Diagnosis and Treatment of the Rheumatic Diseases: Some Practical Pointers

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SUMMARY

The rheumatic diseases include all forms of arthritis and rheumatism. Successful management of R & A patients depends upon precise diagnosis which, in turn, depends upon a knowledge of prevalence and patterns of the particular diseases in this group. The rheumatic diseases most commonly encountered are discussed in detail. Diagnostic tests, specific and otherwise, are referred to. The practical usefulness of such tests is emphasized. The main objectives of treatment are discussed.

THE diagnosis of rheumatic disease confronts every physician who sees patients with musculoskeletal complaints. The diagnostic features of the rheumatic diseases are contained in the standard textbooks of medicine and in many review articles. Too frequently, these disease descriptions list the rheumatic disease manifestations in an encyclopedic manner without giving the reader a clear idea of their relative importance.

Furthermore, a textbook description of disease is often very detailed for reasons other than its importance in clinical practice. For example, such a description may lead the physician to a more basic understanding of disease processes in general. Important as this understanding may be, the reader may gain the impression that a disease entity so described is encountered in practice with considerable frequency. Gout, for instance, is an important rheumatic disease because knowledge of the metabolic pathways of nucleoprotein degradation and urate formation increases the physician's basic understanding of metabolic and biochemical processes. Accordingly, gout occupies a large section in most standard textbooks. Nevertheless, most family physicians see perhaps one new case of gout per year.

On the other hand, backache due to degenerative disc disease or muscular symptoms associated with chronic emotional disturbances are dealt with in a rather cursory way in many textbooks and every practicing doctor knows that these conditions are present in a considerable proportion of patients seeking his advice.

Understanding Diagnostic Process

The differential diagnosis of rheumatic diseases, as in other fields, depends upon an understanding of what might be termed the diagnostic process. This, in turn, depends upon several basic steps: First, a physician requires knowledge of the relative prevalence rates of diseases in the population he serves. In other words, he must have an idea of how frequently certain diseases are likely to appear in the patients who consult him. Second, he usually recognizes a disease by a pattern or constellation of signs and symptoms. Next, as he interviews and examines each patient, the physician is constantly formulating and rejecting diagnostic hypotheses on the basis of his knowledge of their probabilities and patterns. Next, he obtains, if possible, confirmatory evidence from either special clinical, laboratory or radiological examinations. This evidence may be of high or low specificity as certain tests wholly validate or refute the diagnostic hypothesis whereas others merely strengthen it. Finally, the physician accepts what appears to him to be the most likely hypothesis as the working diagnosis.

Let us consider these several steps in diagnosis as they relate to the rheumatic diseases. First, what is the frequency of these various diseases which a family physician will encounter? Although a great deal of work has been done on the epidemiology of these disorders in recent years, final answers to this question are still not clear. It is obvious that no individual physician has the opportunity of seeing enough patients with these disorders to answer it. A Rheumatic Disease Unit or other special facility in which a

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large number of patients are seen can observe and document these diseases, thereby ascertaining an idea of their relative frequency in the population served by the Unit.

The Rheumatic Disease Unit at the University of Saskatchewan has carried out a detailed documentation study of its patients for the three-year period between July 1, 1966 and June 30, 1969. During that time, a total of 1,201 patients were referred to the Unit and 1586 diagnoses of rheumatic disease were made on these patients.

Table I. Diagnosis of Rheumatic Disease in Patients seen in Rheumatic Disease Unit, University of Saskatchewan, Saskatchewan.

<table>
<thead>
<tr>
<th>Degenerative conditions</th>
<th>585</th>
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<tbody>
<tr>
<td>Degenerative Joint Disease</td>
<td>360</td>
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<tr>
<td>Degenerative Disc Disease</td>
<td>225</td>
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<table>
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<tr>
<th>Inflammatory Polyarthritis</th>
<th>432</th>
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<tbody>
<tr>
<td>Rheumatoid arthritis</td>
<td>360</td>
</tr>
<tr>
<td>Ankylosing spondylitis</td>
<td>44</td>
</tr>
<tr>
<td>Others</td>
<td>28</td>
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</table>

