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REVIEW

Kinesthetic treatment on stiffness, quality of life and functional independence in patients with rheumatoid arthritis

Tratamiento kinésico sobre la rigidez, la calidad de vida y la independencia funcional en pacientes con Artritis Reumatoide

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ABSTRACT

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disease of unknown etiology that primarily affects the joints, causing joint destruction, deformity and functional disability. Genetic, immunological, environmental, psychological and endocrine factors are believed to contribute to its development. The diagnosis of RA is based on the confrontation of clinical manifestations and laboratory tests, with classification criteria established by the American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR). Treatment has evolved significantly in recent years, focusing on obtaining and maintaining clinical remission to prevent structural and systemic complications. Rehabilitation plays a crucial role in the management of RA, relieving pain, preventing deformities and improving quality of life. Physical therapy programs include joint mobility exercises, resistance exercises, therapeutic massage, aerobic exercises and stretching, among others. RA can have different patterns of evolution, such as acute, cyclic or progressive. Physiotherapy helps to improve the physical and psychological function of patients, adapting to the stages of the disease. In addition, a multidisciplinary approach including pharmacological treatment, orthopedic surgery when necessary and personal care is recommended. Rehabilitation is essential to maintain the functional independence of RA patients and improve their quality of life. Physical therapy programs should be tailored to the individual needs of each patient and consider the stage of the disease. Physiotherapy has been shown to reduce pain, improve muscle function and strength, and contribute to the overall well-being of RA patients.

Keywords: Rheumatoid Arthritis; Rehabilitation; Physiotherapy; Treatment; Quality of Life.

RESUMEN

La artritis reumatoide (AR) es una enfermedad inflamatoria crónica y sistémica de etiología desconocida que afecta principalmente a las articulaciones, causando destrucción articular, deformidad y discapacidad funcional. Se cree que factores genéticos, inmunológicos, ambientales, psicológicos y endocrinos contribuyen a su desarrollo. El diagnóstico de la AR se basa en la confrontación de manifestaciones clínicas y pruebas de laboratorio, con criterios de clasificación establecidos por el American College of Rheumatology (ACR) y la European League Against Rheumatism (EULAR). El tratamiento ha evolucionado significativamente en los últimos años, enfocándose en la obtención y mantenimiento de la remisión clínica para prevenir complicaciones estructurales y sistémicas. La rehabilitación desempeña un papel crucial en el manejo de la AR, aliviando el dolor, previniendo deformidades y mejorando la calidad de vida. Los programas de fisioterapia incluyen ejercicios de movilidad articular, ejercicios de resistencia, masajes terapéuticos, ejercicios aeróbicos y estiramientos, entre otros. La AR puede tener diferentes patrones de evolución, como aguda, cíclica o progresiva. La fisioterapia contribuye a mejorar la función física y psicológica de los pacientes, adaptándose

a las fases de la enfermedad. Además, se recomienda un enfoque multidisciplinario que incluye tratamiento farmacológico, cirugía ortopédica cuando es necesario y cuidado personal. La rehabilitación es esencial para mantener la independencia funcional de los pacientes con AR y mejorar su calidad de vida. Los programas de fisioterapia deben adaptarse a las necesidades individuales de cada paciente y considerar la fase de la enfermedad en la que se encuentra. Se ha demostrado que la fisioterapia reduce el dolor, mejora la función y la fuerza muscular, y contribuye al bienestar general de los pacientes con AR.

Palabras clave: Artritis Reumatoide; Rehabilitación; Fisioterapia; Tratamiento; Calidad de Vida.

INTRODUCTION

Rheumatoid arthritis (RA) is a chronic, systemic inflammatory disease of unknown etiology whose main characteristic is joint involvement. This involvement can be remittent, but if it is continuous, it usually leads to progressive joint destruction, deformity, and variable degrees of functional disability.[1]

Rheumatoid arthritis is the most common of the chronic inflammatory rheumatic diseases. Like many autoimmune diseases, it is multifactorial, i.e., it involves environmental, genetic, immunological, psychological, and endocrine factors. Genetic factors account for only 60 % of the factors favoring RA. This highlights the importance of environmental factors, explaining the differences in RA prevalence between countries. Significant advances have been made in RA in the last 10 years, both pathophysiological diagnostic and therapeutic, leading to a total transformation of the treatment and course of the disease.[2]

