MODERN VIEWS ON RHEUMATOID ARTHRITIS

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The object of this survey is to indicate modern views on rheumatoid arthritis and the logical approach to diagnosis and treatment.

Rheumatoid arthritis is the Cinderella of subjects studied in physiotherapy circles. There are a number of factors to account for this, the chief one being the relative apathy of the medical profession towards the disease. The patients tend to be middle-aged or elderly and therefore have not the "popular appeal" of children with poliomyelitis. Furthermore, the skill and patience of the physiotherapist are probably taxed more in this disease than in many other branches of their work. However, the present falling incidence of tuberculosis and poliomyelitis and the increasing age of the population mean that arthritis is becoming more prominent, so that in future its treatment will form a larger part of the work of physiotherapists.

Formerly a low standard of treatment was accepted by doctors who knew little about physiotherapy and did not expect good results from treatment. Now it is becoming obvious to many of the profession that a physiotherapist requires special training in rheumatic work. It is not simply a matter of applying standard orthopedic measures to another group of patients. The technique is different and requires skill and experience. The varying results obtained by different physiotherapists using the same treatment on similar patients are often surprising. Work in this field is time-consuming and is incompatible with a busy private practice in which the emphasis is on a quick turnover of cases.

Most medical and surgical diseases are reasonably well understood. For instance, much is known about tuberculosis: the cause is known, tubercle bacilli can be isolated, and the way they enter the body and the way in which they damage the tissues are known. On this knowledge a rational line of treatment has been based. With rheumatoid arthritis the situation is different. The cause is unknown; there are many theories, many recent ideas, but very few facts. Detailed pathology has been studied only in recent years and treatment is empirical. This disease and the diseases commonly grouped with it are coming more and more to the front of medical thought. In Great Britain there are now two professors of rheumatology whereas there were none five years ago. In Europe and America considerable research is being done at many rheumatic clinics.

In the past rheumatoid arthritis was so neglected that even the simplest facts were not known. As a student one was taught that rheumatoid arthritis was a disease of young women, a statement which had been passed on for many years. In 1950 the Empire Rheumatism Council analysed a large number of cases and found that the average age of onset was forty-one years. This example illustrates the inaccuracy of individual observation, and the importance of assessing a large number of cases before making a pronouncement on a chronic disease.

ETIOLOGY

The complex etiology of rheumatoid arthritis will not be discussed in detail but one or two points require consideration. The old belief, which is taking a long time to disappear, is that rheumatoid arthritis is due to a focus of infection. This theory is now in disfavour; most patients have no obvious infection, and if found its removal does not influence the course of the disease. Over the years this plausible theory reached the status of an accepted fact, and thousands of patients, including

1 Read at the Seventh Biennial Congress of the Australian Physiotherapy Association, May, 1958.
many with osteoarthritis for whom there was no hope of success, lost their teeth and tonsils. In 1947 Ellman reviewed his last 100 cases and considered such treatment had genuinely benefited only three per cent of patients. The primer on the rheumatic diseases prepared by the American Rheumatism Association in 1949 states:

No one now believes that the removal of an infected focus will alter the course of rheumatoid arthritis, and extraction of teeth, tonsils, gall bladders and pelvic organs is to be condemned unless they are so diseased that they should be removed for their own sakes. Indeed, wholesale removal of teeth usually is not only useless but actually harmful to the patient through interference with nutrition.

As the etiology of rheumatoid arthritis is still unknown, it is possible that a yet undiscovered infectious agent may be responsible. The treatment should therefore be to give proper attention to any sites of infection, as would be carried out even though the patient did not have arthritis. This should be done as a general health measure and not with the hope that it will influence the course of arthritis.

The modern approach to the problem of etiology is on two lines. Firstly, there is the psychological aspect. There is widespread discussion concerning the role of emotional trauma in the precipitation and maintenance of this disease. The "make-up" of these patients is frequently that of an anxiety state. Although investigations are as yet incomplete, emotional factors apparently can cause remissions or exacerbations. On the other hand, the Empire Rheumatism Council (1950) was unable to find evidence of greater emotional stress in their cases than in a control series. More work is required to show how stress results in tissue changes.

