The University of Toronto Rheumatic Disease Unit

APPROACH TO THE MANAGEMENT OF RHEUMATIC ARTHRITIS

By D. A. GORDON and M. A. OGRYZLO

The modern medical management of the rheumatic diseases demands a collaboration of many persons with widely differing skills, and involves political, economic, ethical, social and educational, as well as medical responsibilities. Until the early part of this century, there was no concept of special Rheumatic Disease Units being created for the treatment of rheumatoid arthritis and other forms of arthritis. However, real stimulus came with the post-war success of newly created rheumatic disease centres at Edinburgh, Manchester and Taplow in the United Kingdom, in the Scandinavian countries and in North American Veterans' Hospitals, which clearly demonstrated that a great deal could be done for sufferers from these diseases.

In Canada, the magnitude of the problem of arthritis was recognized by the Canadian Arthritis and Rheumatism Society at a time when the speciality of rheumatology had virtually no status, physicians trained in this specialty were scarce, and hospital services for the general arthritic population were at a minimum. From the Society's inception in 1948, its main effort was directed at correcting these deficiencies. In its "Plan for Attack", one of its main objectives was the provision of centralized units designed for exemplary care of arthritis, to be combined in certain instances with extended research programmes (1). Due to the cost involved, the programme could not be implemented prior to the establishment of government-sponsored hospitalization. In its submission to the Royal Commission on Health Services in 1961, the Society recommended the establishment of 25 or more centres in relation to regional teaching hospitals across Canada. By demonstrating high standards of diagnosis and treatment, by stimulating research and by their educational activities, it was envisaged that these units would exercise a profound and beneficial influence on the care of arthritis patients far beyond the confines of the units themselves, and thus would contribute to a significant reduction in the incidence and severity of permanent physical disability.

Traditionally, patients with arthritis have been at a disadvantage in the competition for admission to hospital. The usual organization of medical services has tended to accentuate the difficulties in communication between the medical, nursing, physiotherapy, occupational therapy and social work members of the therapeutic team, particularly when these members have been pre-occupied with the problems of the most seriously ill patients, not necessarily those suffering from arthritis. These treatment shortcomings and the lack of communication between the various disciplines have been further compounded because rheumatic disease patients have usually been scattered throughout the hospital. This random distribution of patients has complicated, rather than facilitated, the administration of a rheumatic disease programme.

For many years it had been apparent that the complex needs of the arthritic patient were not being met in Toronto by our teaching hospitals, and that a radical revision in our concept of treatment for these patients was required. Some means was necessary to remove the arthritic from competition with more acute illnesses, and at the same time provide a programme of "total care" for these patients. In recent years the situation changed dramatically so that this programme could be implemented. The most important factor was that universal government hospital insurance became a reality in Canada in 1961. Immediately, the financial burden of hospitalization was eliminated, and the prospect of being able to admit all patients in need of hospital care became a reality. Another important factor was the formation in 1959 of a committee*, under the late Dr. Wallace Graham, whose task was to draw up specific proposals for the establishment of an exemplary Rheumatic Disease Unit in Toronto. The recommendations of this committee were outlined in the following proposals:

1. to establish a Unit for the study of the rheumatic diseases, as well as the prolonged active treatment and rehabilitation of patients suffering from these diseases.
2. to demonstrate the highest standards of medical care for patients requiring such treatment and to restore or maintain their state of personal self-sufficiency.
3. to provide the resources necessary for continuing an intensive clinical investigation and research.

*Other members of the committee included the late Dr. A. A. Fletcher, Dr. M. A. Ogryzlo Dr. D. C. Graham, Dr. J. S. Crawford and Mr. Edward Dunlop, Secretary.

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4. to supplement and enhance facilities for undergraduate and graduate instruction in medicine, physical and occupational therapy, public health and social work.

