The student is given an opportunity to visit one of his patients after delivery. Arrangements have been made with the health visitors' department so that the student, accompanied by the health visitor, can visit the patient in her home. The object of this visit is to observe the social impact of a newborn child and the effect on interpersonal relationships within the family. The student finally submits a case report and comments on his experience gained from the course.

Primary medical care (first year)

Each individual student visits a patient in his home four times during his first academic year. Students work in pairs and are attached to a general practitioner who has preselected one of his patients. The patient is chosen to illustrate the social implications of illness, and teaching is concentrated on these aspects because the student at this stage has no, or at least very little, knowledge of anatomy, physiology, pathology, or clinical medicine.

In each teaching session four pairs of students meet four general practitioners for the first half of the session. Each pair of students visits a patient with the general practitioner. The students and general practitioner talk to the patient for about an hour, and the emphasis is on the social background. Particular emphasis is placed on the effect the patient's disability has had on everyday living. After this students and teachers congregate for a seminar when each student is asked to report his observations and express views about the patient he has seen.

Administrative problems

The organisation of both these courses, with the increasing number of students (40-130 a year), involves considerable

logistic problems. We wanted to begin as we intended to continue, provided, of course, that the project was a success and the objectives were achieved.

In human reproduction the problems were that antenatal clinics were scattered throughout the city and the new maternity unit would not be completed until 1979. There were constraints because the main university complex was separated from the maternity unit by three miles. Also, third- and fifth-year teaching would take place within these facilities as numbers increased, and nursing staff were not accustomed to having students who had not had any clinical training. Finally, first-year students have traditional university vacations, and it was therefore difficult for them to attend deliveries other than during term time, well clear of examination time.

On the primary medical care side the main difficulties were in ensuring that there was an adequate supply of general practitioner teachers and that students were at an agreed rendezvous at a specified time.

These problems were recognised and an administrative co-ordinator was appointed to ensure that the administrative aspects of the curriculum were closely and well organised. Her responsibilities are to organise the course details, to establish personal contact with students, and to liaise with administrative and nursing staff and the clinical teachers.

Early medical contact offers a unique opportunity to introduce the student to a healthy woman during pregnancy, labour, the puerperium, and during the six weeks after delivery. It also provides for the introduction to patients in their homes, so that at a very early stage in their undergraduate careers, medical students can learn about the psychosocial and economic aspects of illness.

Today's Treatment

Diseases of the cardiovascular system

Treatment of angina

DAVID SHORT

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Nowhere is the aphorism "Diagnosis comes before treatment" more true than in managing angina pectoris.

Firstly, angina must be recognised. It is still often overlooked. Attacks of pain or oppression occurring anywhere in the torso (though usually in the region of the upper or middle sternum) precipitated by effort or emotion, and persisting for a few minutes, must be regarded as anginal. Radiation to one or both arms, the throat, lower jaw, or back provides further confirmation of the diagnosis. Difficulties in diagnosis arise when the pain is in an atypical site; dependent on a combination of exercise with cold or a recent meal; and induced by excitement rather than effort and the electrocardiogram is normal even when recorded during strenuous effort.

Secondly, it must be accepted that (malingering apart) a history of angina always indicates a reduced coronary reserve. It has often been claimed that hiatus hernia and other disorders of the oesophagus may produce an identical symptom, but this has never been proved.

Thirdly, it must be realised that a reduced coronary reserve does not necessarily imply narrowing of the coronary arteries, although that is by far the commonest cause. In perhaps 5% of cases angina may be due to other varieties of heart disease which cause either a reduction in coronary blood flow or an increase in myocardial work, or both—for instance, severe aortic valve disease, hypertension and, less commonly, cardiomyopathy, mitral stenosis, or pulmonary hypertension. Occasionally no evidence of heart disease (or any other disease) can be found.

Fourthly, it must be appreciated that even when angina is due basically to coronary arterial narrowing the symptom may be aggravated and the diagnosis complicated by extracardiac diseases. In the first place, there are diseases which decrease the oxygen content of the blood or increase the work of the

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heart—anaemia and thyrotoxicosis. Moreover, certain diseases—such as chronic cholecystitis, duodenal ulcer, or cervical spondylosis—may cause pain in the chest and aggravate and distort the pain of angina. Anxiety, smoking, and obesity are other aggravating factors which need to be considered in treating angina.