<table>
<thead>
<tr>
<th>Non-articular Rheumatism</th>
<th>427</th>
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<tbody>
<tr>
<td>Shoulder lesions</td>
<td>85</td>
</tr>
<tr>
<td>Tension fibrositis etc.</td>
<td>205</td>
</tr>
<tr>
<td>Other</td>
<td>137</td>
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<table>
<thead>
<tr>
<th>Metabolic Joint Disease</th>
<th>40</th>
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</thead>
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<tr>
<td>Connective Tissue Disease</td>
<td>62</td>
</tr>
<tr>
<td>No Rheumatic Disease</td>
<td>40</td>
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</tbody>
</table>

Table I indicates the frequencies of these diseases. Although these may not represent the exact frequencies of the disorders within the general population, they do represent a cross section of such patients considered to be problems in diagnosis or management by family practitioners since 78.8 percent or almost four fifths of the patients referred to the Unit, were referred by physicians in family practice. The table makes clear that the likelihood of encountering a given diagnosis in a patient presenting with musculoskeletal symptoms in this group fell into four main categories: degenerative conditions including degenerative disc disease of the spine and osteoarthritis; the inflammatory polyarthritides; the various forms of non-articular rheumatism, including those disorders bracketed together as psychogenic rheumatism; and a miscellaneous group including metabolic joint disease and connective tissue disease. The table also lists that small but definite percentage of patients with musculoskeletal complaints who have diseases other than rheumatic diseases.

Osteoarthritis

Next, let us consider the patterns of the rheumatic diseases. The most frequently encountered group of rheumatic diseases are the degenerative skeletal diseases including osteoarthritis and degenerative disc disease of the spine. Much of the osteoarthritis seen in practice is of little clinical significance. One such common form is that which involves the terminal interphalangeal hand joints in the middle-aged, often women just after the menopause. The involved joints develop soft nodular swellings which protude subcutaneously on either side of the terminal interphalangeal joint, and later become bony hard and are associated with slight flexion contractures and/or deviation of the terminal phalanx from the normal alignment of the finger at this joint. These swellings, called Heberden's Nodes, were first described by William Heberden. Although cosmetically undesirable, they rarely cause significant disability and the pain resulting from them is most severe during the early stages of the nodes' development but much less of a problem once the nodular thickening becomes established. This form of osteoarthritis is not commonly associated with generalized osteoarthritis elsewhere. This point must be made with these patients again and again and reassurance concerning the relatively benign nature of this process repeated from time to time.

More significant osteoarthritis develops in the middle-aged or elderly. It is characterized by loss of articular cartilage, usually for no obvious reason, although occasionally secondary to previous injury, neuropathic disease, old inflammatory polyarthritis or some systemic disorder such as hemophilia, acromegaly, hemochromatosis or ochronosis. Weight-bearing joints are more frequently involved and these patients are often obese. X-rays show narrowing of the so-called joint space indicative of articular cartilage destruction. Here again, this form of osteoarthritis may have little or no clinical significance. In fact, it may be expected to develop to some degree in every person over the age of 40. Even so, the disease may progress relatively slowly and the symptoms may never produce significant disability. Aching and stiffness, particularly at the end of a day or after activities involving walking or standing, together with variable progressive limitation of movement of the involved joint, are the predominant symptoms. When the hips or knees are involved, there may be considerable disability from these symptoms. Interestingly enough, the ankles are rarely affected by osteoarthritis.

Spinal Conditions

Degenerative conditions of the spine are an extremely common cause of back pain and discomfort of the neck. It has become apparent in recent years that lesions of the intervertebral disc are probably the primary cause of most of the degenerative conditions seen in the back in elderly people. These uncommonly lead to the classical prolapsed lumbar disc syndromes seen in younger or middle-aged persons. The latter condition is characterized by the acute onset of lumbar pain with sciatic radiation together with sensory and reflex changes at the appropriate levels in the involved lower extremity.

In contradistinction to this type of acute syndrome, many patients over the age of 50 have recurrent mild to moderate low back pain, occasionally disabling them for two or three days at a time. Investigation at the time of symptoms may reveal some restriction and pain on movement of the lumbar spine but neurological evidence of nerve root irritation or compression is lacking, and myelography may show no definite evidence of protrusion of a particular lumbar intervertebral disc. Plain films of the lumbar spine, however, often show osteophytic fringing on the anterior and posterior surfaces of the lumbar discs as well as either increased or decreased volume changes of the disc itself. Sometimes, protrusion of the disc through the epiphyseal plate of an adjoining vertebral body is seen forming the so-called Schmorl's node. Other changes may include demineralization in elderly persons, particularly in
postmenopausal women, as well as true degenerative arthritis changes in apophyseal and/or sacro-iliac joints. It is important to recognize this condition because a great deal can be done to relieve the symptoms of these patients even though the degenerative changes which cause these symptoms cannot be reversed.

