Modern Management of Rheumatoid Arthritis

E. C. HUSKISSON, MD, MRCP
Physician, St Leonard’s Hospital and Senior Lecturer, St Bartholomew’s Hospital Medical School, London

A. W. F. LETTIN, MS, FRCS
Orthopaedic Surgeon, St Bartholomew’s Hospital, London

D. L. WOOLF, MRCP
Rheumatologist, Central Middlesex and Willesden General Hospitals, London

Four notable changes have taken place in the management of rheumatoid arthritis. First, there are many more drugs available, which is an advantage since different patients like different drugs. Secondly, it is now possible to achieve symptomatic relief comparable to that achieved by aspirin with a substantial reduction in the incidence of adverse effects. New-style anti-inflammatory drugs are safer and better tolerated. Thirdly, there are now drugs like penicillamine which relieve the symptoms but also control the disease process itself and improve the eventual outcome. Fourthly, it is now possible to replace those joints that have failed to respond to medical measures and have deteriorated to the extent of disabling the patient. Unfortunately, many patients still become disabled by rheumatoid arthritis. Some have so many affected joints that to replace them all would be impossible. There are, however, many other ways of helping such patients to achieve relief of pain and to maintain a way of life as normal as possible, including social activities, domestic responsibilities, work, sex and recreation.

ROUTINE MANAGEMENT IN THE EARLY CASE
Step 1  Make the diagnosis. The diagnosis of rheumatoid arthritis is usually easy. When a young adult female presents with a peripheral polyarthritis affecting mainly the hands, feet and knees, accompanied by morning stiffness, it is almost unnecessary to ask for any tests. The ESR is usually raised and the latex test positive in 80 per cent, though many patients must be diagnosed without these aids. It is, of course, essential to consider the 200 other causes of arthritis and to reach a firm conclusion before proceeding.
Diagnosis is a great deal more than just writing 'rheumatoid arthritis' in the notes. It is also assessment. Before treatment can be planned it is necessary to assess the activity of the disease, to document past therapy and its outcome, to note the patient's particular problems, potential difficulties and personal details.

**Step 2** *Tell the patient about the diagnosis.* The diagnosis of rheumatoid arthritis has great emotional overtones. It has often been made before the patient comes to hospital by a friendly neighbour who recalls the misfortunes of Uncle Fred when he was similarly afflicted. It is not surprising that for many patients the diagnosis is taken as a life sentence to a wheelchair and total dependence upon others. It is essential to explain that the disease is often mild and that advances in treatment will, with good fortune, keep the patient living normally. Some very mildly affected patients require no more than this.

**Step 3** *Make a plan.* The management of an individual patient with rheumatoid arthritis is seldom simple. It is necessary to put together a package of measures designed to deal with each aspect of the disease. The package is likely to contain regular analgesic anti-inflammatory therapy which will be required by most patients. It may also include local corticosteroid injection for painful or stiff joints, splints, exercises to restore quadriceps function, shoes for painful feet, letters to the local authority about rehousing, and advice about various aspects of daily life.

**Step 4** *Tell the patient about the plan.* This is the beginning of a relationship with the patient which, if successful, will last for years and years. Rheumatoid arthritis is a disease that, once established, lasts for the remainder of the patient's life. Its course is punctuated by many crises and complications and the treatment plan requires frequent review and revision. The physician, whether specialist or general practitioner, is a life-line to the patient during this time. He is the director of a necessary team (see below), who plans routine treatment and responds to each crisis and complication.

**Step 5** *Institute regular analgesic anti-inflammatory therapy.* Non-steroidal analgesic anti-inflammatory drugs are the mainstay of drug therapy in rheumatoid arthritis. The newer drugs such as the propionic acid derivatives have a huge advantage in the low incidence of adverse effects and they appear to be safer than old-style drugs like aspirin. Whereas aspirin used to be regarded as the first line of treatment, many physicians now prefer propionic acid derivatives. The philosophy underlying this regime is the use of the safest and best tolerated drugs first. Propionic acid derivatives are shown in Table 1.

