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Original article

Sensory disturbance and polyneuropathy in rheumatoid arthritis patients with foot deformity

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ABSTRACT

Introduction: Our aim in this study was to present the results of sensory evaluation tests and electrophysiological evaluations in rheumatoid arthritis (RA) patients with foot deformity and to determine their relation with general health status and lower extremity functionality.
Materials and methods: Fifty-one patients with RA diagnosis and foot deformity were included in the study. Demographic and disease characteristics of the patients were recorded, and a detailed neurological examination was performed. Superficial sensation, pain, heat, vibration, and two-point discrimination sensation were evaluated in each foot, and their sum was used to determine the sensory deficits index (SDI) of 0–10. The presence of polyneuropathy was evaluated with electrophysiological methods. The Health Assessment Questionnaire and mobility and walking subscales of the Arthritis Impact Measurement Scales-2 were used to assess general health status and lower extremity functionality, respectively. According to the sensory examination and electromyography results, patients were compared in terms of their general health status and lower extremity functional status.
Results: Sensory disturbance was detected in 39 patients (74%) during the examination; however, 27 patients (52.9%) had polyneuropathy determined electrophysiologically. In patients with sensory deficits, statistically significant deterioration was detected in general health and foot functionality, including mobility and walking, when compared to patients with a normal sensory evaluation.
Conclusions: Even in the presence of normal electrophysiological tests, sensory dysfunction alone seems to be associated with severe disability in general health status and foot functionality when compared to patients with a normal sensory examination.

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Perturbações sensitivas e polineuropatia em pacientes com artrite reumatoide com deformidade do pé

Palavras-chave:
Artrite reumatoide
Pé
Polineuropatia
Aspecto funcional

RESUMO

Introdução: O objetivo deste estudo foi apresentar os resultados dos testes de avaliação sensitiva e exame eletrofisiológico em pacientes com artrite reumatoide (AR) com deformidade do pé e determinar a sua relação com o estado geral de saúde e aspecto funcional dos membros inferiores.

Materiais e métodos: Foram incluídos no estudo 51 pacientes com diagnóstico de AR e deformidade do pé. Foram registradas as características demográficas e da doença de cada indivíduo, e foi realizado um exame neurológico detalhado. Foi avaliada a sensibilidade superficial, sensibilidade dolorosa, sensibilidade térmica, sensibilidade vibratória e aplicado o teste de discriminação de dois pontos em cada um dos pés, e a soma dos escores foi usada para determinar o índice de déficits sensitivos (IDS) de 0-10. A presença de polineuropatia foi avaliada com métodos eletrofisiológicos. Foi utilizado o Health Assessment Questionnaire e as subescalas mobilidade e deambulação da Arthritis Impact Measurement Scales-2 para avaliar o estado geral de saúde e o aspecto funcional de membros inferiores, respectivamente. De acordo com os resultados dos exames de eletromiografia e de sensibilidade, os pacientes foram comparados em relação ao seu estado geral de saúde e estado funcional de membros inferiores.

Resultados: Foram detectados distúrbios sensitivos em 39 pacientes (74%) durante o exame; contudo, 27 deles (52,9%) tinham polineuropatia determinada eletrofisiologicamente. Em pacientes com déficits sensitivos, foi detectada deterioração estatisticamente significativa no estado geral de saúde e no aspecto funcional do pé, inclusive na mobilidade e deambulação, quando comparados aos pacientes com uma avaliação sensitiva normal.

Conclusão: Mesmo na presença de testes eletrofisiológicos normais, a disfunção sensitiva isolada parece estar associada a incapacidade grave no estado geral de saúde e no aspecto funcional do pé em comparação a pacientes com um exame sensitivo normal.

Introduction

Rheumatoid arthritis (RA) is a chronic, systemic and inflammatory disease with involvement of the peripheral joints, and its etiology cannot be understood completely despite the many new developments. It causes joint destruction, decreased life quality and shortened life expectancy.[1]

The joints of the hand are the most frequent and initially affected in arthritis; thus, studies in the literature have focused mostly on hand deformities and hand disabilities. While foot involvement at the onset of the disease has been reported in 16–20% of patients, this ratio may increase to approximately 95% over the course of the disease.[2,3]

Synovial hypertrophy and capsular tension generated by hyperplasia, ligamentous laxity, muscular imbalance, and ultimately joint subluxation and dislocation play a role in the development of foot deformities in RA. Further, with the direct effect of inflammation, destruction occurs in the cartilage and pericapsular structures.[4] Due to all these changes, the loading on joints causes different deformities and constitutes a severe disability in the patient's mobility and functional independence.[5,6]

Nervous system involvement in RA is often in the form of peripheral involvement.[7] Entrapment neuropathies, mononeuropathies, and sensory and sensorimotor axonal polyneuropathies are considered in this context. In clinical practice, superficial touch, pain, heat, and vibration senses with the two-point discrimination test, muscle strength measurement, deep tendon reflexes tests, and electrophysiological methods are used for the assessment of the peripheral nervous system. Studies investigating the presence of neuropathy in RA patients have frequently used electrophysiological methods in their evaluations.[7–10]

Although sensory evaluation tests are often subjective tests, in recent years, it is reported that the involvement of the other nerve fibers can be shown with these tests.[11]

While in some studies they were reported that a correlation between deterioration in quality of life and functionality, and foot complaints in RA,[12,13] there is no study comparing the sensory examination and electrophysiological assessment findings or evaluating the relationship between these and the patient's general health status and lower extremity functionality.

Foot deformities in patients may be only visible part of the iceberg and much more its below. Even if effective treatment was given for the patient's deformity, functionality and quality of life may not be enough improvement due to nervous system involvement.

We thus aimed in this study to present the results of the electrophysiological evaluation and sensory evaluation tests and to determine their relationship with lower extremity