**Inflammatory Polyarthritides**

The next largest group comprises the inflammatory polyarthritides. Rheumatoid arthritis is obviously the most frequent and certainly the most important in terms of disability. It affects approximately one to two percent of the population in temperate zones and women over men in a proportion of three to one. The polyarthritides is symmetrical. Nodules may be present in 20 to 30 percent of patients and the latex agglutination test for rheumatoid factor is usually positive. Although this disease may progress to increasing disability in one third of the patients, the other two thirds may run a chronic course with joint inflammation of varying severity, or they may enter permanent remission. Factors favoring a remission include early treatment with adequate rest in hospital. Extra-articular manifestations of rheumatoid arthritis include vasculitis, splenomegaly and neutropenia (Felty’s syndrome), ischemic leg ulcers, ocular lesions and osteoporosis. A poor prognosis is often associated with multiple extra-articular lesions. Complications of rheumatoid disease include septic arthritis and amyloidosis.

Ankylosing Spondylitis occurs primarily in men and begins most frequently between the ages of 20 and 40. It begins with inflammation of the sacro-iliac joints and progresses to similar involvement of spinal joints through the lumbar, thoracic and cervical spinal segments, although remissions may occur before the entire spine is involved. Although laboratory evidence of inflammation such as an elevated sedimentation rate and increased white blood count may be found in this condition, the latex agglutination test for rheumatoid factor is almost invariably negative. X-rays of the spine show typical changes of sclerosis and irregularity of the sacro-iliac joints in early disease and later, paraspinal calcification and apophyseal joint obliteration may occur.

Reiter’s syndrome is associated with a history of recent urethritis and often by conjunctivitis. It occurs most often in young men who give a history of venereal exposure, usually within a week or two of the onset of a watery or mucoid urethral discharge. Later, asymmetrical synovitis, usually involving larger joints of the lower extremities appears. In addition to this characteristic triad of signs, skin lesions which occur on the lower extremities and genitalia may also appear.

**Non-Articular Rheumatism**

The next largest group of patients seen in this Unit and one which may represent the true prevalence of these conditions within the community at large, consists of the various forms of non-articular rheumatism. These include various conditions about the shoulder joints which are described as periarthritis of the shoulder. Although this condition may be secondary to myocardial infarction, hemiplegia or degenerative disc disease of the cervical spine, by far the greatest number of these patients develop the insidious onset of pain, stiffness and progressive limitation of movement of the shoulder without obvious precipitating cause. It is important to recognize this fact and to understand the natural history of this disorder. Most frequently, periarthritis of the shoulder runs a course of from three to 18 months. In the milder cases, there is only minimal limitation of movement of the shoulder and minimal pain for a few weeks, followed by gradual recovery of shoulder movement, without treatment. The more severe cases are characterized by pain — frequently nocturnal — about the shoulder which may prevent the patient from lying on the affected arm or awakens him when he attempts to do so. The discomfort may be particularly refractory to analgesic medication. The limitation of movement in the shoulder may be severe, resulting in the descriptive term of “frozen shoulder” being applied to it.

Many other conditions can result in limitation of movement of the shoulder and, in fact, any immobilization of the upper extremity in persons over the age of 60 may result in considerable restriction of shoulder movement, either temporary or permanent. As the inflammatory element of the periarthritis subsides, although some degree of scarring about the shoulder capsule persists, functional range of shoulder movement generally returns. It is upon this background of natural history of the disorder that attempts at treatment must be evaluated.