The second line of approach has been the investigation of an allergic basis for the disease. Similar arterial lesions have been seen in cases of serum sickness, polyarteritis nodosa, and rheumatoid arthritis treated with cortisone. Recent work on the serology of rheumatoid arthritis has shown the closeness of its relationship to disseminated lupus erythematosus. Through its association with the recently recognized diseases of the so-called "collagen group", understanding of rheumatoid arthritis is growing.

**DIAGNOSIS**

It is obvious that a correct diagnosis is essential but it is only recently that this has been emphasized. Doubtless in the past physiotherapists have been asked to treat patients in whom "arthritis" was the only diagnosis made. It is important that a precise diagnosis should be made at an early stage so that treatment may be started on rational lines. In this way the patient is deterred from going to doctor after doctor in a vain search for a cure. As some drugs are specific for certain forms of arthritis the particular type must be diagnosed in order that they may be used correctly. It was formerly thought that the diagnosis of rheumatoid arthritis could be made on the clinical history and examination alone but laboratory tests are becoming increasingly useful. Rheumatoid arthritis is now regarded as a systemic disease with widespread connective tissue involvement. Recognition of this fact is leading to a change in terminology so that many authors are now speaking of "rheumatoid disease". The diagnosis is based not only on the character and distribution of the arthritis, but also upon the coexistence of a constitutional disturbance and on the results of serological reactions. Radiology may also be helpful for the finding of the characteristic erosions of bone in certain situations which will clinch the diagnosis in the absence of confirmatory laboratory evidence.

**HISTORY AND EXAMINATION**

The apparently obvious factors of age and sex should be borne in mind. For instance, the young man with peripheral joint involvement should have X-rays of the sacroiliac joints to exclude ankylosing spondylitis, and enquiry should be made as to urethral discharge. Urethral infection may cause a rheumatoid type of arthritis which improves on treatment of the discharge, or it may precipitate true rheumatoid arthritis. An example of the former was a man aged 33 years with a history of gonorrhoea in 1946, followed by a persistent urethritis. He later developed pain and swelling of several toes, both ankles and the right knee. All joints subsided rapidly after a course of prostatic massage. Related to this is Ford's work at the London
Hospital; he has reported true ankylosing spondylitis after persistent urethritis (Ford, 1953).

It must be emphasized that 95 per cent of cases of gout are in men and of the five per cent in women the majority occur after menopause.

CASE I A woman of 35 years presented with a history of arthritis for ten years. Her hands showed the characteristic swelling of the metacarpophalangeal and proximal interphalangeal joints of the hands with wasting of the intrinsic muscles. X-rays showed the large type of erosions of rheumatoid arthritis. The Rose test was positive. On the basis of the erosions her complaint was diagnosed as gout, although this is unlikely in a woman of this age.

Rheumatoid arthritis may have a sudden onset and many such patients are diagnosed as gout.

CASE II A man aged 80 years presented with sudden painful swelling of the dorsum of the right hand followed shortly by a similar attack in the left hand and wrist. The early radiographs showed osteoporosis of one hand only. Examination three months later showed the characteristic erosions of rheumatoid arthritis. Serum uric acid was normal; the Rose test was negative. He made a satisfactory response to aspirin and splinting.

Another painful affection of joints which is often misdiagnosed is the "shoulder-hand syndrome". This is a reflex dystrophy similar to Sudek's atrophy. The hand and fingers become painful and swollen, and the patient is unable to grip. The shoulder may also be painful with limitation of movement. These cases are often seen after a hemiplegia or following cardiac infarction. Occasionally the pain is situated in the elbow.

CASE III was a woman who presented with the latter complaint. Later she developed pain in the hand and shoulder with limitation of movement. The condition was unrecognized and she had local treatment to the shoulder and manipulation of her neck under an anaesthetic without relief. She responded well to cortisone.

Complete recovery may take two years but in the meantime the symptoms may be much improved by cortisone.

It has been known for many years that tenosynovitis is a common accompaniment of rheumatoid arthritis. Jacobs, Hess and Beswick (1957) published reports of three cases in which tenosynovitis was the presenting symptom and preceded the onset of arthritis by four, fourteen and eighteen months respectively.

