	stenosis of the lesion related to MI at the initial study				
	≤25%	50%	75%	90%	99%
Group I(n=16)	7	4	4	1	0
Group II(n=6)	3	2	0	1	0
Group III(n=6)	2	2	1	1	0
Group IV(n=1)	0	1	0	0	0

These results suggest that 1) myocardial infarction is associated with sudden progression from the lesion with less than 75% stenosis in the extent and severity of coronary obstructive lesions and 2) there is no significant relationship between patterns of onset in MI and degree of stenosis in the lesions evaluated at the initial CAG.

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CLINICAL PROFILES OF ACUTE PHASE IN MYOCARDIAL INFARCTION WITH NO SIGNIFICANT STENOSIS DURING CHRONIC PHASE

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To describe how coronary artery occlusion can resolve with time and to assess the effect of spontaneous recanalization of infarct vessel on LV function, we analyzed 41 cases of myocardial infarction with no significant stenosis (≥50%) during chronic angiogram (NSMI). NSMI were divided into 2 groups according to acute angiographic evidence; patients who had stenosis exceeding 90% (25 cases Group 1) and who had 75% or less (16 cases Group 2). The factor related to regression of stenosis were thrombolysis with PTCA in G1 and relief of spasm with intracoronary NTG in G2. Acute LVEF were similarly low in both group. However, chronic EF were significantly lower and max CPK were significantly higher in G1 than G2 (acute EF G1:56±14, G2: 61±15 NS, chronic EF G1:55±13, G2:78±8 P<0.01, max CPK G1:3696±2158, G2:495±422 P<0.01). Moreover, G2 were divided into 2 groups according to acute EF; patients with or without asynergy. Both subgroups revealed normal chronic EF and slightly elevation of CPK. These data indicate that the difference of main factor related to coronary artery occlusion-thrombus or spasm-is an important determinant of myocardial injury by ischemia-irreversible necrosis or stunning.

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AN IMMUNORADIOMETRIC ASSAY OF SERUM CARDIAC MYOSIN LIGHT CHAIN I -A NEW METHOD OF MYOCARDIAL INFARCT SIZING-

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We have reported that serum cardiac myosin light chain I (LCI) analysis by radioimmunoassay (RIA) could provide an accurate method for sizing myocardial infarction. Furthermore, the determination of serum LCI could evaluate quantitatively the effect of intracoronary thrombolysis on the extent of myocardial damage in the patients with acute myocardial infarction, since the liberation of LCI from damaged myocardium into the serum did not appear to be affected by coronary reperfusion. However, in spite of its clinical usefulness, RIA of LCI in serum could not be applied as a generally used method for infarct sizing, because of the limitation of the antibody preparation for the assay. Recently, immunoradiometric assay (IRMA) has been applied for the determination of protein concentrations with special reference to its specificity, short reaction time and large scaled

productivity with relative ease. Thus, we have developed a sensitive IRMA of serum LCI using two types of monoclonal antibodies (MLM508, MLM544) specific for LCI. In this assay, 100 µl of serum was added with 200 µl of 125I-labeled MLM508 (5x 10⁴cpm) to the tubes coated with MLM544 and incubated for 2 hours. Amount of bound LCI in serum was quantitated by counting the tubes after washing. One ng/ml of serum LCI could be measured by this method. We determined serially serum LCI by this IRMA in 75 patients with acute myocardial infarction within 12 hours after the onset of chest pain. A good correlation was observed between serum LCI concentrations determined by IRMA and RIA (r=0.92). Again, we observed that peak LCI levels correlated with left ventricular ejection fraction (r=0.79). Thus, an immunoradiometric assay of serum LCI can provide a clinically useful and accurate method for myocardial infarct sizing even after intracoronary thrombolysis.

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CORRELATION BETWEEN ANATOMIC MYOCARDIAL INFARCT SIZE, TOTAL CPK RELEASE AND A QRS SCORING SYSTEM IN 12-LEADS ECG

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Myocardial infarct size is definitely related to cardiac function and prognosis. For critical evaluation of the infarct size estimation, we weighed infarcted myocardium in 44 autopsy cases (24 men and 20 women, mean age of 76.8±8.7 y.o.), and compared with peak serum CPK activity (peak-CPK), peak serum CPKMB isoenzyme activity (peak-CPKMB), total CPK release (ΣCPK), and a QRS scoring system in 12-leads ECG modified by Wagner et al., respectively. Mean infarcted myocardial weight (MI weight) of 44 cases were 38.4±19.1g. Mean value of peak-CPK, peak-CPKMB and ΣCPK were 2487±2344, 221±208, 4597±3750 IU/ml, respectively, and mean QRS score was 7.2±3.4 points. Interval between serial CPK determination, ECG recording and autopsy averaged 130.1 and 52.4 days, respectively. There were significant correlation (p<0.01) between MI weight and peak-CPK (r=0.63, n=17), peak-CPKMB (r=0.79, n=17), ΣCPK (r=0.72, n=11), and a QRS scoring system (r=0.64, n=39), respectively. Especially in cases of non-transmural myocardial infarction, a QRS scoring system showed good correlation with MI weight (r=0.82, n=11, p<0.01).

We concluded that peak-CPK, peak-CPKMB, ΣCPK, and a QRS scoring system were useful for the estimation of myocardial infarct size.