**Psychogenic Rheumatism**

An equally important form of non-articular rheumatism is what might be described as psychogenic rheumatism. Several terms have also been used to describe this condition including muscular rheumatism or muscle tension syndrome. This condition is characterized by aching and stiffness in various muscle groups particularly those around the neck, shoulder, girdles and low back. The symptoms are aching and stiffness. On physical examination, no significant joint findings can be discovered. Occasionally, muscle spasm and tenderness can be palpated, particularly about the trapezius, levatores scapulae and lumbar paravertebral muscles. Inquiry into the patient’s lifestyle usually discloses causes for increased emotional tension, and perhaps anxiety or depression. The muscle spasm which occurs seems to result as a physiological mechanism from the emotional stimuli, probably in the familiar flight versus flight pattern. These patients sometimes recognize the relationship of their musculoskeletal complaints to their altered emotional state but, more commonly, the relationship escapes them. They often insist that they are suffering from significant and crippling organic rheumatic disease.

**Metabolic Joint Disease**

A much smaller but potentially more treatable group of musculoskeletal disorders includes those metabolic disturbances, such as gout, which are characterized by inflammation of joints, usually affecting one joint at a time and caused by precipitation of uric acid crystals in and around the joint lining and joint cavity. In the early stages of the disease, or even during acute attacks of gouty arthritis, the serum uric acid may be normal. Ultimately, if untreated, the serum uric acid becomes consistently elevated. Patients with hyperuricemia in gout can be divided into those having reduced urinary excretion of uric acid — the so-called underproducers — and those having increased metabolic turnover of uric acid — the so-called overproducers. The attacks of gouty arthritis ultimately may involve more than one joint and chronic polyarthritis may occur in late stage
gout. Although males are affected predominantly, apparently as a result of an inherited metabolic defect, women can also be affected by the disease. A less common form of metabolic arthritis is pseudo-gout which manifests itself in a form of inflammatory polyarthritis, usually monarticular, similar to gout. This results from precipitation of crystals of calcium pyrophosphate within the joint cavity rather than by crystals of sodium mono-urate.

The physician who is equipped with knowledge of the relative frequency of occurrence of various diseases and their general patterns of presentation, seeks confirmatory clinical, laboratory or radiological evidence on which to base a specific diagnosis. Unfortunately, in the field of rheumatic diseases, specific diagnosis tests are relatively few. Most investigations yield results which can only be interpreted as positive or negative in the light of one's experience and knowledge.

Clinical Acumen

One of the most important diagnostic tools available to the practicing physician is clinical acumen, and it is particularly important in the field of rheumatic diseases. Physical examination of the musculoskeletal system will provide the physician with valuable diagnostic leads. Especially important is the recognition of joint inflammation. Although, in the acutely inflamed joint, all the classical signs of inflammation may be present, they may not be so obvious in the chronically inflamed joint in diseases such as rheumatoid arthritis. Here, there may be no warmth or erythema of the overlying skin and perhaps no effusion. Nevertheless, inflammation can be discerned by careful palpation for soft tissue thickening (which probably represents synovial and periarticular inflammation) and by definite tenderness on pressure, usually over the joint line. Such palpation is more accurate than the observation of swelling by inspection.

Inflammatory swelling, as described above, can be distinguished from the bony overgrowth or osteophytic formation about degenerative joints and which is firm or bony hard. Next, the degree of limitation of joint movement is an essential measurement for the determination of joint function. Too often, physicians make a diagnosis and forget the degree of disability which this diagnosis occasions. A careful assessment of joint range will usually give the examiner an idea of the degree and areas of the patient’s disability. With a little practice, it’s easy to estimate a joint’s range of motion without actually measuring it with a goniometer.

Laboratory evidences of inflammation, such as an elevated sedimentation rate or white blood count, may be present in inflammatory joint disease such as rheumatoid arthritis, ankylosing spondylitis or Reiter’s syndrome. The elevation of the erythrocyte sedimentation rate is often an index of the degree of inflammatory disease.

Diagnostic Tests

Two of the most widely-used diagnostic tests in this field are the determination of serum uric acid, and determination of the presence of rheumatoid serum factor by the latex agglutination test. These must be interpreted with special caution.

Serum uric acid in humans may vary according to a number of factors including whether or not the patient is fasting. All too often, the physician orders a serum acid with the patient in the non-fasting state. This may lead to the reporting of a figure in the borderline or elevated range when the fasting serum acid may be quite normal. Always do serum uric acids with the patient in the fasting state. Next, there is considerable variation in the normal range as reported from different laboratories. The physician should familiarize himself with the normal range as reported by the laboratory to which he sends his patients. Ordinarily, using the methods most frequently employed, normal fasting serum urate levels are 6 mg. per 100 ml. or less in women and 7 mg. per 100 ml. or less in men, with somewhat lower levels in prepubertal age groups. With some of the new auto-analyzer techniques, however, these values may be reported as high as 9 mg. per 100 ml. in males and 7.3 gm per 100 ml. in females. Keep in mind other causes for serum uric acid levels: secondary hyperuricemia can occur in various myeloproliferative disorders and can be caused by a variety of medications such as thiazides.