The diagnosis of RA can be challenging to establish. It is based on the confrontation between clinical manifestations and laboratory tests. The American College of Rheumatology (ACR) and the European League Against Rheumatism (EULAR) have developed classification criteria developed from cohorts and cases of incipient arthritis, which can assist the clinician in diagnosing complex cases.[3]

The treatment of RA has undergone significant transformations in recent years, related to advances in the knowledge of pathophysiological mechanisms that allow the identification of potential therapeutic targets, but also to a better diagnostic and prognostic approach. It is now one of the best-codified conditions in rheumatology, with international recommendations on strategies for treating incipient or established RA being disseminated. These advances have made it possible to define ambitious therapeutic objectives that consist, first and foremost, of obtaining and maintaining clinical remission. The control of inflammation leading to remission is, in this sense, the best way to prevent the main complications of the disease: structural lesions, functional disability, and systemic complications, especially cardiovascular. Thus, the prognosis has improved considerably in 15 years. To achieve these objectives, early diagnosis and the establishment of effective and equally early treatment are essential. This illustrates the concept of the "window of opportunity," which is well documented in the early stages of this disease.[1,2]

Characteristic symptoms are persistent swelling, more intense pain in bed, persistent stiffness more accentuated when getting up, and progressive limitation of joint movements and the patient's autonomy. If left unchecked, it can first deform and then destroy the joints, making the patient's basic activities of daily living (ADLs), such as dressing, grooming, eating, moving about, working, and leading an everyday active life significantly more difficult.[4]

The physician diagnoses the disease based on symptoms and joint findings and confirms it with analyses and imaging tests. All these data also show the degree of intensity of disease involvement at a given time and allow comparison of the evolution, for better or worse, with another past or future time. In blood tests, the findings of increased sedimentation rate and C-reactive protein level, called acute phase reactants, are significant, indicating the analytical activity of the disease. At the same time, rheumatoid factor is a finding of crucial diagnostic value since it will be present in 80 % of patients with RA.[2]

The prognosis of the evolution of each case of RA is difficult to establish, but the early and sustained high intensity of the symptoms, signs, and analytical parameters noted point to the possibility of a more aggressive and destructive course if sufficiently effective therapy is not introduced early.[5]

Rheumatoid arthritis does not have a curative treatment that definitively eliminates it, but a series of treatments that can slow down its development, alleviate its symptoms, and prevent the development of deformities and functional limitations and, therefore, of disability.[2]

In this paper, we will learn about the development of the disease, from its definition, etiology, epidemiology, clinical manifestations, diagnosis, and prognosis to treatment, where we will focus on physiotherapeutic treatment, describing modalities and physiotherapeutic techniques used to reduce pain and inflammation, improve functional capacity and maintain or improve the patient's quality of life.

Taking into account that the population of the country has aged and has increased its life expectancy, kinesiology services should be projected to work to ensure that patients with RA achieve more remarkable

survival.

When reviewing the literature, we found that in first-world countries such as Spain, France, and England, there is a decrease in life expectancy in people suffering from the disease and that this is also overshadowed by concomitant diseases and complications arising from the treatment or the immunosuppression inherent to them.[2,5,6]

The importance of a physiotherapeutic program for patients with RA is that there is currently no cure for this disease. It is also one of the most prevalent inflammatory arthropathies in the world due to the various degrees of temporary and permanent disability that it generates among the population, both in terms of reduced physical functionality, deterioration of quality of life, and increased morbidity and mortality. For this reason, it is considered that a physiotherapy program for patients with RA is essential for its treatment. Physiotherapy programs for RA patients aim to develop the most significant possible independence and functionality in their daily activities.

Since this is a frequent nosological entity in kinesiology services, with projections to increased morbimortality, in the Kinesiology service of the Hospital General de Agudos "Bernardino Rivadavia," no research has been conducted to characterize the effects of kinesic treatment on stiffness, quality of life and functional independence in patients with RA diagnosis, so a study including cases during the period studied could provide information to make decisions that can be tested in future analytical studies.

Objective: To describe the effects of kinesic treatment on stiffness, quality of life, and functional independence in patients with rheumatoid arthritis.