To treat angina rationally it is necessary not only to make a comprehensive diagnosis but also to appreciate the prognosis of different patterns of angina. Certain types of angina are particularly dangerous. Recent onset angina is in this category, especially if the onset is sudden. Crescendo angina—that is, angina increasing in severity without any extracardiac cause such as anaemia, increasing weight, or a fall in atmospheric temperature—also carries a high incidence of myocardial infarction and death. Angina which is unresponsive to adequate medical treatment also carries a serious prognosis. On the other hand, it is not sufficiently appreciated that in many patients angina subsides completely and may not return.

General principles of treatment

Any remediable factors such as severe aortic valve disease, mitral stenosis, hypertension, anaemia, thyrotoxicosis, as well as smoking and obesity, should be corrected. Gall bladder disease and duodenal ulceration should be treated, although operation should not as a rule be advised unless it is indicated on other grounds.

Patients with angina should be advised to avoid activities which bring on the pain. This usually means walking more slowly and avoiding exercise after a meal or in the coldest part of the day. They should be specifically warned against heavy lifting and pushing—for instance, lifting heavy furniture or trying to push a car which has become stuck. If they can avoid travelling to work in the rush-hour they should do so. It may be best to go earlier than usual when parking is easier. If the patient's occupation is strenuous and less heavy or demanding work is available a change should be advised; but unsuitable work is far better than unemployment. If the patient can move to a warm climate, this is to be recommended. There is some evidence to suggest that drugs such as the contraceptive pill and amitriptyline (Tryptizol) increase the risk of myocardial infarction and sudden death; such drugs should therefore be avoided so far as possible.

Nervous factors are very important in angina; indeed, Paul White went so far as to say that the nervous sensitivity of a patient was as important as all the pathological factors combined. For this reason an optimistic, reassuring attitude is important. Indeed, it is usually justified; for the prognosis of angina is nothing like as bad as it is often thought to be. Statements like, "You have a mild form of angina" and, "Your heart is 95% normal" are often appropriate. It is also important to avoid unnecessarily frequent review because frequent interrogation regarding symptoms tends to perpetuate them.

Drug treatment

GLYCERYL TRINITRATE

Glyceryl trinitrate is still the mainstay of treatment and is usually sufficient in the mild case. The patient should be instructed to carry his tablets with him constantly in a container with a well-fitting cap (to avoid loss of potency by evaporation). He should be told to suck (not swallow) one of the tablets at the onset of pain or oppression. He should be advised to chew the tablet if the pain is severe and to discard it as soon as the symptom has been relieved. He should also be advised, until he is familiar with the effect of the tablet, to sit down after taking it, in order to minimise the danger of fainting. He should not be advised to lie down because this increases the work of the heart and tends to prolong the attack. It is also important to instruct the patient in the prophylactic use of the drug—that is,

to suck a tablet before starting any exertion which he knows from experience is likely to bring on his angina.

Some patients find that glyceryl trinitrate in the standard dose of 0.5 mg causes such a headache that they prefer to put up with the angina. Such patients should be told that they are unusually sensitive to the preparation and need a smaller dose (0.3 mg) or, alternatively, that they should be advised to break the tablets and take half a tablet or less. The trinitrate may be replaced by a less rapid and longer acting compound such as isosorbide dinitrate (Sorbitrate, Vascardin) 5-20 mg three times a day. Other patients find glyceryl trinitrate tablets helpful but are afraid of overusing them for fear they will lose their efficacy or lead to harmful side effects. Such patients may be reassured on both accounts and told that as many as 20 tablets have been taken daily for long periods without harm.

There has been some concern about the loss of potency of trinitrate tablets. Earlier preparations using a cocoa base were somewhat unstable, but the modern tablets in a mannitol base retain their activity for at least two years if stored in an air-tight container, protected from light, and kept in a cool dry place. Heat accelerates decomposition, so that tablets kept in a waist-coat pocket might need to be changed rather sooner.

The way glyceryl trinitrate works is still not absolutely certain. Although a coronary vasodilator, it cannot be expected to dilate zones of atherosclerotic narrowing. It usually causes a rapid fall in blood pressure, which decreases the work of the heart. It also dilates the peripheral veins; with consequent pooling of blood in the hands and feet; this reduces the venous return to the heart, and hence its stroke output and work.