**Step 6** *Change the drugs to find the best.* There is a striking individual variation in response to anti-inflammatory drugs. Even chemically similar drugs like pro-
Propionic acid derivatives affect different people quite differently. The differences between patients are much greater than differences between drugs. It is therefore necessary to change from drug to drug in order to find the one that suits each patient. These drugs take only a few days to work, and a week of treatment is sufficient to find out whether a drug will prove effective. It is as well to explain to the patient why different drugs are being used in quick succession.

As an alternative to propionic acid derivatives, there are a few drugs of other chemical types that have the same big advantage over aspirin; they are shown in Table 2. Finally, if none of them works, it is worth trying the old-style anti-inflammatories, aspirin, indomethacin and phenylbutazone.

### Table 2. Drugs whose clinical properties resemble propionic acid derivatives.

| Drugs       | Tablet size | Usual dosage  |
|-------------|-------------|---------------|
| Sulindac    | 100 mg      | 100 or 200 mg b.d. |
| Azapropazone| 300 mg      | 300 mg qds    |

**Step 7** *Take appropriate steps to control remaining problems.* It is at this stage that one must tidy up a number of unsolved problems. Morning stiffness and sometimes pain at night and sleep disturbance are often involved and may be relieved by a large dose of an anti-inflammatory drug taken before retiring. Possibilities include indomethacin 75 to 100 mg by mouth or a 100 mg suppository, naproxen 500 mg or flurbiprofen 100 mg. These may be combined with a mild hypnotic such as diazepam if sleep is impaired. Simple analgesics such as aspirin, paracetamol or a combination of paracetamol and dextropropoxyphene (Distalgic) may be given to the patient for use ‘on demand’ when pain is not controlled. A local injection of corticosteroid into a stiff or painful joint, shoulder or knee, for example, may help. But systemic steroids are not normally worthwhile in rheumatoid arthritis; they have no effect on the outcome of the disease and their use in doses sufficient to control symptoms is inevitably associated with Cushing’s syndrome.
Step 8 Advise the patient and answer his questions. Patients with rheumatoid arthritis are unequalled in their ability to produce questions. They often come with a lengthy list of carefully prepared enquiries. Should I diet, wear a copper bangle, rest in the afternoons, give up knitting, take up yoga, move away from Bournemouth, buy a bungalow, take in bees, try acupuncture? The physician must be prepared to answer them all and to provide sound advice on a number of important questions. The emphasis in the management of rheumatoid arthritis has changed from resting, giving up activities and changing occupations to encouraging patients to maintain every aspect of their way of life. There is no evidence that patients who use their joints fare worse in the end than those who rest. The physician should therefore take steps to help the patient to maintain his job, his hobbies and interests, his marital pleasures, his social activities and all other aspects of a normal life. One exception to this is in the early stage of very active rheumatoid arthritis when a period of rest in hospital may lead to prolonged improvement. Hospitalisation may be desirable in the later stages to give a dispirited patient a ‘wash and brush up’. Modern management advises ‘take up’ not ‘give up’.

Step 9 Review progress and consider penicillamine-like drugs. After not more than six months of the disease, the patient’s progress must be reviewed. Information required includes pain severity compared with the level at the start of treatment, the duration of morning stiffness, clinical evidence of active inflammation of joints such as effusion and synovial proliferation, and clinical evidence of deterioration of joints such as the development of restriction of movement or deformity. It is helpful to compare X-rays of the hands and feet with those taken at the start of treatment. If the disease is not controlled despite anti-inflammatory therapy and other measures, or if it has progressed as judged by clinical or radiological deterioration, treatment with penicillamine or another similar drug should be started. This must be done before irreversible changes have developed.

Penicillamine is a slow-acting drug whose action is specific to rheumatoid arthritis. It takes 6 weeks to start to work and 4 to 6 months to achieve a maximal effect. Not only does it relieve the symptoms and signs of rheumatoid arthritis but it also improves extra-articular features such as nodules and vasculitis, and lowers the titre of rheumatoid factor and ESR. It reduces the need for corticosteroids and other symptomatic drugs. Most important, it slows the radiological progression of the disease. Unfortunately, there are many adverse effects, including rashes, loss of taste, nausea, thrombocytopenia, proteinuria, mouth ulcers and, rarely, myasthenia, systemic lupus erythematosus and pemphigus. A knowledge of these adverse effects is required for the safe and effective management of patients receiving the drug and most problems can be overcome. Alterna-
Table 3. Three drugs with a slow suppressive action in rheumatoid arthritis for use in a patient with persistently active or progressive disease.