CASE IV was a woman of 27 years with a history of tenosynovitis of the right middle finger for one year. Biopsy of the tendon showed changes compatible with rheumatoid arthritis. The blood sedimentation rate was normal and the Rose test negative. She has as yet no general symptoms.

INVESTIGATIONS

The most widely used investigations are still a blood sedimentation rate and a hemoglobin estimation. It is generally accepted that the blood sedimentation rate is raised and the hemoglobin level lowered during active phases of the disease, although in a recent review by Richardson (1957) it was shown that a normal blood sedimentation rate could be present in active and progressive disease. These tests are probably of greatest value in the prodromal stage of rheumatoid arthritis and in the early diagnosis of cases labelled tenosynovitis, capsulitis of the shoulder or metatarsalgia. Ansell and Bywaters (1957) showed that many of a series of patients with persistently raised blood sedimentation rate subsequently developed rheumatoid arthritis.

Much work has been done in the search for an accurate and specific laboratory test for the diagnosis of rheumatoid arthritis and its variants. Of the serological reactions the Rose test and its modifications have proved the most specific. The test was elaborated from the observation made by Waaler in 1940 that the serum of patients with rheumatoid arthritis agglutinates the sensitized red cells of sheep to a higher titre than does the serum of normal persons. The test is positive in 60 per cent of patients with active rheumatoid arthritis and in 20 per cent with inactive disease; it is positive in a few cases of degenerative arthritis, in some patients with the rarer collagen diseases and in about two per cent of apparently normal subjects. Rheumatic fever appears to be the only major connective tissue disease which gives consistently negative results. The Rose test is nearly always positive in patients with acute rheumatoid arthritis with fever and enlarged glands; it is also positive in patients with disease of one year's duration or less, and one positive reaction was recorded as early as five weeks.
after the onset of the disease. The test does not reflect clinical changes associated with treatment of the disease by gold, ACTH or cortisone, and remains negative in some patients despite severe progressive disease. It is usually negative in patients suffering from both psoriasis and rheumatoid arthritis and in patients with Still’s disease.

Another diagnostic aid is biopsy, which has already been mentioned in connection with tenosynovitis. It may be the only diagnostic procedure of help.

**CASE V**
A man of 70 years presented with a painful swollen wrist, and transitory involvement of other joints, including the knees, ankles and shoulders. The blood sedimentation rate was slightly raised, the serum uric acid was normal and the Rose test was negative. Many different interpretations were made of X-rays of his wrist. Biopsy showed tuberculosis.

**CASE VI**
A woman of 64 years gave a history of arthritis for five years which began in her hands and gradually became generalized. Examination showed the changes of rheumatoid arthritis but, on the basis of the original X-rays, she was considered to have gout. Serum uric acid was 3 mgms per cent, the blood sedimentation rate was 44 mm per hour, and the Rose test was positive. Later radiographs showed the more characteristic changes of rheumatoid arthritis but this diagnosis was confirmed only by biopsy of a nodule on her elbow.

**CASE VII**
A man 70 years of age was sent to the rheumatic clinic for treatment of gout which had been diagnosed twenty years previously. There were large nodules on his elbows, hands and around his ankles. The Rose test was positive. Biopsy of two of the nodules showed that they were rheumatoid nodules and not gouty tophi.

A punch-biopsy instrument may be used to take a piece of synovial membrane from a joint for histological examination without a major operation and without opening the joint. The instrument may be inserted into the joint almost as easily as a needle for aspiration of fluid.

The characteristic erosions of bone found radiologically in rheumatoid arthritis have already been mentioned. Manchester workers claim that 80 per cent of cases show these changes within six months of the onset of the condition. Sometimes they are large and punched out as in Case I, but more commonly in the early cases they are merely surface erosions; they are best seen in the hands and feet.

One other problem in diagnosis may be mentioned here. Disseminated lupus erythematous may present in a way very similar to rheumatoid arthritis or acute rheumatic fever. It is a relatively rare condition which runs a prolonged course and is characterized by the development, under laboratory conditions, of certain specific “lupus erythematous cells” in the blood. One of the collagen diseases, it usually shows some response to cortisone.