DEVELOPMENT

Definition

Rheumatoid arthritis (RA) is a severe, chronic, debilitating systemic disease of progressive course but variable in each affected individual. It is characterized by immunological alterations at both the cellular and humoral levels, which result in chronic inflammation, destroying joint tissues.[7]

Epidemiology

For the World Health Organization (WHO), RA is a public health problem. According to statistics, one out of every 10 people suffers from RA, and 40 new cases are diagnosed yearly per 100 000 inhabitants. *Rheumatoid arthritis* is a chronic autoimmune and systemic disease in which the body produces antibodies that attack the functioning of different human body organs, mainly the musculoskeletal system and joints. There are regional variations in particular. The peak incidence of the first outbreak is between the fourth and fifth decades of life. It occurs more frequently in women than in men, in a 3:1 ratio, fundamentally when it begins before the age of 60, since after this age, the male-to-female ratio becomes equal to 6.

In Latin America, there are prevalence studies carried out in Brazil, where it has been reported at 0,45 %.[8]

In the case of our country, a study was carried out following a capture-recapture strategy. According to this study, the prevalence rate of RA in the population aged 16 years or older was 0,94 (0,86-1,02). The sex-adjusted rate was 1,54 for females and 0,40 for males. The female-to-male ratio was 3,85: 1, in agreement with the literature. This figure is similar to some of the classic reports of the prevalence of this disease. The prevalence rate obtained resembles estimates from British, Lithuanian, and American studies. These rates are higher than those of some Mediterranean and Scandinavian studies and lower than others. Various genetic, epigenetic, ethnic, and environmental conditions could explain, at least in part, these differences.[9]

Extrapolating the data to the 2010 census, 400 000 people suffer from RA in our country.[10]

Clinical manifestations

Before the onset of joint manifestations, prodromal symptoms such as fever, general malaise, and weight loss may appear. Joint inflammation is the primary clinical manifestation in these patients due to the synovitis that occurs in these organs of locomotion.

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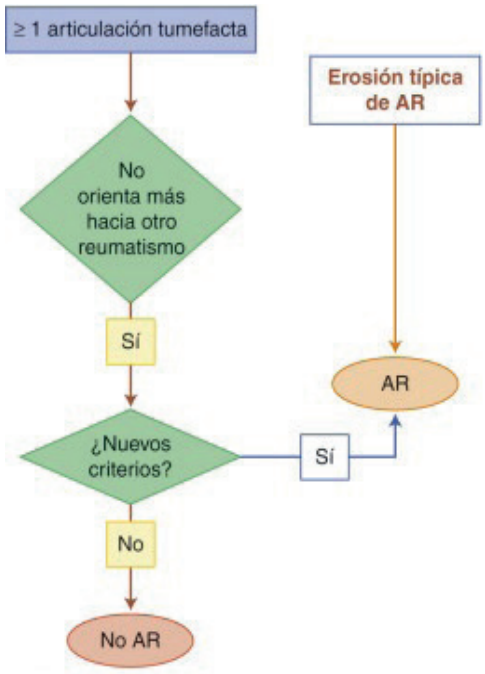
Joint pain is due to immobilization, muscle spasms, cartilage and bone destruction, ligament laxity, and altered tendon function. Among the joint groups most affected in this pathology are the joints of the hands (metacarpophalangeal, proximal interphalangeal, carpal joints), knees, elbows, ankles, metatarsophalangeal, cervical spine, and there may be involvement of the temporomandibular.[2,7]

Diagnosis

The ACR and EULAR developed new classification criteria in 2010, also developed with a diagnostic objective.[1] These criteria were established based on cohorts of patients affected by incipient arthritis and with a complex methodology based on case patients with incipient arthritis (figure 1).



A

Lesión articular (0-5)	
1 gran articulación	0
2-10 grandes articulaciones	1
1-3 pequeñas articulaciones (sin contar grandes articulaciones)	2
4-10 pequeñas articulaciones (sin contar grandes articulaciones)	3
> 10 articulaciones (al menos 1 pequeña articulación)	5
Serología (0-3)	
FR negativo **Y** ACPA negativo	0
FR débilmente positivo (1-3 × normal) **O** ACPA débilmente positivo (1-3 × normal)	2
FR fuertemente positivo (> 3 × normal) **O** ACPA fuertemente positivo (> 3 × normal)	3
Duración de los síntomas (0-1)	
< 6 semanas	0
≥ 6 semanas	1
Parámetros bioquímicos de inflamación (0-1)	
CRP normal **Y** VSG normal	0
CRP anormal **O** VSG anormal	1

