THE MANAGEMENT OF CARDIAC INFARCTION

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This article is concerned with patients suffering from cardiac infarction, rather than so-called acute coronary insufficiency. For complete diagnosis the former should have, during the first few days, a mild fever, raised sedimentation rate, leucocytosis and excess urine uroblinogen. In addition a significant Q wave should be present in the electrocardiogram.

Immediate Management

(a) Of patients without extensive infarction.

When first seen within a few hours of the onset, these patients are usually recovering from their chest pain, have mild dyspnoea and have little or no drop in blood pressure. Especially if pain has been severe the blood pressure may even be a little higher than the normal level for them. There is sometimes a presystolic gallop rhythm heard but the jugular venous pressure is seldom raised. The main symptom is anxiety. Such patients should be propped up on several pillows which will reduce the work of the heart and often relieve pain. Morphia should be given in adequate dosage. The decision whether or not to nurse at home must depend upon social circumstances. In any case it is rarely necessary to move any patient for the first 24 hours. Subsequently hospital care has the advantage of removing patients from domestic and working worries and makes easier the control of anticoagulant therapy if it is decided upon.

During the first few days there is statistical evidence that the diet with advantage should contain about 800 calories per day. Morphia is best given for the first few nights before patients are weaned on to a barbiturate. By day, small doses of phenobarbitone are usually prescribed. If patients do not worry about their bowel action the doctor need not either, but as this is so rare liquid paraffin or other mild aperient may make circumstances happier. It is not often necessary to give an enema, but if it is olive oil is the best form. Bed pans are to be condemned and a commode should be used. There is experimental evidence that quinidine

sulphate, 5 gr. q.d.s. by mouth, or pronestyl (procaine amide hydrochloride), 250 mg. q.d.s. by mouth, reduces the incidence of ventricular arrhythmias.

(b) Of patients with extensive infarction.

Here the picture may be of intense pain or syncope, dyspnoea and elevation of jugular venous pressure. In those with syncope, and in some without, the blood pressure may drop to well below 100 mm. Hg systolic, and as this represents a 'vaso-vagal' attack there may also be a bradycardia. If such patients feel faint they are best lain flat, but if they do not, and especially if the jugular venous pressure is much raised, a few pillows should be allowed. The dose of morphia required depends upon the severity of pain, but it is always wise to give a large dose and, if necessary, intravenously. There is still insufficient evidence concerning the cardiac output of such patients, for the obvious reason that cardiac catheterization in patients especially susceptible to arrhythmias should not be performed. It is hoped that information will be forthcoming by the use of the dye method of calculating output. With this deficiency of knowledge therapy of the 'shocked' patient is still not established. Methods tried have been intra-arterial transfusion and the use of various pressor agents such as methedrine and nor-adrenalin.

Oxygen therapy has been used when pain is intense with some relief. Clearly there is no reason why the arterial oxygen saturation should be reduced and it is presumed that the effect is to increase the plasma oxygen tension.

Early movement of these patients to hospital may be highly dangerous and, if at all possible, they should be nursed at home at least for several days.

Later Management

The routine practice following cardiac infarction is bed rest for four weeks, followed by three to four weeks moving quietly about at home, and a final three to four weeks increasing activity before

returning to work. These are not just haphazard periods of time for in experimental infarction in animals three weeks are required for the infarcted area to become firmly fibrotic, and certainly cardiac infarction in mental patients who cannot be controlled is associated with an increased incidence of cardiac rupture. Good prognostic signs are absence of cardiac failure and gallop rhythm, slight or absent chest pain on effort, return of blood pressure to near-normal for the patient, and ability to lead a life without excessive tension or effort.

Levine and Lowe (1952) reported last year the 'arm-chair' treatment of nursing at the end of the first week unless patients were debilitated, still 'shocked,' or had cerebrovascular accidents. They claim that cardiac output and pulmonary congestion were reduced, that thrombo-embolic complications were less and anxiety lessened. This is a very practical suggestion and it is only hoped that more suitable arm-chairs will be provided in hospitals.

The Anticoagulant Problem

There is no doubt that the risks of thrombo-embolic complications can be reduced by using anticoagulants. This especially applies to pulmonary embolism secondary to phlebothrombosis of the legs and, to a lesser extent, to systemic embolism from ventricular mural thrombosis. There is little evidence that, following coronary arterial occlusion, much retrograde thrombosis occurs in the coronary arteries, and even less evidence that this is influenced by anticoagulants. There are numerous reports that in all cases of myocardial infarction the overall mortality is reduced by 6 to 10 per cent. by anticoagulants, but very few of these reports state the number of deaths attributable to their use. It is the unfortunate experience of most clinicians to have seen at least one death due to dicoumarol or tromexan therapy. This being so it does seem that it is desirable to select in some way those patients particularly liable to thrombo-embolic complications and reserve treatment for them. As there is not yet any sure haematological test to assess liability to thrombosis the decision has to be made on clinical grounds. This has been done by Russell *et al.* (1952). They found that in 'poor risk' patients who had evidence of previous myocardial infarction, intractable pain, extreme degree and persistence of shock, marked cardiac enlargement, congestive heart failure, arrhythmias, diabetic acidosis, marked obesity, varicose veins or evidence of previous thrombo-embolism, that the mortality in hospital was 70 per cent. and the incidence of thrombo-embolism 12.4 per cent. In 'good risk' patients in whom none of these were

present the mortality was 3.5 per cent. and the incidence of thrombo-embolism 0.7 per cent. They conclude that it is pointless to subject the second group to the hazards of anticoagulant therapy and this seems to be a most reasonable point of view.