| Drug    | Dose                                                                 | Minimum supervision                                           |
|---------|----------------------------------------------------------------------|--------------------------------------------------------------|
| Penicillamine | 250 mg daily increasing at intervals of 4 weeks to between 500 mg and 1 g daily | Monthly full blood count including platelets                  |
| Gold    | 50 mg i.m. weekly until response, then increase intervals between injections to between 2 and 6 weeks. Increase for relapse | Urinalysis (for protein) + Warn patient to report any intercurrent illness at once |
| Azathioprine | 50 mg b.d.                                                        |                                                              |

Alternative s to penicillamine include gold and azathioprine (Table 3), but there are others that can be used and still others for the evaluation stage.

SURGICAL TREATMENT OF RHEUMATOID ARTHRITIS
Operative treatment of patients with rheumatoid arthritis is usually no more than an incident in their overall management, which is essentially medical. It is rarely definitive. The disease, of course, is a generalised disorder of connective tissue and although involvement of the pericardium, the lung and the peripheral vessels may sometimes influence surgical treatment, it is the involvement of the synovial connective tissues of the joints that is amenable to surgical treatment. Surgical treatment can be conveniently divided into surgery of the soft tissues and surgery of the joints themselves.

Soft Tissue Operations
Synovectomy or the removal of the synovial covering of the tendons, is a worthwhile operation, relieving pain, swelling and stiffness, and perhaps preventing later tendon rupture. The flexor and extensor tendons of the hands and wrist are most frequently involved, and often result in compression of the median nerve in the carpal tunnel. The nerve is decompressed at the time of the synovectomy. The operation is equally applicable to the tendons around the ankle joints, where the peroneal tendon sheaths are commonly affected.

Tendon Repair. Tendon rupture may be the result of direct involvement of the tendon by the disease, or occurs as a result of attrition. The extensor tendons of the fingers are particularly prone to rupture as they cross the lower end of the ulna.

Direct repair is usually impossible. The distal end of the tendon can often be sutured to its intact neighbour, but tendon transfer, for example, using extensor indicis to replace a ruptured extensor pollicis longus, may sometimes be preferable.
Operations on the Joints

Synovectomy early in the course of the disease can usually be relied upon to relieve pain and swelling, especially in the absence of damage to the articular surface. It does not arrest the progress of the disease or prevent further joint destruction. The operation is particularly applicable to the knee in patients with localised disease or complications of raised intra-articular pressure such as popliteal or calf cysts and recurrent rupture of the knee. Good results have also been claimed for synovectomy of the metacarpo-phalangeal joints.

Osteotomy, the surgical division and realignment of a bone, is a logical procedure in the presence of deformity, and also relieves pain. The operation has a place, particularly at the knee, when movement and stability are preserved and pain warrants operative treatment, but joint replacement is not yet justified. Sometimes both the femur and the tibia are divided (double osteotomy). The beneficial effects are often only temporary, but subsequent joint replacement is not precluded.

Replacement Arthroplasty. Replacement of one or more severely damaged joints with prostheses made of metal or plastic may often transform the life of a patient disabled by rheumatoid arthritis. It must never be forgotten, however, that no operation is without its complications; infection, loosening and mechanical failure may necessitate the removal of a prosthesis. Unless care is taken in the selection of patients for operation, their disabilities may be increased. On the whole, both surfaces of the damaged joint must be replaced to ensure a successful outcome.

The hip. Total replacement of the hip in rheumatoid arthritis is now a well-established procedure and there is a wide variety of prostheses available. Most surgeons favour a metal femoral component and a plastic acetabular cup anchored to the bone with acryllic cement. Pain is consistently relieved and a functional range of movement restored.

The knee. In the absence of ligamentous laxity, or more than minimal deformity, resurfacing the articular surfaces with metal or plastic prostheses is often sufficient, although not without complication. When the disease is more severe, particularly in the presence of ligamentous laxity and severe deformity, the constrained or linked hinge-type prosthesis is more reliable, if stability is to be restored and deformity corrected. Salvage in the event of deep-seated infection may, however, be more difficult.