AR: puntuación ≥ 6

B

Figure 1. A. 2010 College of Rheumatology (ACR)/European League Against Rheumatism (EULAR) rheumatoid arthritis (RA) classification criteria 3. B. Patients classified RA if score ≥ 6. RF: rheumatoid factor; ACPA: anti-citrullinated peptide antibodies; CRP: C-reactive protein; ESR: erythrocyte sedimentation rate.
Note: modified from Combe and Morel[2] (2015)

The following is a practical scheme for the assessment of the arthritic patient, proposed by Porro Novo et al.[7] (2007):

- Diagnosis and prognosis
- Medical History
- Physical examination
- Consultation with other specialists
- Laboratory tests
- Functional capacity and power
- Muscle test
- Grade of joint movement
- Activities of daily living
- Economy
- Psychological test
- Social study
- Vocational test

Evolution[11]

RA can evolve in many different ways. Studies on the course of the disease, using data from thousands of people with RA, have shown three primary forms of progression: acute, cyclic, and progressive.

Acute RA

In about 20 % of cases, RA presents as a single episode of arthritis that may last from a few days to a few months and is followed by a period of remission or absence of symptoms lasting at least a year. This pattern of evolution is the most favorable.

Cyclic RA

In approximately 70 % of cases, RA progresses cyclically, alternating periods of symptomatic exacerbation or flare-ups, usually lasting a few weeks or months, with periods of relative calm or total absence of symptoms. This pattern of evolution is less favorable than the previous one because a gradual deterioration of joint function and quality of life usually accompanies it.

Progressive RA

In about 10 % of cases, RA progresses uninterruptedly in a progressive manner, i.e., joint inflammation is maintained continuously. This pattern of progression has the worst prognosis, as it tends to lead to an early deterioration of joint function and quality of life.

Other forms of RA

Rarely does the disease take other forms of evolution. One of these is robust arthritis, which mainly affects men who are physically active and in which, although there is intense joint inflammatory activity, there are usually no significant symptoms or functional impairment. There is also senile rheumatoid arthritis, which starts in people over 70 years of age and usually has a good prognosis; palindromic rheumatism, characterized by cyclic episodes of arthritis in a single joint, also with a good prognosis; and rheumatoid nodules, in which joint inflammation is usually not noticeable and does not generate complications, but instead numerous rheumatoid nodules develop.

Functional evaluation of patients with RA

The Stanford Health Assessment Questionnaire (HAQ) is an instrument proposed to assess physical capacity and ability in patients with RA. This questionnaire has demonstrated its reliability and validity in multiple studies in which it has been applied worldwide.[7,12]

The HAQ is a questionnaire that, in its complete form, assesses mortality, disability, symptoms, medication side effects, and economic impact. However, the disability scale is usually used exclusively in clinical practice.

The HAQ is considered the gold standard for the evaluation of functional capacity in patients with rheumatoid arthritis (RA) since it performs a global assessment of functional capacity.[13]

Treatment

None of the therapeutic interventions used to date are curative, so our efforts should mitigate the painful symptoms and prevent joint injuries. The treatment of this disease requires an interdisciplinary and multidisciplinary approach to overcome the different problems that may arise in the functional sphere and the psycho-social plane. The treatment of RA has traditionally been based on the sequential use of pharmacological therapies, rehabilitation treatment in all phases of the disease, orthopedic surgery if necessary due to deformities, and personal care of the patient.[7]

The current goal of treatment, especially at the beginning, is to obtain short-term remission or at least a low level of activity to limit or prevent irreversible joint damage and disability, as well as systemic manifestations, especially cardiovascular and skeletal.[2]

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Rehabilitation of the patient with rheumatoid arthritis

In the treatment and management of rheumatoid arthritis (RA), more emphasis has generally been placed on rest than on physical activity; therefore, the role of rehabilitation has traditionally been minimized. Improvements in the clinical and functional aspects and better radiological evolution have been demonstrated in patients following a rehabilitation program, especially in physical training.[7]

Among the objectives of rehabilitation treatment in rheumatoid arthritis are:[7,14]

- Relieve pain. To reduce inflammation
- Prevent deformities
- Postural correction
- Preservation and improvement of joint mobility
- Increase respiratory capacity
- Psychological compensation
- Independence in the activities of life and walking
- Socio-occupational reincorporation
- Avoidance of risk factors (stress, trauma, infections)
- Increase strength and static and dynamic resistance.