BETA-ADRENERGIC BLOCKING DRUGS

Propranolol (Inderal) and oxprenolol (Trasicor) were a great advance in treating patients with severe angina. Many new beta-blocking drugs have appeared in the last two or three years, but it is too early to say whether any has any advantage over the well-tried preparations. Practolol (Eraldin) should no longer be used for treating chronic angina on account of its occasional serious side effects. Not all patients are helped by beta-blockade: a few are actually made worse. Nevertheless, most patients improve and the results are often dramatic, particularly in patients with tachycardia or other evidence of sympathetic overactivity. In patients with associated hypertension beta-blockade offers a chance of "killing two birds with one stone."

It is wise to start treatment with a small dose—for example, propranolol 10 mg twice daily—and to double the dose every three or four days until relief is obtained, or the heart rate falls below 60 beats/min. If the angina remains unrelieved in spite of a reduction of heart rate below 60 beats/min, a larger dose may still be successful, but this should be done only with due caution. Care should be taken in patients with a tendency to bronchospasm, because this may be made worse. If there is cardiac enlargement beta-blockade should be accompanied by a diuretic (or digoxin), but if the resting electrocardiogram is normal this precaution is unnecessary. Since angina often subsides spontaneously it may not be necessary to continue beta-blockade indefinitely. If the patient is getting no angina at all the dose should be gradually reduced, and if the symptom does not return the drug may be stopped and kept in reserve.

OTHER DRUGS

With glyceryl trinitrate for the relief of the acute attack and beta-blocking drugs for continuous prophylaxis, the need for other drugs is greatly diminished. Nevertheless, there are patients who are not helped by beta-blockade and for whose frequent attacks of angina, glyceryl trinitrate produces only transient relief. Many attempts have been made to find drugs with a more prolonged action than glyceryl trinitrate but without success. Isosorbide dinitrate has been mentioned as a

substitute for glyceryl trinitrate in patients who get a headache with the latter drug. Delayed release trinitrin (Sustac) is sometimes helpful in patients with nocturnal angina. Diazepam (Valium) may also be helpful, but stronger hypnotics have the disadvantage that they rarely abolish the attacks and often make the patient too confused to take his trinitrate properly. In such cases, a whisky nightcap is often effective. Perhexiline maleate (Pexid) has sometimes been dramatically successful in relieving angina which has been resistant to other treatment including beta-blockade. Verapamil hydrochloride (Cordilox) and prenylamine (Synadrin) have also been reported effective in some patients. The value of anticoagulant treatment and clofibrate (Atromid-S) now appears to be negligible.

SURGICAL TREATMENT

The operation of saphenous vein bypass, introduced five or six years ago, is a logical answer to what is basically a mechanical problem. The obstructed segment of a coronary artery is bypassed by a length of vein, whose proximal end is inserted into the aorta a short distance above the aortic valve and the distal end into the coronary artery beyond the obstruction. Two, three, or even four arteries may be grafted in this manner at one operation with very low mortality in experienced hands. Undoubtedly saphenous vein bypass is often dramatically successful in relieving severe angina which has proved resistant to full medical treatment including beta-blockade. On the other hand, there is no evidence yet that it alters the course of ischaemic heart disease or prolongs life. Hence it is quite unjustifiable at present to advocate this operation for all patients with angina.

Most patients with angina can live a more or less normal life with the help of glyceryl trinitrate and beta-blocking drugs, and a considerable proportion will lose their angina altogether. Others will develop myocardial infarction or die suddenly whatever is done. The only clear indication for saphenous vein bypass at present is angina which causes persistent disability after any remediable factors have been corrected and the medical armamentarium has been fully tried. Such patients should be seriously considered for operation, particularly if the electrocardiogram and x-ray films show only slight myocardial damage.