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COMPARATIVE STUDY OF RECONSTRUCTION AND ECG FINDINGS OF INFARCT HEART AUTOPSY CASES

-FIRST REPORT: Q WAVES AND INFARCT SIZES-

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The purpose of this study was to clarify the relationship between myocardial infarct sizes and ECG findings, especially Q waves. From 20 autopsy cases of acute myocardial infarction, we prepared large heart specimens cut transversely at 8mm intervals from apex to base, and investigated the relationship between Q waves and infarct volume and expansion.

1. In examples showing QS waves at I, aVL, V1-V5 or V6, the infarct area (recognized between the apex and cardiac base) amounted to over 40% of the total myocardial volume.
2. In anterior infarct cases showing Q wave from V1-V5 or V6, with no Q waves in extremity leads, the infarct volume is 20.4 - 38.7%.
3. Inferior infarction with QS waves at II, III, aVF showed the same infarct size as anterior infarction with QS waves at V1-V3. These sizes were 10.3-17.9% and 15.9-19.0% respectively.
4. In 14 cases of anterior infarction, all were recognized as infarct areas as far as cardiac apex, but in 6 cases of inferior infarction, only one case was recognized.

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A STUDY ON ELECTROCARDIOGRAPHIC CHARACTERISTICS OF INFERO-POSTERIOR MYOCARDIAL INFARCTION CAUSED BY RIGHT CORONARY OR LEFT CIRCUMFLEX ARTERY OBSTRUCTIONS

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In order to investigate the relations of electrocardiographic abnormalities to the site of coronary artery obstructions, 85 patients with myocardial infarction (at one month after acute episode); 54 of right coronary (RCA) and 31 of left circumflex artery (LCX) obstructions were selected. According to the American Heart Association classification, the RCA was subdivided into three segments; segment (seg) 1, seg 2 and distal site to seg 3, and the LCX into 2 segments; seg 11 and seg 13, respectively.

The segment of the obstructed artery was compared with the standard 12-lead electrocardiographic findings and the results were obtained as follows.

- 1) RCA obstructions frequently demonstrated "Q in III, aVF, II and R/S in V₁<1"
 - i) "QS in III, aVF and II" were highly correlated with seg 1 obstructions.
 - ii) "QS in III and aVF" were frequently associated with seg 2 obstructions.
 - iii) "QR in III and aVF" were well correlated with seg 3 obstructions.
 - 2) LCX obstructions frequently demonstrated "R/S in V₁ ≥ 1, initial r in aVR ≥ 0.1mV and Q in V₆"
 - i) "Q in aVL" was highly correlated with seg 11 obstructions.
 - ii) "QR in II, III and aVF" were frequently associated with seg 13 obstructions.
 - 3) "initial r in aVR ≥ 0.1mV" was highly specific and predictive of LCX or RCA seg 1 obstruction.
- It is concluded that observation of Q wave pattern and its location, R/S in V₁ ≥ 1 and initial r in aVR ≥ 0.1mV on ECG at one month after acute MI was highly reliable in predicting the site of RCA or LCX occlusion.

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RELATION BETWEEN TREND PATTERN OF

HEART RATE AND CLINICAL FEATURE IN ACUTE MYOCARDIAL INFARCTION

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In 50 patients with acute myocardial infarction (AMI), Holter ECGs were recorded for serial 7 days.

Plasma catecholamines and serum CPK level were also measured for serial 7 days, especially five times each four hour on admission day.

Two dimensional UCG was performed on 1st, 4th and 7th day. Two types were observed in the trend pattern of heart rate; Flat type (F-type) showing flat fluctuation was observed in 6 patients, while Spike type (S-type) showing episodic and steep fluctuation in 44 patients.

F-type showed following features compared with S-type;

- (1) Mean heart rate was significantly higher. (93/min vs 75/min)
- (2) Incidences of LV failure and Death were significantly higher. (66% vs 18%, 66% vs 6.8%)
- (3) Peak serum CPK level was significantly higher. (4639 IU/L vs 2525 IU/L)
- (4) EF was significantly lower and malignant ventricular arrhythmia was more frequent. (39% vs 52%)
- (5) Peak plasma Norepinephrine (NE) level was significantly higher (1715pg/ml vs 954pg/ml)

We concluded that F-type was an indicator of poor prognosis of AMI and was induced by abnormal high plasma concentration of NE.

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CLINICAL SIGNIFICANCE OF AaDO₂ IN PATIENTS WITH ACUTE MYOCARDIAL INFARCTION

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To evaluate the clinical significance of AaDO₂, arterial blood gas analysis were obtained in 86 patients with their first acute myocardial infarction. Arterial blood samples were taken within 24 hours after the onset of chest pain while patients were breathing room air. Hemodynamic parameters were obtained by Swan-Ganz catheter. Plasma colloid osmotic pressure was calculated by Nitta-Staub's equation. Wall motion point score was analysed by two dimensional echocardiography in 25 patients within 3 days after admission. Age, preinfarction angina, diabetes mellitus and smoking had no significant relation with AaDO₂. AaDO₂ and PaO₂ had no significant correlation with hemodynamic parameters (cardiac index, mean right atrial pressure, pulmonary capillary wedge pressure, the gradient between plasma colloid osmotic pressure and pulmonary capillary wedge pressure). AaDO₂ in patients with peak CPK