- Improve the feeling of well-being

Regarding rehabilitation treatment, Porro Novo et al.[7] (2007) state that patients with RA are chronically affected functionally and psychologically, with particular joint involvement, so precautions should be taken in the physiotherapy techniques to be applied:

- Short-duration sessions are performed (to avoid patient fatigue).
- Rest period between sessions.
- Slow maneuvers are performed, avoiding sudden gestures that injure the joint.
- Use small or moderate resistance, depending on the phase in which the patient is.
- Strong pressures (massages, passive exercises) should not be used, as they may cause hematomas.

Hinostroza and Susana[15] (2018) state that thanks to the early implementation of physiotherapy treatment, it is possible to prevent deformities, greater patient independence and energy savings when performing ADLs, and an increase in the patient's self-esteem when facing a daily activity. Physiotherapy plays a decisive role in the early treatment of RA due to the dependence that this pathology can cause and the deterioration of the patient's self-image. From physiotherapy, there are various interventions for patients with rheumatoid arthritis, among which therapeutic exercise is the most used and has the most significant positive effects.

Rubio-Oyarzún et al.[16] (2017) Meanwhile, a study conducted on Chilean patients described the changes in manual function, fist strength, and pain in the sixth week and third month after the application of exercises focused on manual motor skills in adults with rheumatoid arthritis. It was concluded that the application of an exercise program focused on manual motor skills generated changes at the level of fist and gripper strength. Concerning functionality and pain intensity, no significant differences were observed.

When reviewing the literature on the exercises recommended for the kinesic treatment of rheumatoid arthritis, the systematic reviews by Moseley et al.[17] reported mild to moderate evidence regarding low-intensity versus high-intensity exercises in users with rheumatoid arthritis in the inactive phase.

For their part, the extended case reviews by Van den Ende et al.[18] strongly recommend low-intensity exercise to improve strength and pain in the inactive phase.

According to Cuadrado Carmona and Díez Buil[19] (2017), treatments will depend on which of the above symptoms predominates. It will consist of a plan to be carried out in the consultation (manual therapy, massage, and exercises) and a guideline to be implemented by the patient at home (self-massage and exercises) accompanied by orthoses. With these treatments, we hope to reduce pain and deformity and improve functionality and grip strength, thus enabling the patient to have a better quality of life.

Table 1 summarizes the proposal of two physiotherapy programs for patients with RA in AF and FS; considering that the patient's health is determined to a large extent by the treatment received but also by the habits and actions performed, these proposed rehabilitation programs provide the patient with strategies and attitudes that could benefit him/her in coping with the disease in his/her daily life.

Table 1. Physiotherapeutic programs for patients with RA[1]

Phase	Physical agent or exercise	Instructions for use or execution	Duration (Min.)	Frequency (Week)
FA/FS	Joint mobility exercises	Active or assisted mobilization of all body segments in all directions.	15-20	6-7 times
FA	Cold compress	Apply on inflamed or painful joints.	10-15	5-6 times
FA/FS	Resistance exercise	Strengthen weakened muscles, starting with isometrics and later with isotonics with attachments such as weights and bands.	10	3-4 times
FA/FS	Massage therapy	Use relaxing and decontracting massage in stiff and/or painful areas.	10	4-5 times
FA/FS	Aerobic exercise	Mechanotherapy such as bicycle, elliptical or treadmill (go for walks).	10-30	5-6 times
FA/FS	Stretching	Perform passive or active stretching on stiff muscles.	8-12	5-6 times
FA	Breathing exercises	Perform abdominal and costal breathing accompanied by the movement of the arms in supine, lateral, seated and standing positions.	10-12	6 times
FA	Occupational therapy	Perform activities involving the use of fine and coarse gripper.	10-15	7 times
FS	Hydrotherapy	Perform mobilizations of all joints in hubbard bathtub 36-40 °C.	15	5 times
FS	Kerosene	Use repeated immersion method (8-12 Rep.) for peripheral joints (mainly hands) and strokes for central joints.	15	3-4 times

FS	TENS	Bipolar current "low rate", frequency 1 to 4 Hz and pulses of 0,15 to 0,25 ms.	15	4 times
FS	Gait reeducation	Re-education in front of a mirror by phases and then with obstacles.	10	5 times

CONCLUSIONS

Rehabilitation of people with arthritis aims to restore or maintain joint mobility and strength, emphasizing functional training and health promotion. Physical activity is the best possible restorative and revitalizing since it improves life expectancy with a better quality of life towards good living. Hence, the importance of the subject and the relevance of this research.

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