The latex agglutination test measures the presence in the serum of the patient of a macroglobulin of the 19 S variety. This is found in perhaps 80 percent of patients suffering from rheumatoid arthritis in most series. It is not in itself specific for the disease as it may be found in the serum of patients with various dysproteinemias and in up to five percent of the normal population.

Examination of the synovial fluid is essential to the diagnosis of septic arthritis where positive identification of the infecting organism enables the physician to prescribe the appropriate antibiotic. In other forms of joint disease, examination of synovial fluid may also be helpful but diagnostic identifications of crystals of uric acid in acute gouty arthritis, for example, can usually be carried out in specialized laboratories.

X-rays can be helpful in the diagnosis of rheumatic disease but they should be interpreted with caution. In chronic rheumatoid arthritis, typical juxta-articular erosive changes are seen by X-ray. In contradistinction, the so-called “punched-out” lesions of gout adjacent to joints can be discerned by radiologists. Evidence of the loss of articular cartilage and adjacent osteophyte formation in degenerative joint disease may be helpful.

Treatment of Rheumatic Disease

Proper treatment depends upon accurate diagnosis, adequate understanding of the natural history of a disease, and evaluation of the individual patient’s disability and future physical requirements. It is more proper to speak of management rather than treatment of rheumatic disease since the term management implies dealing effectively with a chronic disease over a long period of time, rather than the use of the word treatment which implies cure or abolition of the disease state. Most important in any plan of management is the patient’s ability and willingness to cooperate in it. This will depend on the patient’s understanding of the disease. Particularly in the cases of rheumatoid arthritis, where potential disability is a possible outcome of the disease state, it is essential for the family physician charged with the management of these cases to give each patient as full an explanation of the disease as possible. Only rarely is there anything to be gained by deferring such explanation. The patient is entitled to know what he has to deal with and must, if possible, alter his life to compensate for the disease, and to adjust to it. In this way, the patient “accepts” his disease but not in a
purely passive way. Instead, he assumes the role of an active partner in an intelligent struggle against his disease. Acceptance of a rheumatic disease is all too often equated in the patient's mind (and in the physician's) with the attitude: “you've got to learn to live with it”.

The principles of management of chronic rheumatic disease are well-covered in standard textbooks of medicine and good review articles. The most frequently involved occupational group is the housewife on whom physical demands are constant and whose workload can be lightened only to some extent. The main management principles are:

1. Relief of pain.
2. Relief of joint and other soft tissue inflammation, if present.
3. Correction of abnormalities associated with disease — e.g. anemia, psychological, disturbance etc.
4. Maintenance of joint and adjacent soft tissue function (i.e. prevention of joint deformities, tendon scarring and rupture).
5. Correction of, or adaptation to, joint, soft tissue and bony dysfunction (e.g. correction of deformities, arthroplasties etc.)
6. Treatment directed specifically against the disease process itself. (e.g. treatment of rheumatoid arthritis with attempts to induce a remission of the disease or treatment in gout which corrects for the effects of the metabolic defect).

The basic regime of treatment of rheumatoid arthritis, gout and ankylosing spondylitis and osteoarthritis is well-outlined in Dr. Duncan Gordon’s article (Canadian Family Physician January, 1970).

Relief of Pain

The importance of adequate and continuing relief of pain cannot be overemphasized. If the attending physician does not make a sincere effort and have some success in relieving the patient's symptoms (whether they be described as pain, stiffness, discomfort, aching etc.), the patient's confidence is lost and other aspects of the program of management will be in jeopardy. Analgesics should not be prescribed until a definite diagnosis is made but once it has, you can use appropriate analgesic medications. In those rheumatic diseases characterized by inflammation of joint or soft tissues, salicylates are still the safest and most effective analgesic. In addition, they produce an anti-inflammatory effect. At least 4-6 gm. (60-90 grains) of enteric coated aspirin or buffered aspirin in four or five divided doses daily are required. Serum salicylate levels of about 20 mg. percent should be achieved for best anti-inflammatory and analgesic effects. Tinnitus or deafness occur if the serum salicylate level rises much above these levels in adults. The appearance of these symptoms should be a warning to reduce the dosage slightly.