The elbow. The earlier hinge-type prosthesis for the elbow frequently came loose and was impossible to salvage satisfactorily. More recent design (for example the Stanmore elbow), can easily be converted to a satisfactory excision arthroplasty.
in the event of failure. The joint also consistently restores a functional range of pain-free movement, corrects deformity, and restores stability to a severely affected joint.

The shoulder. The shoulder joint is difficult to replace and none of the implants at present available is capable of restoring a full range of movement. Nevertheless, a useful functional range can be restored to very stiff, painful, gleno-humeral joints, and a successful arthroplasty is undoubtedly superior to arthrodesis. The fragile nature of the scapula makes fixation of the prosthesis difficult, and loosening of the prosthesis is a frequent complication. If the prosthesis needs to be removed, the resulting arthroplasty is not a serious handicap.

The metacarpo-phalangeal joints. Most prostheses for replacing the metacarpo-phalangeal joints are made in one piece and depend for movement on the flexibility of the plastics from which they are made. They have a tendency to 'cut out' of the small bones of the hands, and deformities are likely to recur. The long-term results are often disappointing.

The ankle. Satisfactory prostheses for replacing the ankle joint are now available and the early results are encouraging. The operation is a useful alternative to arthrodesis and spares the sub-talar and mid-tarsal joints, which themselves may need arthrodesis (triple arthrodesis).

Excision Arthroplasty. Resection of the joint surfaces to leave a false joint (excision arthroplasty) invariably results in instability, although pain relief may be dramatic. The operation is now usually reserved for salvaging failed implants, except in those situations where instability is not a problem. It is the operation of choice in the treatment of the painful deformed forefoot (Fowler's operation), often enabling the patient to wear ordinary shoes without pain. Excision of the head of the ulna (Vaughan Jackson operation) is useful in patients with advanced disease of the wrist, and after rupture of extensor tendons.

Arthrodesis. Surgical fusion of a painful joint has limited application in poly-articular disease because of the extra strain imposed upon neighbouring joints which may themselves be involved by the disease. Furthermore, the length of the immobilisation often required after operation is badly tolerated by patients with rheumatoid arthritis. When satisfactory internal fixation can be employed, arthrodesis is a better proposition. Its main indications are at the wrist and the thumb, and in the mid-tarsal and sub-talar joints. It is, of course, mandatory for stabilising an unstable atlanto-occipital joint in the presence of neurological signs. Newer techniques require no more than a simple collar for immobilisation after the operation.
ALL THE OTHER THINGS THAT CAN BE DONE
FOR THE PATIENT

Drug therapy and orthopaedic procedures do much to relieve pain and improve function in rheumatoid arthritis but there are many other ways in which the patient can be helped. Perhaps doctors worry too much about the disease and not enough about many other things that concern the patient: his family, his job with, possibly, an unsympathetic employer, and his financial position. The physician's job is not done until the patient's rehabilitation is complete.

Measures that can be considered in addition to drug therapy include splintage, intra-articular injections, physiotherapy, hydrotherapy, occupational therapy, aids and appliances, psychological management and correct footwear.

Successful management requires a team with a family physician, rheumatologist, orthopaedic surgeon, physiotherapist, occupational therapist, social worker and appliance department. The social worker can call on community services, from home help to meals-on-wheels.

*Physiotherapy, Hydrotherapy and Splintage.* Physiotherapy is a valuable form of treatment that must be used with a sensible, planned approach. Its important aspect is exercise. Heat can be given prior to the start of exercises and may be either superficial or deep. Ice may be used for its soothing effect. Vigorous active exercises should be withheld in the acute stage of rheumatoid arthritis, but thereafter a programme of exercises is valuable to maintain the range of movement of joints and to sustain muscle power and function. Patients with chronic arthritis can easily become addicted to physiotherapy and feel their arthritis may progress without treatment. It should, therefore, be given only for a clear indication, regularly reviewed, and stopped when its aim has been achieved.

Hydrotherapy is often useful. Spa therapy is of traditional value though it is likely that nothing in the water produces relief. The patient derives benefit from its buoyancy, which allows better movement, and this is frequently helpful following joint replacement.

Splints can be used to achieve local rest and to prevent or correct deformity; for example flexion deformity of the knee. Apart from the knee, the wrist and hands are the commonest sites needing splints. Rest splints can be worn at night. Working splints, on painful wrists for example, need not interfere with the patient's life.

