

ACUTE MYOCARDIAL INFARCTION WITHOUT CORONARY CARE

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The care of cases of acute myocardial infarction has given rise to many energetic arguments. This is partly because for a long time, this care has been no more than an expectant one, where the patient was put to bed with supportive treatment and permitted to recover after a due period of time of rest, with the doctor only watching for complications. Naturally, the doctor would jump at any opportunity to be able to participate actively towards the recovery of the patient, and psychologically, he is biased towards the value of any active system in the treatment of acute myocardial infarction. The advent of anti-coagulant therapy has illustrated this point to the full, in that as soon as it came into being, very enthusiastic reports were published, suggesting that the regimen could be responsible for a dramatic reduction of mortality (Wright, 1964). Subsequently, the treatment was extended for long-term care after the acute episode, and again many enthusiastic reports have been published to show that the long-term morbidity and mortality have all improved dramatically. However, with controlled trials and more extensive studies by different centres, it has become more and more evident that anti-coagulant therapy is only of marginal value, if indeed there is any, in the care of coronary heart disease as a long-term prophylaxis (Brit. Med. J., 1970); and even in cases of acute myocardial infarction, most workers accept that the value is only in the reduction of death through thromboembolism. In countries where thromboembolism is not a common feature, such as in Singapore, then the value of anti-coagulant therapy in acute myocardial infarction would have questionable advantage, and in fact, a controlled study with a small number of cases has shown that there is really no evidence of benefit in its use (Gwee, 1963). The advent of coronary care units using monitoring has led to a resurgence of interest in active therapy, and the doctors again see in this a chance of active participation, and again, history seems to be repeated in that very quickly many enthusiastic reports have been made of the value of monitoring an acute coronary case, and dramatic improvements in mortality figures have been reported from various centres. Locally,

Toh *et al* (1970) reported on the results of intensive care of acute myocardial infarction in a coronary care unit in 1968, and although the final total mortality rate of 22.2% cannot be said to be a dramatic reduction or even a significant improvement on the reported coronary mortality in the acute stage in Singapore, the authors conclude: "It would appear that a well-run and adequately staffed coronary care unit can lower the hospital mortality of acute myocardial infarction. The overall mortality of 22.2% for the first 12 months is *superficially not different from the rates in other units*, yet it was obvious that in the first 12 months, one patient was revived from "death" and another 2 from a moribund state, and there were others with very serious arrhythmias and cardiac failure who might have died had they not been detected and treated early in the unit."

Simultaneous with the use of cardiac monitoring in Medical Unit II and in other medical units, Medical Unit III did not make use of monitoring in coronary care, and we like to report the results of a similar period (1968) so that comparison of mortalities may be made to provide a basic idea of the probable value of coronary care in Singapore.

METHOD

There are 3 medical units in Outram Road General Hospital, Medical Units I, II and III, and of these, Medical Units I and II possess cardiac monitoring, but Medical Unit II runs intensive care units systematically whereas Medical Unit I uses the coronary care monitoring in selected cases only. No case however is put to cardiac monitoring in Medical Unit III. The 3 units take turns to admit cases from a common admission point, and no pre-selection of cases is exercised by the units themselves, other than a small number of cases admitted to the paying beds, where it is conceivable that selective referral to individual units exercised by the General Practitioner may make a difference. However, paying beds account for less than 20% of the total bed strength, and hence it is unlikely that they can affect the pattern of

admission very much. Further, it is likely that with attention drawn to the existence of a coronary care unit, the G.P. referrals would increase in the way of a more ready attitude in the direction of private patients, and from our past experience, this can result in a greater admission of milder and non-characteristic, or even pseudo-coronary cases, and this bias would tend to improve the results of mortality in coronary care units. All cases of myocardial infarction admitted into the unit were put under the same routine management, namely, bed rest for the first 2 weeks, morphine and other sedatives when required, treatment for heart failure, or hypotension if required, and digitalisation with procainamide or quinidine when the need arose. The cases were divided into 3 categories: those who had the classical acute myocardial infarction pattern with shock, or cardiac failure, and extensive infarction were regarded as severe; those who had the characteristic infarction pattern without shock or cardiac failure and other complications were regarded as moderate; those where the infarction had been minimal and the case had been relatively well were regarded as mild.