**Treatment**
In the last ten years there has been a great increase in the number of effective drugs at our disposal. As it is so easy for the patient to take a few tablets and get immediate relief of symptoms, there has naturally been a pronounced tendency to adopt this form of treatment. Physiotherapy in private practice is expensive for patients, and there are also the questions of transport and time. The result is that there are many patients being treated only with drugs such as butazolidine or cortisone. Some of the results appear to be good. Does it really matter whether they are taught exercises, given splints at night, and made to rest? The role of physiotherapy in the treatment of rheumatoid arthritis is best considered after reviewing current trends in other forms of therapy.

**The Problem**
The fallacy of drawing conclusions from small numbers of patients observed over short periods of time in a chronic disease has already been mentioned. It is the impossibility of predicting the immediate future which has led to such a host of so-called “remedies”. Whatever is being taken just before a remission occurs is given the credit for it; hence there are the patients who always eat a lemon a day, those who never do, those who eat “Royal Jelly” and so on.

Amongst the inaccurate and misleading information are there any facts upon which to base an opinion? The most informed opinion is possibly that of Duthie and others (1955) who reviewed the published literature and a series of Edinburgh cases over the previous three years. They made two points. One was that apparently 50 per
cent of cases do well even if inadequately treated; this figure may be an underestimate, as there are probably many mild cases who never attend a hospital. The other was that the amount of rest a patient received in the first five years of the disease bore a direct relationship to their ultimate prognosis. This seems reasonable for rheumatoid arthritis is a generalized systemic disease and even when cortisone is given erosions continue to form and enlarge in the affected joints. There is thus the picture of suppression of symptoms associated with advancing underlying disease.

The problem is therefore that of a chronic disease, which is mild in over half the cases and which shows long-term benefit from rest.

Rest

The general treatment of rheumatoid arthritis is obviously important. Rest is essential as the disease is a systemic one resulting in anemia and probably loss of weight. The patient is tired and in pain and has probably not been sleeping well. Rest is required for the general manifestations as well as for the local inflamed joints.

Drug Therapy

Treatment is also designed to relieve pain. The majority of patients respond to aspirin, two to four tablets every four hours. The Medical Research Council in Great Britain carried out a three-year controlled trial in which half the patients were given cortisone and the other half aspirin. At the end of the trial there was no difference between the results in the two series as judged by the clinical history and examination and by laboratory tests. The patients on cortisone tended to be happier as this drug produces euphoria. The number of patients developing serious complications from the use of cortisone is steadily increasing so that the modern tendency is to reserve the drug (a) for severe progressive disease in patients who have received the standard treatments without avail, and (b) for short-term use, such as giving relief from pain associated with the manipulation of knees. Patients having cortisone for long periods are now given smaller doses than previously, the aim being not to suppress the symptoms completely but to diminish them, so that the patients can manage to live a reasonable life. In this way the risk of complications is diminished.

One of the most valuable methods of using cortisone is for the local injection of joints. The chief effect is on the joint concerned; the drug is absorbed into the general circulation but causes no complications as the dose is so small. This technique can be applied to any patient and to most joints, although some joints are easier to inject than others; the hip joints are difficult, the knees comparatively easy. Before cortisone was available aspiration of knee joints had been used with good results. Cortisone injected after aspiration prevents recurrence of fluid for a variable time.

Case VIII. A middle-aged man with rheumatoid arthritis had a painful swollen right knee. Eighteen months ago arthrodesis was suggested by an orthopedic surgeon. At the time this seemed reasonable because it was the only joint in which the disease was active and he was keen to get back to work. Operation was refused and he was given an injection of cortisone into the knee once every six weeks. The result has been excellent; he has a full range of movement, very little swelling and he walks without a stick.

Another drug commonly used for the treatment of rheumatoid arthritis is butazolidine which is considered to have no specific antirheumatic effect but to be solely an analgesic. In some cases it is extremely effective but it is impossible to foretell whether or not it will suit an individual patient. Butazolidine is a dangerous drug, and unlike cortisone or gold, there is no way of avoiding complications. These are of two kinds, firstly, those associated with the gastrointestinal tract, ranging from nausea to duodenal ulceration with perforation or hemorrhage, and secondly, blood dyscrasia, ranging from minor lowering of the white cell count in the blood to agranulocytosis and death.