These proposals were wholeheartedly accepted and in 1961 the University of Toronto Rheumatic Disease Unit was established ([2]). Throughout all these developments, the Ontario Hospital Services Commission, in charge of the hospital insurance plan, furnished much theoretical and practical encouragement. An example of this was the recognition that these special units require an increased number of physiotherapists compared with general hospitals. The ratio of one physiotherapist for every 30 or more patients, usual in general hospitals, was recognized to be inadequate in the rheumatic disease setting. Thus, one physiotherapist for every six patients was authorized.

Now housed in the new Wellesley Hospital, the Unit consists of 40 beds in a segregated area on the 6th floor, having at its disposal facilities of a well-equipped 650-bed general hospital, including a modern Rehabilitation Department under the direction of Dr. C. M. Godfrey. Facilities for basic research in the rheumatic diseases comprise 4 modules with a total of 3,000 square feet of laboratory space on the main floor of the hospital. Adjacent to the rheumatic disease patients, space has been provided for physiotherapists and social workers, as well as for a Clinical Investigation Unit of 10 beds, associated with 1,200 square feet of additional laboratory space for clinical and metabolic investigations.

The concept and organization of a modern rheumatic disease unit is depicted schematically in Fig. 1. All phases of the programme are now functioning, and the diagram is intended to illustrate the dynamic inter-relationship between the treatment, education and research functions of the Unit. Patients have generally been admitted on an elective basis by application. In cases where the patient is not known to the staff, and where inadequate information is provided by the referring physician, a pre-admission assessment is usually requested through the agency of the Canadian Arthritis and Rheumatism Society. This involves a visit to the patient by a physiotherapist and social worker of the field staff of the Society and the submission of a detailed report to the referring physician and to the Rheumatic Disease Unit. The evaluation can usually be completed during the waiting period for admission, which varies from one to six weeks. Where the patient has been known to the staff of the Unit this pre Unit evaluation is usually unnecessary and admission has been expedited in rotation as beds have become available. These procedures have been effective in avoiding the unnecessary admission of patients for whom the real intention may merely have been the provision of nursing and domiciliary care on a continuing basis.

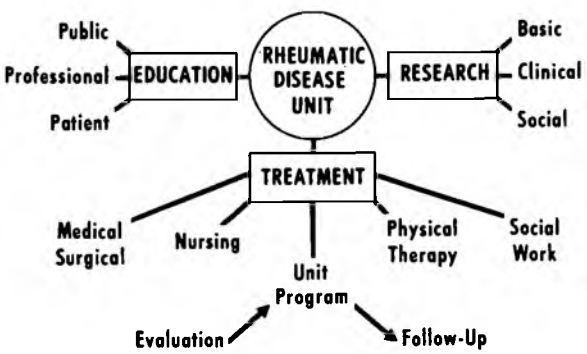

Fig. 1.—Organization and functions of the Rheumatic Disease Unit depicted schematically.

The conceptual aim has been to develop a Unit primarily for the purposes of: complete investigation of patients with rheumatic disorders; early, accurate diagnosis; intensive application of accepted therapeutic procedures and rehabilitation of those disabled patients who are capable of responding. Our experiences and impressions to date confirm that the advantages to be gained from the establishment of a rheumatic disease Unit are legion. As emphasized previously, all patients requiring hospitalization for diagnosis and management of arthritis are eligible and, because admissions are controlled, these patients do not have to compete directly with patients with other general medical problems of a more acute nature.

The patient population comprises all types of rheumatic diseases, including the collagen diseases. However, as might be expected, the majority suffer from rheumatoid arthritis. Although rheumatoid arthritis is a symmetrical polyarthritis affecting in particular peripheral joints, there is an increasing appreciation that this is a disease of the patient as a whole. For this reason many prefer the term "rheumatoid disease" instead of "rheumatoid arthritis" ([3]). Figure 2 schematically depicts many of these non-articular features which can affect the patient systematically.

