. History criteria : Angina pain was severe and prolonged for more than 30 minutes

2. ECG criteria : The ECG underwent a series of changes beginning with ST-T and T-wave changes followed by the development of abnormal Q waves.

3. Cardiac enzyme criteria : Creatine phosphokinase (CPK), Serum glutamic oxaloacetic transaminase (SGOT), lactic dehydrogenase (LDH) were rising in consistent with myocardial necrosis or more than two folds above the upper limit of normal values.

RESULTS

1. Age and sex

Of the 95 patient with unstable angina, 60 cases were male and 35 cases were female, ratio of male to female was about 2 : 1. Their ages ranged from 33 to 84 year (mean age 59.5 $\pm$ 10.4 years). Patients in the age-group 51-60 years had the highest incidence of AMI and/or acute complications.

2. History of previous illness.

Of 95 patients with untable angina, 20 (21.1%) had a previous history of diabetes mellitus, 40 (42.1%) had a history of hypertension, 21 (22.1%) had a previous history of MI, 60 (63.2%) had a history of angina pectoris, 45 (47.4%) were smokers.

X-ray findings.

Of the 95 patients with unstable angina, 90 (94.7%) had chest x-ray for evaluation of cardiae size. Forty (42.1%) patients an had increased cardiothoracic ratio.

Table 1. Patient - Grouping.

Group	No.	Percent
1 A	13	13.7
1 B	19	20.0
2 A	20	21.0
2 B	43	45.3
Total	**95**	**100.0**

AMI developed, almost always within 24 hours after admission, in 14 (14.74%) patients, nine were Q-infarction and 5 were subendocardial (non-Q) infarction. (table 2.)

Table 2. Acute myocardial infarction.

ECG RESULTS		NO. cases
Q-infarction	*- male*	*8*
	- female	*1*
Non-Q infarction	*- male*	*3*
	- female	*2*
Total		**14**

Of 5 non-Q infarction patients, the ECG showed ST depression with T-wave invertion in 2 cases, T-wave invertion alone in 2 cases, and 1 case of normal ECG. (table 3.)

Table 3. ECG in non-Q infarction.

ECG RESULTS	NO. cases
Depressed ST with inverted T wave	2
Inverted T wave	2
Normal	1
Total	**5**

Of the 14 cases with acute MI, 6 (42.9) had complications (Table 4.)

Table 4. AMI with complications.

Complications	No. cases
VT with cardiogenic shock	1
SVT with aberration	1
Second degree AV block type I	1
PVC	2
Frequent APC	1
Total	**6**

Of 79 patients without MI, 26 (27.37%) developed complications within 7 days hospitalization. (Table 5.)

Table 5. Acute complications (in non-MI).

Complications	No. cases
Cardiac arrhythmia	
: PVC	15
: AF	5
: VT	1
Heart block	
: First degree AV block	2
: second degree AV block	1
: third degree AV block	1
: SA block	1
Acute CHF	6
Total	**32**

Note Some patients developed more than one complication
PVC = premature ventricular contraction,
AF = Atrial fibrillation,
VT = Ventricular tachycardia,
AV block = Atrio-ventricular block,
SA block = Sino-atrial block
APC = Atrial premature contraction
CHF = Congestive heart failure

Discussion

Krauss et al.[6] followed the clinical course of 108 patients with acute coronary insufficiency (ACI), there was only a single hospital death. Six others developed late MI during their hospitalization. Patients who presented with a deterioration of chronic angina had a significantly increased mortality rate as compared to those with the recent onset of coronary pain. All six hospital MIs and the single hospital death occurred in patients with recurrent pain after admission to the coronary care unit. Gazes et al.[7] reported 20% (29 of 140) of the patients developed an AMI within eight month after the onset of preinfarctional (unstable) angina with an associated mortality of 41.4% (12 of 29). A combination of high-risk factors in a patient eg., frequent angina in the hospital, previous stable angina and ischemic ST change during pain, were identified.

There was no mortality in this study, previous studies on unstable angina revealed a hospital mortality of 0-60%. The incidence of nonfatal myocardial infarction during hospitalization in our study was 14.74%, previous studies have reported an incidence of 7-80%[6-11] The difference in the mortality and nonfatal myocardial infarction between our study and the previous studies was probably because of the different definitions of unstable angina and patient selection. The Unstable Angina Pectoris National Co-operative Study Group reported a hospital mortality of 3% for patients treated medically. Their study also indicated an incidence of 8% for nonfatal myocardial infarction during hospitalization.[12]

There is considerable controversy about what is the most appropriate treatment for patients with unstable angina, some workers suggest that a conservative approach is all that is necessary.[13] Others support the early use of invasive techniques, including angioplasty, and operation.[14] Much of the conflict may be due to the difference in the definition of unstable angina.

In patients with severe angina, treatment with nitrates, beta blockers, and calcium antagonist would theoretically be the best approach. Betablocker is designed to prevent or blunt spontaneous rise of heart rate of blood pressure, or both, that could precipitate angina at rest. The addition of nitrates also helps to reduce blood pressure and venous filling pressure.[15,16] A decade of experience has established that combined therapy with propranolol and long-acting nitrates can stabilize patients with unstable resting angina and reduce the indidence of myocardial infarction and death compared with the incidence in the 1960s, before the availability of beta-blockers.

In conclusion, This study has shown that patients with unstable angina have high morbidity with a high incidence of AMI (14.74%), and of acute complications (27.37%).

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