

## Leading Article

# The management of patients after a myocardial infarct

D C Banks<sup>1</sup>

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The management of patients after a myocardial infarct has changed radically over the last three decades.

In the early 60's, the practice was to keep patients in bed for a long time. Three weeks total bed rest was followed by 3 weeks mobilisation in hospital. In the 1990's patients are kept in hospital for shorter and shorter periods. Two or three days in a coronary care unit is common and a total stay in hospital of one week is the norm. This has come about because in the 60's, practice was based on the knowledge demonstrated by pathologists that an infarct took about 12 weeks to heal, and in the 90's, the physicians knowledge that resting does not help. This has meant that the risks of the 60's such as deep vein thrombosis, disuse atrophy and the development of patients who were crippled by their heart disease has been replaced in the 1990's by fewer patients who have more complex problems such as arrhythmias, and sudden death. This change from keeping patients in bed a long time, to a short time was accompanied by a period of investigation of the pharmacological possibilities of drug interventions. I will review these roughly in the order they were studied.

### **Betablockers**

Several studies were carried out with various betablockers and some of these showed a benefit. In particular, a study carried out with Timolol in Norway<sup>1</sup> which despite being relatively small in terms of numbers, showed a distinct benefit. Because of this, various other studies were carried out involving a large number of patients. One of these reported in 1981<sup>2</sup> showed a mortality in the placebo group of 8.9% and in the group treated with Metoprolol of 5.7%. As well as being large, this was one of the earliest studies which was analysed by "the intention to treat" principle, so that all patients who were admitted to the study, were accounted for and included in the analysis. Follow up showed that there was benefit early and that this continued throughout

the 90 days of the study. Because of the relatively low placebo death rate, it became clear that not only were a large number of people needed in a study, but many people would need to be treated to gain benefit for a few. This leads to the important point that we have to weigh up the benefit from the treatment against the adverse affects. This is particularly true with the betablockers as many patients feel tired and lethargic whilst taking them. There does not seem to be evidence that any one particular group of the betablockers is any better than any other.

### **Calcium Channel Antagonists**

On the whole, studies with Calcium Channel Antagonists have been disappointing, although Verapamil<sup>3</sup> has been shown to be of some use.

### **Nitrates**

These have proved themselves useful in the management of the acute problem when pain is difficult to control but have not been helpful in preventing re-infarction or death.

### **Thrombolytics**

Because of the disappointing results with Calcium Channel Antagonists and Nitrates. Some of the older drugs were investigated, in particular, streptokinase which had been introduced some time earlier but because patients developed an allergic reaction on repeat exposure had fallen out of favour. However, during the 1980's, its use post myocardial infarction has been explored extensively. There have been two major studies done on this. The first one in Italy which is known as the GISSI<sup>4</sup> study and the second ISIS II<sup>5</sup> which was co-ordinated in the United Kingdom. At the same time that these studies were being carried out, Aspirin was being explored because of its antiplatelet activity and one of the results of the ISIS II study was that streptokinase and Aspirin were cumulative in their effect. It was also true that age did not seem to make any difference to the benefit and there was the suggestion that there might be an increase in benefit in older patients. Various other thrombolytic drugs

<sup>1</sup> *Consultant Physician and Cardiologist, Nottingham City Hospital, UK.*

have been used and seem to be efficacious however, streptokinase is the cheapest simplest drug which has been most extensively investigated and is used as the drug of choice unless the patient has been exposed to it in the preceding six months. In this case, one of the more sophisticated thrombolytic therapies should be used.

### Ace Inhibitors

Earlier this year there was a report from the United States of America which showed that captopril<sup>9</sup> reduced mortality in those patients who had evidence of left ventricular dysfunction after myocardial infarction.

### Magnesium

Also this year there has been a study published<sup>7</sup> on 2,000 patients who were given a large dose of magnesium sulphate intravenously followed by a slow infusion of the drug over 24 hours. Magnesium is known to cause coronary and systemic vasodilatation and inhibit platelet aggregation. In addition, it has an antiarrhythmic effect. The mortality at 28 days in those patients given magnesium was 7.8% and in those given a placebo was 10.3%. In view of this study, it may well be that magnesium will enter into the armamentarium of patients after they have had a heart attack.

### Exercise

All advances in patients after heart attacks have not been pharmacologically based. In particular, the trend has been not only towards early mobilisation but to increasing activity so that activity levels are higher than before the heart attack. There are good physiological reasons which explain why training in those patients who have suffered heart damage leads to an increase in their ability to exercise more with less adverse effects. Many studies have been done on this but most of them are too small to demonstrate any significant benefit. However, Metanalysis<sup>8</sup> suggests that organised increase in physical activity after a heart attack is beneficial. This has to be set against the background that in the western world the majority of people do not exercise a great deal even when they are well. There have been studies carried out in Canada<sup>9</sup> and the UK, that demonstrate that for many people, walking up an incline at 3 mph would be considered to be strenuous activity. This is partly because of the sedentary life style in western countries and also because people over estimate the energy expenditure required for common physical activity. As well as the physical benefit from rehabilitation, there is also a major psychological

component which makes the patient feel better and more able to cope with their normal life style. The benefit of cardiac rehabilitation is perhaps most clearly demonstrated by the rapid increase in the number of rehabilitation programmes being established each year in the UK<sup>10</sup>. Which is still small but has risen from one per year up to 1974 to 12 per year at the end of the 1980's.

### Other measures

As well as the pharmacological interventions, and the rehabilitation, it is important to remember to introduce other measures which reduce risk factors. Such as stopping smoking, losing weight and reducing blood pressure.

### Summary

Figure 1 — schematically illustrates current standard practice in the UK. In the future intravenous magnesium sulphate may be added to this and an ace inhibitor would be used in those patients who have developed evidence of left ventricular failure dysfunction.

### References

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