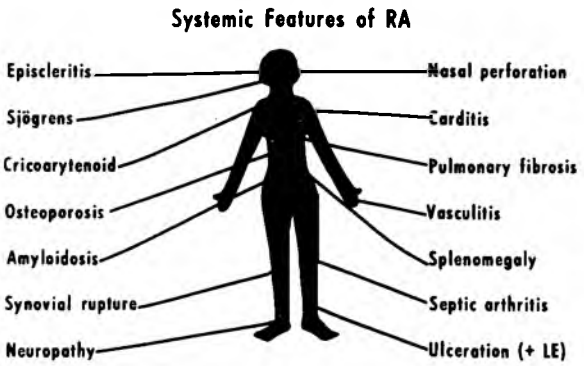

Fig. 2.—Schematic depiction of certain systemic features and complications of rheumatoid arthritis.

In the past two years we have studied 106 patients with classical rheumatoid arthritis[4] admitted to the University of Toronto Rheumatic Disease Unit[5]. The characteristic female predominance of 65 per cent and the mean age of 54 for rheumatoid arthritis were confirmed (see Table I). Rheumatoid factor detected by means of the latex test was found in 96 per cent of these patients with a titration level of 1:1280 or greater in 84 per cent of cases, and the pathog-

Fig. 3.—Ward rounds at the University of Toronto Rheumatic Disease Unit, The Wellesley Hospital.

nomonic feature of subcutaneous nodulation was present in 59 per cent of patients. Synovial effusions were noted in 51 per cent of patients. Table II depicts the prevalence of various systemic features in these patients which highlights the need for optimum investigative services to be found only in an active general hospital rather than a chronic care or convalescent hospital.

TABLE I

FEATURES OF 106 PATIENTS WITH CLASSICAL RHEUMATOID ARTHRITIS

Characteristics	Number	Per Cent
Females	67	65
Mean Age	54 years	
Joint Effusion Present	57	51
Subcutaneous Nodulation	65	59
Rheumatoid Factor Positive	102	94
Titre of 1:1280 or Greater	90	84

Before treatment can be instituted precise medical diagnoses must be established in association with careful functional and social assessments. These assessments are carried out and recorded in each patient's chart by Unit physiotherapists, occupational therapists and social workers. Education of the patient is basic to the successful management of the patient suffering from rheumatoid arthritis. This approach is coupled with a clear appreciation of the patient's emotional reaction and requirements. As a consequence, admission of patients early in the course of their

TABLE II

FEATURES OF 106 PATIENTS WITH CLASSICAL RHEUMATOID ARTHRITIS

Systemic Complications	Number	Per Cent
Cardiovascular	28	25
Pulmonary	23	21
Splenomegaly	10	9
Digital and Skin Vasculitis	29	26
Neuropathy	14	12
Atlanto-axial Subluxation	21/60	35
Positive LE Test	18	16

illness has been emphasized so that they may be better educated about their condition, and in order to prescribe a proper regimen calculated to prevent disability and maintain functional capacity. This emphasis on patient education at the Unit is illustrated by the daily ward exercises, hand classes and regular patient meetings for discussion of other aspects of arthritis. It is not surprising that patients learn a good deal and profit greatly from their association with the other patients in the Unit. Our policy of allowing ambulatory patients home-leave on the weekends has also been an important factor in maintaining patient morale, and has not interfered with the physiotherapy programme. In addition to general and special exercises the physiotherapy measures employed at the Unit include hydrotherapy, various forms of heat and cold to reduce joint inflamation and muscle spasm, as well as various resting and functional splinting methods.

Other measures to control rheumatoid disease activity include the use of various medications (see Table III). Salicylates as enteric coated preparations were most commonly prescribed in 93 per cent of patients, and the adequacy of this therapy was ensured by periodic measurement of blood salicylate levels. Chloroquine or gold therapy had been used at some time or other in 91 per cent of patients in this series (see Table III) in attempts to induce disease remission in those not responding to the measures outlined above. These agents have been found to be of greatest value in early active disease rather then in longstanding rheumatoid arthritis. Corticosteroids were used in 38 per cent of cases. Most of these individuals had been taking prednisone prior to admission and our usual efforts have been directed to gradual reduction of this medication rather than to their institution. The long-term complications of corticosteroids are well known and only in the most severe or elderly cases are we tempted to use these agents in the lowest possible dosage. Intra-articular steroid injections used in 39 per cent of patients are much preferred to systemic medication, but in rare instances where isolated articular areas of synovitis fail to respond, surgical synovectomy is performed by our orthopaedic colleagues. In other selected cases with long