If anticoagulants are decided upon heparin is the safest and most expensive. It is best given through an indwelling intravenous needle in the dosage of 10,000 units six-hourly. Alternatively it may be given with procaine in the same dosage intramuscularly into the upper and outer quadrant of the buttock; in the thigh haematoma formation is much more likely. By either method control of clotting time is usually unnecessary because the effect wears off so quickly. If bleeding should arise and must be stopped, transfusion or the intravenous injection of 5 to 10 cc. of protamine sulphate are recommended.

Heparin may be continued for three weeks or used only for the first day, tromexan being given at the same time by mouth and carried on for three weeks. The usual dose of tromexan is 0.3 g. four times during the first day, 0.3 g. twice on the second day and then the dose regulated by daily prothrombin estimations in order to keep the prothrombin time about twice normal. Attempts to stop bleeding during tromexan therapy may be made by transfusion or intravenous injection of Vitamin K (or preferably K¹).

Management of Complications

Ventricular tachycardia must be urgently treated because it may be a prelude to fatal ventricular fibrillation; 1,000 mg. of pronestyl should be injected slowly intravenously, always remembering that it is a powerful hypotensive agent. Supraventricular tachycardias are best treated by a combination of digoxin, 0.25 mg. twice daily, and quinidine sulphate, 5 to 7 gr. four-hourly by mouth. Auricular fibrillation is treated by quinidine sulphate, 5 gr. two-hourly up to a maximum of 30 gr., and auricular flutter by either aural digoxin, 0.25 mg. four times a day (stopping either when normal rhythm or vomiting occur), or 0.5 mg. of digoxin intravenously. Any of these arrhythmias considerably worsen the prognosis.

Left ventricular failure is also a very serious complication and is treated in the usual manner with low salt diets, mercurial diuretics and digitalis. When it becomes chronic it is one of the most distressing and refractory conditions encountered in cardiology.

Ventricular aneurysm, diagnosed radiologically, may present a frightening appearance and clearly may rupture, but it is at times surprising how long such patients may survive.

The surgical treatment of ischaemic heart disease is not yet established and many attempts to try and revascularize ischaemic areas have failed. However, progress is now being made and it is probable that a valuable operation will arise in the next few years. A reduction in the number of further attacks of infarction by modification of diet, such as a diet low in cholesterol, is not yet proved,

but weight reduction in the obese is logical and may improve residual pain on effort.

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CLINICAL SECTION

DYSGERMINOMA IN ASSOCIATION WITH EXFOLIATIVE DERMATITIS AND FEBRILE EPISODES

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Dysgerminomas are comparatively rare tumours but are probably commoner than granulosa cell tumours of the ovary. Their histology and varying malignancy are well known and their variable association with features of infantilism and abnormal hormonal output has been discussed in the literature. The case under review showed some unusual associated features.

Case Report

Jean C., a schoolgirl, aged 15½ years, was admitted at the request of her doctor who, while treating her for dermatitis, discovered a large abdominal swelling. Oedema of the legs had prompted abdominal palpation. The dermatitis had started three weeks prior to admission and the oedema had been present for one week.

Past history: Menstruation had commenced when the patient was aged 14 years and had been normal apart from two months' amenorrhoea when aged 15 years. The last period was two months before admission.

The girl was ill but normally developed. There was a severe generalized exfoliative dermatitis, oedema of the ankles and a solid tumour arising from the pelvis to 3 in. above the umbilicus. The temperature varied between 104° F. and 97° F.

during the first week. Apart from a sedimentation rate of 24 mm. in the hour, routine blood tests were negative.

Treatment at this stage was by intravenous thiosulphate and boracic ointment to sore areas. Progressive improvement of the skin lesions, apart from loss of hair, continued until the eighth week of hospitalization, when the first febrile episode occurred. It consisted of high fever (104° F.), vomiting, tachycardia, dyspnoea and cyanosis, fall of blood pressure and extreme prostration. After 24 hours these features disappeared. Three further similar episodes took place, five days, 12 days and six weeks later, the last one three weeks after laparotomy. During the third episode a temperature of 105° F. and a blood urea of 300 mgm. per cent. were recorded. Biochemical investigation on the blood, cerebrospinal fluid and urine during these episodes showed no abnormality.

Ten weeks after admission the skin and general condition had improved sufficiently to allow laparotomy. This revealed a left ovarian tumour and a small quantity of fluid in the peritoneal cavity. The right ovary, uterus and other abdominal organs appeared to be normal. The tumour was attached only by its pedicle and was easily removed. It was ovoid in shape and had an