If salicylates do not give the patient satisfactory pain relief, consider the use of other analgesics. Codeine has a time-honored place in the relief of pain and is still, I believe, an excellent drug. Very few cases of true codeine addiction have been described and this possibility is probably not an important one. The drug should be used in doses of 15, 30 or even 60 mg. q4h p.r.n. It is helpful to patients to advise them that they may take up to four codeine tablets of appropriate dosage in 24 hours. Codeine consumption by the patient can and should be monitored easily by the physician when he authorizes refilling of the prescription. Codeine does have the disadvantage of being constipating, particularly in older people. Many patients, however, achieve satisfactory pain relief with codeine and overcome the tendency to constipation by taking regular, small doses of laxative. Propoxyphene is a useful substitute for codeine and can be used in equivalent dosage on the same basis outlined above. Other satisfactory analgesics include zactin or ponstan. I think that the careful physician listening to this patient's complaints can, with judicious juggling, work out a program of analgesics which will control the patient's musculoskeletal complaints.

Physical Measures

The use of physical measures to relieve pain should not be neglected. Advice on the application of local heat which the patient can use at home will be very helpful. Simplest, of course, is the use of a hot water bottle or heating pad applied to the involved area. Sometimes, after the patient has been instructed, he may apply ice or other cold applications with considerable benefit. Rest is an important method of producing analgesic effects in rheumatic disease. Patients are naturally reluctant to consider rest, so the physician should emphasize the importance and rationale of a rest program, and also its compatibility with an active exercise program. I usually tell my patients that rest does not mean that they are to go to bed and remain there without moving. I suggest that regular rest periods and an adequate program of sleep at nights will be helpful. The elderly osteoarthritic whose complaints, particularly in the weight-bearing joints and in the spine, are aggravated by standing, walking or other weight-bearing, will be greatly relieved of his or her joint symptoms if he or she can sit and rest for even ten minutes out of every hour. The use of some form of walking aid, such as a cane or crutches, will also have analgesic effect in that it relieves weight-bearing joints from some degree of stress.

Relief of Inflammation

The inflammatory polyarthritides include rheumatoid arthritis, ankylosing spondylitis, Reiter's syndrome, psoriatic arthritis and the arthritides associated with inflammatory bowel disease. Gout is also an inflammatory joint disease, but characteristically involves one joint. Even osteoarthritis, although primarily degenerative, can result in what might be called a reactive synovitis, particularly after minor injuries to significantly previously damaged joints.

Relieving or suppressing inflammation in these various conditions will depend, to some extent, on the particular diagnosis. Patients with rheumatoid arthritis should be on regular anti-inflammatory medication. The safest of the anti-inflammatory medications are salicylates.

The use of phenylbutazone or indomethacin is also helpful and, in ankylosing spondylitis, phenylbutazone is almost a specific for the inflammatory changes of this disorder. It is interesting that, although these three anti-inflammatory medications are in the same range of potency, individual patients may respond better to one than to another. Most patients will achieve good effect from salicylates but, if after a trial of at least two weeks, satisfactory anti-inflammatory effect is not achieved, then
phenylbutazone and, subsequently, indomethacin may be tried. Generally speaking, it is unwise to increase the dose of phenylbutazone above 400 mg. or the dose of indomethacin above 100 mg. per day. Again, rest and various physical methods may be very helpful in relieving inflammatory joint and soft tissue changes in these disorders.