*Occupational Therapy.* The occupational therapist can be of value either assessing a patient in hospital or visiting the home at the request of the hospital medical staff or through the social services department. The occupational therapist will start looking for problems from the moment of arrival at the patient's home. She will note if rails or ramps are necessary to reach the front door, if the patient can
use a key, the type of door handle, whether the doorway is wide enough to allow the passage of a walking aid or wheelchair and whether electric light switches are at the correct height. Are there loose mats on the floor? The occupational therapist can give guidance on the supply of aids for the disabled housewife, which include bath, retrieving and toilet aids, kitchen aids, lever door handles, tap aids, non-slip mats, adapted table also used as a trolley, walking aids, stocking aids, long-handled combs, combined knife and fork, and adaptations for keys and writing implements. There are also aids for gardening and leisure activities. Wheelchairs, crutches, walking frames and sticks may have to be considered.

**Social Services Financial and Occupational Problems.** Social services can provide home help, radio, television, library services, recreational facilities such as visits to a day centre, adaptations in the home, holiday facilities, meals-on-wheels and modified telephone equipment for the disabled. Among financial resources that can be used to assist the disabled are an attendance allowance for the severely handicapped who need prolonged or frequent attention, an invalid care allowance, introduced for anyone of working age unable to follow his occupation because he is needed at home to care for a severely disabled relative receiving attendance allowance, and a mobility allowance, for those who are unable or virtually unable to walk.

It is of the greatest importance to maintain patients in employment when possible and to find jobs for those who have lost them. The disablement resettlement officer can sometimes help and it may be necessary to register the patient as disabled. Referral to a rehabilitation centre may be desirable for retraining. The difficult patient with arthritis may be able to attend a sheltered workshop or occupational centre.

**Management of Problems.** The course of rheumatoid arthritis is punctuated by many problems which may include atlanto-axial subluxation, ruptured tendons, painful callosities on the feet, as well as financial, social and sexual crises. A particularly painful or stiff joint may be helped by local injection of a corticosteroid, which may also be used for carpal tunnel syndrome. The feet are often neglected in rheumatoid arthritis but cause at least as much trouble as the hands. Correct footwear may solve this, in particular the provision of space shoes.

Psychological management is often required. Constant pain and disability in rheumatoid disease may produce personality changes and depression, which require skilful therapy. Patients should be given the opportunity to talk about sexual difficulties, often just as important as prescribing wheelchairs or choosing between the type of walking aid required. Loss of mobility does not mean loss of sexual fulfilment, and precluding discussion on this important aspect of family life can only lead to loss of harmony. A booklet on sex and arthritis is available from The Arthritis and Rheumatism Council.
Voluntary and Lay Organisations. In spite of the National Health Service, the help of lay organisations is frequently necessary. Many organisations take an interest in arthritis and these include The Arthritis and Rheumatism Council and The British Rheumatism and Arthritis Association. The latter has a membership of nearly 30,000 with 149 branches giving service to patients. The association facilities include information and advice, welfare grants, aids to daily living, a quarterly journal, specially adapted holiday hotels, self-catering family holiday units, and permanent homes for the seriously disabled.

This article is based on a Teach-in held at the Royal College of Physicians in January 1978.

HOW NOT TO BE ELECTED A FELLOW

Hearing but yet hardly beleeving that you are purposed to preferre certaine others before me in the Candidatshipps which are now of late fallen voide; I thought it not amissee to send these few lines unto you as expostulations of my right, if happily you were so unrightly mynded against me ... What cause therefore may there be, that I, which once was in such favour should now so contemptuously be used ... If any man be offended at my conversation and manners they shall safely excuse themselves being called to trial ... Doth any one feare lest I stepping into your Society, will marre their musick and Jollyty? ... But if for money you allow a man and disallow him againe when you list: if you draw on your fellowe brethren with faire woordes as with baites and then having them on your hooke, pull the gutts and the lief out of their bellies ... God in his justice will confound you and make the College of Phisitions more odious to London than ever it was in Rome ... Your assured frende for ever if it please you. Tho. Muffet.

Extracts from a letter of Dr Thomas Muffet to the President of the College, September 1584.