TREATMENT OF RECENT ONSET AND CRESCENDO ANGINA

Recent onset and crescendo angina, often referred to as unstable angina, carry a high risk of myocardial infarction or sudden death. If the angina appears only with effort, it is usually sufficient to insist on complete bodily and mental rest, reinforced by sedation if necessary. This often breaks the vicious circle, so that the patient may resume activity without the return of angina. If the attacks come on at rest as well as with effort it is clearly no use merely putting the patient to bed: more is required, though there is no agreement as to the best policy in such cases. If anxiety is a factor, as it often is, sedation is logical. If there is evidence of sympathetic overactivity one of the beta-blocking drugs is indicated. Anticoagulant treatment, either with heparin or warfarin, has its advocates, though it is by no means always successful in averting myocardial infarction. Thrombolytic treatment, using streptokinase, is currently being tried with some promising results. Saphenous vein bypass has also been tried in these cases, but the results to date are not encouraging.

Is there any reliable evidence that the incidence of stroke syndromes is higher in women subject to migraine whose headaches are aggravated by taking oral contraceptives than in migrainous women not on these drugs? Are oral contraceptives contraindicated in such patients?

There is no simple answer to this question. There is an increased risk of stroke syndromes in women who take oral steroid contraceptives.¹ This seems to be mainly due to thrombosis, though there is a slight increase in risk also for cerebrovascular haemorrhage, which may be due to the known tendency of the pill to cause a rise in blood pressure. Oral contraceptives increase the tendency to headaches and migraine,² though this statement needs qualification in that some migrainous women improve when on the pill. No obvious relationship has been found between the incidence of headaches and the actual formulation of the contraceptive prescribed. The question perhaps comes down to asking whether there is an increased frequency of stroke syndromes in those who suffer from migraine or other forms of headache. Probably not, but migraine or a stroke syndrome may rarely co-exist. To most prescribers the induction or exacerbation of migraine and other forms of headache would be taken to be a contraindication to oral contraceptives, but different formulations might be tried under careful supervision. Probably the culprit in causing headache may be the oestrogen component, though not all would agree that that is true.

¹ Collaborative Group for the Study of Stroke in Young Women, *New England Journal of Medicine*, 1973, **288**, 871.

² Larsson-Cohn, U, and Lundbert, P O, *Acta Neurologica Scandinavica*, 1970, **46**, 267.

As fructose is reported to help in the metabolism of ethanol would a formulation of both be advisable for consumption as a drink?

The effect of fructose on ethanol metabolism has been known for almost 25 years.¹ Intravenous fructose increases the rate of elimination of alcohol by 70% and while small quantities (such as are contained in sweet wines) have little effect, large oral doses are as effective as parenteral ones. The mechanism is a complex one and has been well

investigated.² Despite the proved efficacy of large amounts of fructose in accelerating the disposal of alcohol it is not clear what benefits would derive from the formulation of a drink containing both ingredients. Fructose is twice as sweet, per unit weight, as sucrose and to any discriminating consumer the unpalatability of the product would be a greater deterrent to inebriation than the biochemical compatibility of its constituents. To those who drink primarily for the pharmacosocial effects of alcohol the exercise would appear to be self-defeating.

¹ Stuhlfauth, K, and Neumaier, H, *Medizinische Klinik*, 1951, **46**, 591.

² Tygstrup, N, Winkler, K, and Lundquist, F, *Journal of Clinical Investigation*, 1965, **44**, 817.

What is the rationale behind avoiding alcohol for some arbitrary length of time after viral hepatitis? Would the advised period of abstinence be influenced either by the severity of the illness or by the degree of disturbance of liver function tests (or the time taken for such tests to return to normal)?

The advice often given to patients who have had acute viral hepatitis to abstain from alcohol for three to six months is somewhat empirical. Relapses of hepatitis after excessive consumption of alcohol have, however, been documented.^{1,2} The available evidence suggests that poor nutritional status, rather than the severity of the attack, determines the liability to such an alcohol-provoked relapse. Although there is no evidence to suggest that chronic hepatitis is more likely to develop if the patient continues to drink moderately or even heavily, it would seem reasonable on common-sense grounds to advise the patient to keep off alcohol until recovery is complete. This normally means for at least three months after an attack of hepatitis, by which time the patient's liver function tests have usually returned to normal—complete with restoration of the weight so commonly lost during acute hepatitis. They will then be in as fit a state as possible to withstand the toxic effects of alcohol once again.

¹ Damodaran, K, and Hartfall, S J, *British Medical Journal*, 1944, **2**, 587.

² Barker, M H, Capps, R B, and Allen, F W, *Journal of the American Medical Association*, 1945, **129**, 653.