TABLE I

COMPARATIVE INCIDENCE DATA (1968)

Total Hospital (Outram Road General Hospital) admission	-	49,405
Total Medical Unit III admission		4,593
Total Cardiac cases registered in M.U. III	- - -	901
Total number of coronary heart disease in M.U. III	- -	183

TABLE II

SEX AND RACIAL DATA

	Male	Female
Chinese	75	20
Indian	42	3
Malay	21	2
Others	13	7
TOTAL	151	32

Ratio of Chinese (75) to Indian (42) to Malay (21) males = 3.5 : 2 : 1.

Ratio of Chinese (20) to Indian (37) to Malay (2) females = 10 : 1.5 : 1.

RESULTS

Over a period from 1st January, 1968 to 31st December, 1968 (Table I), 183 cases of coronary heart disease were registered in Medical Unit III and this represents the incidence of coronary heart disease in a total admission of 901 cardiac cases in Medical Unit III. The total admission of Unit III for the year was 4,593 cases which was approximately 10% of the total admission of the hospital, and equivalent to the admissions in Medical Unit I and Medical Unit II. Table II shows the information of sex and ratio data and it is observed that the ratio bias is represented by Malays to Indians to Chinese equivalent to 1:2:3.5 in the male and 1:1.5:10 in the female. It has been pointed out previously when discussing cerebrovascular diseases in Singapore (Gwee *et al*, 1970) that at this particular age group when they are coronary-prone, the population ratio is actually as follows:— Malays to Indians to Chinese = 7.5:1:21. These figures show that there has been no population bias in the case of Chinese and Malays in the male. The female cases were too few to permit any reliance on the interpretation of the figures. The very high incidence of Indian patients can be partly explained by the fact that Indian males exceed Indian females at this age. This would therefore further confirm that Indians in Singapore seem to be more prone to coronary thrombosis than either Chinese or Malays. The sex ratio in toto is about male to female 5:1. But when broken down according to race, it can be seen that whereas in the Chinese, this ratio is 3:1, for the Indians and for the Malays it rises to 10:1 or more. This however is due to the fact that at this particular age distribution, there are more males among Indians and Malays than females compared to the Chinese, whose sex distribution is almost equal, with the females exceeding the males.

Table III shows the age distribution and it can be seen that cases of coronary thrombosis occur as early as the fourth decade but the bulk is in the 5th, 6th and 7th decades. Table IV shows the admission data on 181 cases (2 of the 183 cases being not traceable, the only available information is that they were coronaries and age group they belonged to). It can be seen from Table IV that 74 cases representing 40.8% were admitted within 24 hours of the onset, and in fact 2 of these cases arrived at the ward dead. The E.C.G. showed tracing was found abnormal in all cases. Enzyme changes occurred in 40% of them compatible with the observation that almost half of them were admitted within 24 hours.

TABLE III
AGE DISTRIBUTION
(183 Cases)

	Male	Female	Total
Under 30	0	0	0
31-40	9	0	9
41-50	51	7	58 (31.6%)
51-60	43	11	54 (29.5%)
60 →	44	16	60 (33.0%)

TABLE IV
ADMISSION DATA
(181 Cases, 2 Not Traceable)

Admitted within 12 hours			
from onset - - -	58	} (40.8%)	
Admitted within 12-24 hours			
from onset - - -	16		
Admitted within 1-7 days			
from onset - - -	73		
Admitted over 7 days from			
onset - - -	34		
E.C.G. classical fresh infarct	156	(86.0%)	
E.C.G. abnormal but not			
classical pattern - -	35		
E.C.G. normal - - -	0		
S.G.O.T. raised - - -	73	(40.3%)	
Morbidity—severe - -	61	(33.8%)	
Morbidity—moderate -	59	(32.4%)	
Morbidity—mild - - -	61	(33.8%)	
Typical angina - - -	98		
Non-specific chest pain	24		
Dyspnoea sudden onset	62		

