Kinesiotherapy for quality of life, pain and muscle strength of rheumatoid arthritis and systemic lupus erythematosus patient. Case report*

Intervenção cinesioterapêutica na qualidade de vida, dor e força muscular de paciente portador de artrite reumatoide e lúpus eritematoso sistêmico. Relato de caso

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ABSTRACT

BACKGROUND AND OBJECTIVES: Rheumatoid arthritis is an inflammatory, chronic and progressive disease. It impairs joint synovial membranes and may induce bone and cartilage destruction. Many diseases may follow rheumatoid arthritis, including systemic lupus erythematosus, an inflammatory, chronic autoimmune disease with multisystemic manifestations, with periods of remission and exacerbation. This study aimed at reporting kinesiotherapy intervention for quality of life, pain and muscle strength of a patient with rheumatoid arthritis and systemic lupus erythematosus.

CASE REPORT: Female patient, 49 years old, diagnosed 15 years ago with rheumatoid arthritis and systemic lupus erythematosus. Patient complained of pain on hands, feet and lumbar spine, with irradiation to lower limb and morning stiffness. Tool to measure muscle function was Biodex System3 Pro isokinetic dynamometer in the speeds of 120 and 240° during knee flexion and extension movements, in addition to the Short-Form Health Survey questionnaire and pain evaluation by the visual analog scale.

CONCLUSION: The study has shown that kinesiotherapy-based physiotherapy is effective to relieve pain and improve muscle strength and quality of life of patient with systemic lupus erythematosus and rheumatoid arthritis.

Keywords: Muscle strength, Pain, Physiotherapy, Quality of life, Rheumatoid arthritis, Systemic lupus erythematosus.

RESUMO

JUSTIFICATIVA E OBJETIVOS: A artrite reumatoide é uma doença inflamatória, crônica e progressiva. Compromete a membrana sinovial das articulações, podendo causar destruição óssea e cartilaginosa. Muitas doenças podem cursar com a artrite reumatoide, uma delas é o lúpus eritematoso sistêmico, uma doença inflamatória crônica, autoimune, com manifestações multissistêmicas, apresentando períodos de remissão e exacerbação. O objetivo deste estudo foi relatar a intervenção cinesioterapêutica na qualidade de vida, dor e força muscular de um indivíduo portador de artrite reumatoide e lúpus eritematoso sistêmico.

RELATO DO CASO: Paciente do gênero feminino, 49 anos, diagnosticada há 15 anos como portadora de artrite reumatoide e lúpus eritematoso sistêmico. Apresentava queixa de dor nas mãos, nos pés e coluna lombar com irradiação para o membro inferior; rigidez matinal. O instrumento utilizado para medir a função muscular foi o dinamômetro isocinético *Biodex System3 Pro* nas velocidades de 120 e 240° nos movimentos de flexão e extensão de joelho, além da aplicação do questionário *Short-Form Health Survey* e avaliação da dor por meio da escala analógica visual.

CONCLUSÃO: Este estudo mostrou que a fisioterapia baseada na cinesioterapia é eficaz para a diminuição da dor, melhorar a força muscular e gera progresso na qualidade de vida em um paciente portador de lúpus eritematoso sistêmico e artrite reumatoide.

Descritores: Artrite reumatoide, Dor, Fisioterapia, Força muscular, Lúpus eritematoso sistêmico, Qualidade de vida.

INTRODUCTION

Pain is multidimensional and classified as unpleasant sensory and emotional experience[1]. Muscle and joint pains affect individuals' functionality, changing their daily routine[2]. Rheumatoid arthritis (RA) and systemic lupus erythematosus (SLE) patients often indicate pain as major symptom of the disease[3,4].

RA is a chronic, autoimmune, inflammatory disease of unknown etiology which affects joint synovial membranes causing bone and cartilage destruction[5]. Body joints are symmetrically affected, with further involvement of hands

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and feet[6]. It is more prevalent in females and in general develops between the fourth and fifth decades of life[7]. Because of its chronic and destructive character, it leads to functional limitation and poorer quality of life (QL)[8].

Other diseases may follow RA, among them SLE[8-10]. SLE is a chronic, inflammatory autoimmune disease. It has multisystemic manifestations and unknown etiology, with remission and exacerbation periods[11]. There is skin, visceral[12] and joint[13] involvement, in addition to myalgia, osteoporosis[14] and pain[15], among others.

Physiotherapy is very important for painful patients. Several mechanisms may be influenced by physiotherapeutic techniques, thus contributing for patients' management[16].

So, this study aimed at evaluating pain, muscle strength and QL before and after physiotherapeutic treatment in RA and SLE patients.

CASE REPORT

Female patient, 49 years old, diagnosed 15 years ago with RA and SLE. Patient complained of pain in hands, feet and lumbar spine with irradiation to lower limb (LL) and morning stiffness. The following drugs were administered during treatment: levothyroxin (88mg) used for hormonal replacement therapy in patients with hypothyroidism of any etiology; prednisone (5mg), used to treat endocrine and musculoskeletal diseases, collagen disorders and dermatologic diseases; enalapril (10mg), used for hypertension and heart failure; and folic acid supplement (vitamin B9), which is an anti-anemia agent.