standing disease and deformity various reconstructive surgical procedures are carried out. One measure to the success of the foregoing programme has been obtained from a functional assessment of 243 patients with rheumatoid arthritis evaluated at the time of admission to the Unit and at the time of discharge[6]. These results are shown in Table IV where it can be seen that at the time of discharge there has been a substantial reduction in the proportion of patients in class III and IV.

TABLE III

FEATURES OF 106 PATIENTS WITH CLASSICAL RHEUMATOID ARTHRITIS

Treatment	Number	Per Cent
Salicylates	103	93
Chloroquine	35	32
Gold	65	59
Systemic Steroids	42	38
Duration of Steroids—		
less than 1 year	10	23
less than 5 years	20	46
more than 5 years	10	23
Intra-articular Steroids	43	39

TABLE IV

THERAPEUTIC RESPONSE OF 243 PATIENTS WITH RHEUMATOID ARTHRITIS

Functional Capacity*	Admission	Discharge
I Completely normal	5	16
II Adequate	34	131
III Limited	133	77
IV Incapacitated	71	19

*American Rheumatism Association Classification.

Possibly the greatest advantage arising from the creation of such a Unit has been the more effective application of treatment methods, resulting from improved communication between the various members of the team, including the medical staff, nurses, physiotherapists, occupational therapists and social workers. All representatives of these treatment disciplines are based on the Rheumatic Disease Unit, and make rounds regularly together, in addition to their individual professional relationship with patients. (See figure 3). As a consequence, all Unit personnel now obtain a more complete and intensive experience in the investigation and management of the rheumatic disease patient than previously and they develop an appreciation of the interdisciplinary approach. Furthermore, there has been an increased facilitation in the education of the various Unit staff members from their association at rounds, seminars and the out-patient follow-up clinic. As noted, each patient has a thorough medical investigation by the clinical staff, including a social history and an assessment by a physiotherapist assigned to the patient. On discharge from the Unit, the family physician is given not only the usual summary of medical investigations and recommendations as to future management, but also a complete physiotherapy, occupational therapy and social work report.

In addition to the pre-admission evaluation referred to above, the physiotherapists and social workers of the Canadian Arthritis and Rheumatism Society carry out a regular evaluation of patients in their home setting following discharge[7]. This has been an important and successful aspect of the programme. As evidenced by the improvement maintained by 75 per cent of patients discharged from the Unit during three years of follow-up evalaution[6]. Furthermore, continued liaison with the Arthritis Society physiotherapists and social workers is maintained by the regular attendance of their representatives at the Rheumatic Disease Unit teaching rounds and conferences.

The treatment programme is under the direct supervision of 3 geographic full-time physicians. Participating in the treatment programme are a number of part-time consultants including one in physical medicine, 2 in orthopaedic surgery, one in clinical psychiatry, one in research psychiatry and one in microbiology. At the house physician level, provision is made for one resident physician or senior clinical fellow, assisted by 2 or 3 assistant residents or clinical fellows. The full-time physicians participate in active research programmes in the various metabolic, immunologic, microbiologic or pathologic aspects of the rheumatic diseases, assisted by 3 or more research fellows. The paramedical personnel include 5 physiotherapists, 2 occupational therapists and 3 social workers, assisted by 4 graduate students from the University of Toronto School of Social Work. All of these individuals spend their working day with their patients on the Unit. The success of this programme and the ease of co-ordination of various basic and clinical research studies has been self-evident. Many of the administrative difficulties encountered in managing an outpatient rheumatic disease programme, as described by Engelman *et al*[8], appear to have been eliminated. At the present time, similar units are in operation in 5 other Canadian medical centres. More are in the planning stage although not all are provided with research facilities. Meanwhile, the concept of the University of Toronto Rheumatic Disease Unit is being expanded to other University of Toronto teaching hospitals.