Steroid Therapy

Cortical steroid medications may be necessary for adequate anti-inflammatory effect. In self-limited disorders such as Reiter's syndrome or severe periartthritis of the shoulder, their use is probably justified. But the potentially serious side effects of longterm steroid therapy are such that the decision to embark upon this form of treatment is one which must not be made lightly. Indeed, there is a very real danger in a chronic inflammatory joint disease such as rheumatoid arthritis, that once started on systemic steroids the patient may never be able to discontinue them. It seems apparent now that doses of prednisone should, if possible, be kept below 10 mg. per day. Doses above this level induce a painfree sense of wellbeing which the patient quickly learns to expect and enjoy. This leads to corticosteroid dependence and hastens development of longterm complications, particularly protein and calcium wasting with osteoporosis and the possibility of ulcerative lesions of the upper gastrointestinal tract. It is therefore best to start on a low dosage — probably 5 mg. per day — and titrate the dose to a level which will relieve most of the patient's symptoms and enable him to continue a therapeutic exercise program or to cooperate in other aspects of treatment. Milder anti-inflammatory drugs should be continued — and not discontinued when prednisone is started. This must be constantly re-emphasized to the patient as the initial sense of wellbeing which follows the initiation of corticosteroid therapy may well induce the patient to discontinue aspirin, indomethacin or phenylbutazone. In rheumatoid arthritis, if the patient's condition permits, systemic steroids may often be discontinued after their use has tided patients over an exacerbation of their disease.

Local Steroid Injections

Widespread and ill-considered use of local steroid injections in rheumatic disease has tended to mask their usefulness. There is no question that the judicious use of intra-articular steroids, given when the patient is on a good program of treatment for his underlying disease process, is helpful in reducing inflammatory manifestations of joint disease. Unfortunately, degenerative joint changes are not influenced by local intra-articular steroid injections. The repeated use of intra-articular injections can also result in severe disorganization of the joint with loss of articular cartilage and resultant instability. There is also the ever-present possibility of introducing infection into the synovial cavity by repeated joint injections.

In many forms of rheumatic disease, correction of associated abnormalities is essential. In rheumatoid arthritis, for example, correction of anemia, either by means of iron therapy if the patient is iron deficient, or perhaps by judicious transfusion during the acute phase of the disease, may be very helpful in improving the patient's general condition. Similarly, local treatment of conjunctivitis or urethritis in Reiter's Syndrome may reduce the inflammation. Particular attention must be paid to the prompt treatment of infection in patients who are chronically debilitated by rheumatoid arthritis. If the patient is disabled or bed-ridden, he is naturally more prone to such infections.

Joint and Tissue Function

Essential to the treatment of any rheumatic disease is preservation of joint function. Normal joint functions include mobility, stability, freedom from symptoms and efficiency in terms of lack of deformity, crepitus, loose bodies, etc. These functions may be compromised by any form of rheumatic disease and it is essential to understand how they can be preserved. Perhaps the most important aspect of such treatment is an active exercise program designed to maintain functional range of motion. Every patient with rheumatic disease should receive a general program of exercise appropriate to the stage and extent of his joint disease. These exercises are best demonstrated to the patient by a physiotherapist, but a discerning physician can easily learn to instruct the patient. What is required is an understanding that the patient must put his involved joints through as complete a range of motion as is possible for a certain number of times each day. In addition, "setting" or isometric exercises are helpful in maintaining adjacent muscle strength and bulk. Patients' ideas of joint physiology are often rudimentary and they therefore do not understand the need to maintain these proper joint functions. Each physician dealing with rheumatic disease must therefore explain this need in detail to patients the need to maintain them. Rest for inflamed joints is also essential to prevent joint damage and avoid strain.

Correction of joint deformities by a variety of means, including splinting and reconstructive surgery, requires the intelligent cooperation of the attending physician and various consultants including those engaged in rheumatology, physical medicine and orthopedic surgery. In the inflammatory forms of polyarthritis such as rheumatoid arthritis, the total treatment program of the patient must be kept well in mind when planning operations designed to correct or alleviate joint dysfunction. Uppermost in the minds of the attending physicians should be the specific functional needs of the patient. In few areas of medicine is teamwork between the various medical and allied health personnel so important.

If established joint dysfunction appears, then the physician should be aware of a variety of aids which can be adapted to the patient's use and may render him more self-sufficient. Most doctors can make brief assessment of the patient's activities of daily living if they think in terms of the important activities everyone carries out daily. Consultation with a specialist in physical or rehabilitation medicine, plus assessment by an occupational therapist, will be of invaluable assistance to the physician in improving function in these ways, even in those patients who have established joint deformities which cannot be corrected by any form of treatment.

Specific Treatment

There are few forms of specific treatment at present for the rheumatic diseases. Further investigation into these disorders will, we hope, result in more precise knowledge of the causes, and therefore the treatment, of these disorders.