The opinion has been expressed that the drug is too dangerous to be used but the doses used now are smaller than formerly. Of 33 patients treated in the rheumatic clinic at the Royal Perth Hospital prior to 1956, nine developed complications necessitating withdrawal of the drug. Most complications occurred within a month of
beginning treatment but one patient developed a duodenal ulcer after six months, indicating that the risk is ever-present. In seven further patients butazolidine was stopped because it was not effective or only temporarily so.

For the majority of patients with rheumatoid arthritis aspirin, associated with local injection of cortisone, is the treatment of choice. The more dangerous and unpredictable drugs should be kept in reserve for serious cases.

The final drug to consider is gold. It has been shown by Duthie and his colleagues (1955) that gold, by intramuscular injection, leads to a remission in 70 per cent of cases. It is more likely to be effective if given in the first five years of the disease, and its use should be combined with the general measures outlined. Gold has complications but if the patient develops the warning signs of rash or albuminuria he can be treated effectively.

Physiotherapy

We may now turn to physiotherapy as the third of the basic methods of treatment. There are two important aspects of physiotherapy: the technical procedures employed on the one hand and the approach to the patient on the other. Techniques will not be discussed in this paper except to mention that splints, supporting the joints in the position of function, must be light and comfortable so that the patient will wear them. To apply a plaster suitable for a footballer to a middle-aged woman with rheumatoid arthritis or to supply an uncomfortable plaster is a serious and all too common mistake.

The second aspect, the physiotherapist’s approach to the patient, is probably the more important. An understanding attitude, by which care is directed to the patient as a whole rather than to isolated segments of his anatomy, is essential but is often lacking. If the emphasis is on getting the patient seen and treated in a certain allotted time the results will not be good. It is a reflection on educational methods if, after three years, this fundamental point has not been grasped by the majority of physiotherapists. In this country where patients may be returning to areas with no facilities for further treatment, the work of the physiotherapist assumes greater significance. He sees the patient more often and for longer than the doctor so that he hears many tales and many questions. He must understand the importance of investigations and of the various treatments used so that he may encourage the patient through the various stages of his illness. In addition he must “sell” physiotherapy. During his treatment, the patient must not only learn to wear splints and do exercises regularly but also to understand the reasons for these procedures; he must understand so well that he will continue to follow the instructions for the rest of his life. The patient needs encouragement, for he is faced with a chronic painful disease which in most cases fills him with fear. Usually he knows a crippled person in his family or among his acquaintances. The attitude that “this is arthritis and there is no cure” is most harmful and results in patients snatching at any bogus remedy. It is important for the physiotherapist to know about prognosis and treatment to help instil into the patient a sensible balanced attitude towards the disease. After all, nobody can cure pernicious anemia, chronic bronchitis, the majority of cases of bronchiectasis or a host of other medical and surgical complaints, so the rheumatoid arthritis is not unique in this respect. But the attitude of many people to rheumatoid arthritis is unique. Nobody withholding vitamin B12 injections from patients with pernicious anemia on the grounds that it will not cure them. It will relieve their symptoms and they will feel well. The treatment of rheumatoid arthritis is less satisfactory, but that is no reason why it should be denied to anyone. Indeed, better results may be obtained in rheumatoid arthritis than in many other chronic medical diseases.

In summary, the first and most important part of a physiotherapist’s work is to treat the patient as an individual, as a whole, and to instil into the patient a hopeful energetic attitude towards his complaint.

Rehabilitation

In the rehabilitation of these patients we are far behind other countries. The liaison between home and hospital is weak
and hospital facilities for rehabilitation and occupational therapy are poor. Perhaps two of the chief deficiencies are that there are no sheltered workshops and that men who are not completely fit find it practically impossible to get light work. The latter do not do well medically as they have too much time to think about their joints and they end on a pension. This problem is the most unsatisfactory aspect of the management of patients with rheumatoid arthritis; legislation is required to solve it.

**Summary**

Modern views on the etiology, diagnosis and management of rheumatoid arthritis are outlined. The role of the physiotherapist is seen not merely as the local treatment of inflamed joints but as an important element in the management of the patient as a whole. The unsatisfactory state of facilities for rehabilitation at present available is indicated.

**References**

- **Ellman, P.** (1946) "The Etiology of Chronic Rheumatism" (Discussion), *Proc Royal Soc Med*, 40 332.