Evaluation has collected data such as: gender, age, medical diagnosis and associated diseases. Tools were visual analog scale (VAS) and QL questionnaire – Medical Outcomes Study 36 – Item Short-Form Health Survey (SD-36, in addition to isokinetic evaluation.

Muscle function parameters were evaluated with isokinetic dynamometer Biodex System3 Pro (Biodex Medical System, Shirley, NY, USA), electromechanical equipment to quantitatively evaluate physical parameters of muscle function[17].

Pain was evaluated with VAS which, according to the American College of Rheumatology, checks pain levels in individuals with rheumatic diseases[18].

QL was evaluated with SF-36, applied after previous explanation and answering of questions. SF-36 is made up of 36 items, gathered in physical and mental components[19].

Patient was submitted to 15 physiotherapy sessions, during three months, twice a week and lasting 50 min. Protocol was based on kinesiotherapy and consisted of: initial and final blood pressure; global active-passive stretching and with Swiss ball; muscle strengthening of arms flexors, extensors and abductors, elbow flexors and extensors (blue elastic band 3x10); strengthening of ankle plantiflexors and dorsiflexors and ankle inverters and everters (digiflex progressively increasing load); weight unload; balance and proprioception exercises (airex); wrist, ankle and toes joint mobilization; massage therapy on dorsal region and cervical pompage. Post-intervention evaluation was carried out after the last physiotherapy session.

Table 1 shows muscle torque peak of knee flexors pre and post physiotherapy intervention by means of isokinetic dynamometer.

Table 1. Knee flexors muscle torque peak

	Pre		Post	
Speeds	Left	Right	Left	Right
120°	7.8	8.1	21.4	24.4
240°	10.0	8.5	21.9	30.9

For knee flexion movement, there has been right (RLL) and left (LLL) lower limb torque peak improvement in both speeds. At 120° there has been 202.5% strength improvement in RLL, and in LLL of 175%. At 240° there has been 118.8% improvement for LLL and of 265.7% for RLL.

Table 2 shows knee extensors muscle torque peak pre and post intervention.

Table 2. Knee extensors muscle torque peak

	Pre		Post	
Speeds	Left	Right	Left	Right
120°	26.7	22.3	56.8	55.9
240°	24.6	20.6	38.9	43.8

Results show increased torque peak in both speeds for RLL and LLL. At 120° speed there has been 150.1% improvement for RLL and at 240° it was 112.7%. For LLL there has been 112% improvement at 120º and of 57.8% at 240º.

Table 3 shows QL results, obtained with SF-36. First four domains address physical health and four last domains address mental health. Scores vary from zero to 100, where zero is the worst and 100 the best score.

Table 3. Quality of life

Domains	Pre	Post
Functional capacity	25	40
Limitation by physical aspects	0	25
Pain	20	50
General health status	27	17
Vitality	50	35
Social aspects	25	15
Limitation by emotional aspects	0	4
Mental health	48	56

There has been general QL improvement and maintenance after physiotherapy. Percentage variation shows major 150% increment on pain domain, followed by social aspects (66.67%) and functional capacity (60%).

When evaluating pre-physiotherapy pain by VAS, patient has reported score 10, and after intervention it was considerably decreased (60%), reaching score 4.

DISCUSSION

Muscle pain during static contraction decreases painful muscle activity and attenuates synergic muscles ativity[20]. Abnormal motor behavior is evidenced by changes in performing some activity, because the body compensates other muscles to be able to perform certain movements, thus contributing to worsen pain[21].It was observed that both for extension and flexion movements at 120º/s there has been further improvement as compared to 240º/s, showing that as speed increases, torque peak decreases.

In chronic pain, symptoms persist beyond the physiological recovery period of the injured tissue, worsening QL, wellbeing, physical and cognitive capacity. Chronic pain management, differently from acute pain therapies (rest and drugs), is made up by physical exercises and multidisciplinary management[22]. Intervention with physiotherapy is critical for SLE patients, restoring physical and mental wellbeing and improving QL, because when participating in a regular physiotherapy program, patient has improved her pain with consequent improvement of muscle strength and fatigue parameters, in addition to improving QL in most domains.

Meireles et al.[23] have evaluated torque peak, work and potency of 50 individuals with RA and 50 healthy ones, with speeds of 60º/s, 80º/s and 300º/s. They have observed that RA patients had lower values as compared to healthy participants in all variables. This information is in line with results of this case report, where participant had low torque peak values as observed by isokinetic evaluation scores.

As in SLE, a predominant RA symptom is pain[24,25], in addition to distal joints edema, stiffness and weakness[26]. So RA management should be multidisciplinary, including pharmacological, psychological and physiotherapeutic approaches, primarily based on kinesiotherapy[24], as proposed for our case, providing a tailored protocol for patient's needs.

In addition to improving pain and QL, Pereira et al.[26] have also observed that physiotherapeutic management of RA should be made of passive exercises in the early phases and of active, isometric and/or isotonic exercises. These exercise programs aim at assuring maintenance, recovery or improvement of joint movement amplitude, strength, muscle stretching and aerobic capacity improvement.

CONCLUSION

Physiotherapy based on kinesiotherapy is effective to improve pain, muscle strength and QL in SLE and RA patients. However, one has to be aware that each person has different symptoms and limitations so physical activity intensity, frequency and duration should be tailored.

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