The distribution of morbidity in our series can be seen to be approximately 1:1:1 in terms of severe (61), moderate (59), and mild (61) cases compared with the admission break down of Medical Unit II reported as severe (17) to moderate (34) to mild (66) equivalent to 1:2:4, which is a further illustration that when it gets known

that a coronary care unit is functioning, it tends to attract more referrals and in consequence more mild cases of coronary thrombosis. Chest pain either typical angina or non-specific and dyspnoea were the 3 commonest modes of presentation of myocardial infarction. Table V shows the complicating factors based on 181 cases. This shows that 13 of them had a previous attack of coronary thrombosis, 27 had diabetes, 47 had hypertension and 20 of them had hypotension equivalent to shock during admission. 8 of them were complicated by cerebrovascular diseases either occurring before the episode of myocardial infarction, or during, or after. Attempts to get history of smoking were not very successful, but 60 of them admitted to smoking cigarettes regularly, whereas 121 persons were either non-smokers or their status of smoking was unknown. Table VI shows the results of the outcome of immediate hospital treatment during the acute phase which is 4 weeks in the hospital as a routine; but because some patients take their discharge earlier, or sometimes because of the bed situation, a number of patients are discharged earlier, the average stay has been 3 weeks. 24 cases died within the first 2 days, including 2 who arrived dead at the ward; after two days but within the first week 2 cases; after the first week or before discharge, 6 cases; making a total of 32 cases. Table VII shows the relation of severity and mortality arranged into grades. It will be seen that the mortality of the severe group comes to over 30%, whereas the mortality of the moderate group comes to 11%, and the mortality of the mild group is only as low as 3%. Finally, on following up further, 57 of the cases were not traceable. On the other hand, of the remaining that were traceable, 55 of the cases went back to their original work within 3 months, 40 went back to their original work after 3 but before 6 months, but 29 of them went back to lighter work only, and 2 of them were completely invalidated. In other words, about 1/6 of the cases definitely were not able to go back to their original work.

SUMMARY

The results of coronary care in a unit without cardiac monitoring for the year 1968 is presented, and it is shown that although the admission figures and the incidence of coronary disease amongst the admitted cases were approximately similar to a published report from another unit with intensive coronary care, the mortality figure was better than with intensive coronary care. However, with the smallness of the number, this

TABLE V
COMPLICATING FACTORS
(Total 181 Cases)

Previous attack of coronary thrombosis - -	13	7.0%
Diabetes mellitus - -	27	15.0%
Hypertension - -	47	26.0%
Hypotension - -	20	11.0%
Complicated by cerebrovascular episodes either before, during, or after	8	4.4%
Smokes more than 20 cigarettes - - -	26	} 33.1%
Smokes less than 20 cigarettes - - -	34	
Status unknown or non-smoker - -	121	

TABLE VI
RESULTS

Total deaths in hospital	32	17.5%
Died within 1st 2 days -	24	75.0%
	(2 arrived dead)	
Died within 1 week -	2	6.3%
Died over 1 week but before discharge - -	6	18.3%
	(Adv. stage 3 weeks)	
Deaths after discharge -	4	
Back to normal work within 3 months - -	55	30.0%
Back to normal work 3-6 months - - -	40	22.1%
Back to lighter work only	29	16.0%
Completely invalided -	2	1.1%
Unknown - - -	57	31.5%

TABLE VII
SEVERITY AND MORTALITY
(181 Cases)

	M/Total	F/Total	Total	% Mortality	% of Admission
Severe	19*/46**	4/15	23/61	37.7% (64.7%)	33.8% (14.5%)
Moderate	5/51	2/8	7/59	11.8% (41.2%)	32.4% (29.1%)
Mild	2/50	0/11	2/61	3.3% (1.5%)	33.8% (56.4%)

* = Dead during hospitalisation. ** = Total cases admitted. () = Figures reported by Toh *et al.*

difference is not extremely significant, but it is sufficient to show that the presence of monitoring does not seem to make any material difference to the immediate mortality of acute myocardial infarction in the first few weeks.

In conclusion, the figures obtained from our unit compared with the figures as reported from Medical Unit II show that there is no serious difference between the morbidity and mortality of coronary infarction in the first few weeks, irrespective of whether cardiac monitoring is done or not done. In fact, the figure seems to be biased in the favour of our unit where cardiac monitoring was not done. This lack of difference cannot be ascribed to selection bias as the proportion of severe to mild cases was about the same, and for the period in question, no case was

transferred out of M.U. III for monitoring in another unit thereby decreasing the mortality figure of the unit.

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