The success of the University of Toronto Rheumatic Disease Unit at The Wellesley Hospital would appear to support the recommendations of the Canadian Arthritis and Rheumatism Society in its submission to the Royal Commission on Health Services. Visualized as "focal points for specialized diagnosis, treatment, research and medical education, in order to provide a truly balanced rheumatic disease control programme," the creation of such Units has enabled the complex needs of the patient with arthritis

to be met in a comprehensive way. At the same time the treatment programme facilitates and complements in every way the education and research functions of the Unit. It is evident that the responsibility for developing Rheumatic Disease Units will fall upon various parties, including University Departments of Medicine, Teaching Hospitals and Government Hospital Insurance Commissions, as well as local Medical Societies. However, the effort of planning and seeking out methods of achieving the desired goal in each area, is a responsibility to be met, if at all, only by interested lay groups such as the Canadian Arthritis and Rheumatism Society.

In summary, the rationale for and aims of the Rheumatic Disease Unit concept as well as our Unit approach to the management of rheumatoid arthritis have been described. We have been greatly heartened by our experiences to date and hope that the establishment elsewhere of similar units will lead not only to better methods for controlling the various forms of arthritis, but will also enhance education about the rheumatic diseases, and lead to new knowledge about them.

The authors wish to thank Miss Rosemary Jacobson of Johannesburg, a recent physiotherapist with the Unit (see Figure 3, third from the right) for encouraging us to write this account.

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Place of Physiotherapy in the Treatment of Rheumatoid Arthritis

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In 1964 The American Rheumatism Association established 6·4 per cent of the population were reported to have Arthritis and Rheumatism. The Socio-economic impact of the rheumatic diseases can be appreciated from data obtained from the U.S. National Health Survey (1964)—this showed that of the one million persons confined to the house 17 per cent attributed their restriction to arthritis and rheumatism and the same conditions were blamed for a work loss of approximately 27 million days annually.

The management of rheumatoid arthritis is of necessity somewhat pragmatic and the care of each patient must be adapted to his own needs.

This article is a description of the general principles employed by the physiotherapist in the treatment of rheumatoid arthritis. The ideal situation for such patients is a unit where all the therapists are geared to the education and effective techniques of management.

TYPES OF PATIENTS ADMITTED TO THE UNIT

(*a*) First timers—these patients demonstrate the active stage of the disease.

(*b*) Flare up's—reassessment of the condition and reorganisation of treatment.

(*c*) Advanced cases—these require maintenance of strength and maximal usage of remaining joint function.

(*d*) Post surgical management.

Before considering the approaches available in this condition, it is essential to comprehend the forces producing the pain and deformity. (See Table I).

JOINT DEFORMITY

Joint function depends on the architectural integrity of bones bearing surfaces and restraining ligaments, on muscle power and neural regulation and freedom from adverse external circumstances; in the rheumatoid all of these may be involved.

Movement

In the normal person activities of daily living result in maintaining muscle strength and an adequate blood supply; the nutrition of the cartilage is dependent on joint movement and the most effective stress on bone preventing disuse osteoporosis is from muscle contraction. In the person with changes characteristic of the rheumatic type exercise cannot be left to chance but is regulated by a therapeutic regime controlled for load, direction, duration and frequency.

Capsule, ligament, cartilage and bone

Effusion in a joint will produce a raised intra-articular pressure. This may result either from active disease process or traumatic inflammation. DeAndrade, Grant and Dixon suggested that stimuli from the knee joint reflexly inhibit lower motor neurons supplying the quadriceps. In patients with articular disease pain precedes weakness. The highest pressures noted in the knee are during full knee bend whereas the lowest pressure noted was with the knee in a position of slight flexion.