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Original Article

Influence of the Structure of Mood in the Assessment of Rheumatoid Arthritis Through the Visual Analog Scale for Pain, HAQ and DAS28[☆]

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ABSTRACT

Objective: To analyze the effect of the structure of mood over the following assessment tools for rheumatoid arthritis: visual analog scale (VAS) for pain, HAQ and DAS28.

Patients and methods: We studied 86 patients with recent onset rheumatoid arthritis, of which 75.7% were female, with a mean age at disease onset of 55 years. All patients were administered the Spanish version of the PANAS questionnaire that evaluates the components of positive (PA) and negative mood (AN). Patients belonged to the registry of new-onset arthritis in our center, so clinical information was available for 282 patients visits. To determine the effect of PA and AN on each of the dependent variables we performed three multivariate linear regression models using generalized linear models through the Stata glm command 10.1.

Results: The mean score for PA and AN in our patients was similar to that described for the healthy Spanish population. The high scores on the subscale of AN were associated with worse scores in both the VAS for pain and the HAQ. By contrast, high scores on PA were associated with better outcomes of disease activity measured by DAS28.

Conclusion: The structure of mood may influence the tools we use for evaluating patients with rheumatoid arthritis, so it might be advisable to include the PANAS questionnaire as part of that assessment.

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Influencia de la estructura de los afectos en la evaluación de la artritis reumatoide mediante la escala visual analógica de dolor, el HAQ y el DAS28

RESUMEN

Objetivo: Analizar el efecto de la estructura del afecto en las siguientes herramientas de evaluación de la artritis reumatoide: escala visual analógica (EVA) de dolor, HAQ y DAS28.

Pacientes y métodos: Se estudiaron 86 pacientes con artritis reumatoide de reciente comienzo, de los que el 75,7% eran mujeres, con una mediana de edad al inicio de la enfermedad de 55 años. A todos los pacientes se les aplicó la versión adaptada a población española del cuestionario PANAS que evalúa las componentes de afecto positivo (AP) y negativo (AN). Los pacientes pertenecían al registro de artritis de reciente comienzo de nuestro centro por lo que se disponía de información clínica de los enfermos en 282 visitas. Para determinar el efecto de AP y AN en cada una de nuestras variables dependientes se estimaron 3 modelos de regresión lineal multivariable mediante modelos lineales generalizados usando el comando *glm* del programa Stata 10.1.

Resultados: El promedio de la puntuación de AP y AN en nuestros pacientes fue similar al descrito para la población española sana. Las puntuaciones elevadas en la subescala de AN se asociaron a peores puntuaciones, tanto en la EVA de dolor, como en el HAQ. Por el contrario, puntuaciones elevadas en AP se asociaron con una mejor evolución de la actividad de la enfermedad medida por el DAS28.

Conclusión: La estructura del afecto puede influir en las herramientas que utilizamos para la evaluación de los pacientes con artritis reumatoide, por lo que podría ser recomendable incluir la realización del PANAS como parte de dicha evaluación.

Introduction

Rheumatoid arthritis (RA) is a chronic inflammatory disease that causes deterioration of diarthrodial joints, leading to functional impairment, impaired quality of life, decreased life expectancy and social[1–3] dependence. This generates a very elevated care cost.[4,5] This bleak picture has improved in the last 10 years with the emergence of biological therapies but, above all, with the implementation of treatment strategies aimed at achieving targets based on composite indices for evaluating the activity of the disease.[6,7] However, it has been recently proposed that these indices may be biased in the evaluation of patients.[8,9] In some cases, personality factors related to the patients may also interfere. In this sense, RA is a clear example of a biopsychosocial model of disease. This model proposes that, in addition to the organic component, the emergence and subsequent evolution of diseases, especially chronic ones, are influenced by the environment in which the person lives, as well as the reality of every individual.[10,11] Therefore, the tools used to assess the clinical activity of RA and its functional impact may be influenced by the psychological characteristics of the patients we serve.

As part of the individual psychological characteristics, the structure of affect consists of 2 dimensions or dominant factors commonly labeled as positive affect (PA) and negative affect (NA). This division between positive and negative affective states is manifested from early childhood, and can already be seen, as positive emotions correlate with increased activity of the left hemisphere, while the right is more affected by negative ones.[12] Therefore, PA and NA are considered personal provisions of emotionality with little variability over time, influenced by genetics and, in part, by the individuals first experiences.[13] Elevated levels of PA are associated with high energy, focus and dedication of the individual, while low levels are characterized by sadness and lethargy; on the other hand, high levels of NA reflect a variety of moods including anger, guilt, fear and nervousness, while low NA is a state of calm and serenity.[14] Clark and Watson developed in 1988 the PANAS questionnaire to adequately weigh PA and NA.[14] Subsequently, the results obtained with its application to patients and healthy controls were used to establish their tripartite model of anxiety-depression.[15] In this model, scores of NA and PA, along with distress in response to environmental stimuli, lead the authors to properly classify cases of anxiety, depression or mixed cases.

With respect to RA patients, previous studies have shown that there is an association between higher pain scores and higher levels of NA.[16,17] Therefore, the objective of this study was to investigate the influence of NA and PA in two of the most widely used measurement instruments in clinical practice employed to assess RA: the DAS28 activity index and the HAQ questionnaire to assess functional capacity.

Patients and Methods

Registration of patients with recent onset arthritis at the Hospital Universitario de La Princesa includes patients referred from primary care who have had one or more swollen joints for at least 4 weeks and a maximum of one year. The only exclusion criterion is that along the course of their follow up, patients are diagnosed microcrystalline arthritis, septic arthritis or viral infections, spondyloarthropathies or connective tissue diseases.

The study protocol provides for four follow-up visits in a period of 2 years: baseline, at 6 months, one year and two. At each visit, we collect demographic data (gender, educational level and marital status), clinical data (date of onset of illness, 28 tender joint count [TJC28] and swollen [SJC28], global assessment of disease by the physician [GADP] and by the patient [GADPa] and assessment of pain on a visual analog scale (VAS) from 0 to 100 mm) and laboratory data (erythrocyte sedimentation rate [ESR, measured by the Westergren method], C-reactive protein [CRP, nephelometry], rheumatoid factor [FR; nephelometry], levels of anti-CCP antibody [AAPCC; determined by ELISA: Immunoscan CCPlus®, Euro-Diagnostica, Arnhem, Netherlands]) and hematology and blood biochemistry. Functional capacity is estimated by a HAQ questionnaire validated in Spanish population[18] and DAS28 with ESR is calculated every visit as described previously: $0.56*\sqrt{(TJC28)}+0.28*\sqrt{(SJC28)}+0.70*\ln(ESR)\,0.014+(GADP).$[19]

For the present study we analyzed the clinical data of 282 visits (86 first visits, 52 visits after 6 months follow-up, 71 visits at one year and 73 visits at two years), performed between September 2001 and November 2009, with 86 patients having RA according to the American College of Rheumatology (ACR) criteria of 1987.[20] 75.7% of patients were women, with a median age at disease onset of 54.6 years (interquartile range: 44.3–68.6). As shown in Table 1, the characteristics of this group are similar to those of other cohorts in our environment. In these patients the evaluation of PA and NA was performed by applying, on one occasion, the PANAS (Positive and Negative Affect Scale) as adapted to the Spanish population, which scores for both PA and for NA, ranging from 10 to 50 points.[21]

Both the record of recent onset arthritis and the study described in this paper have been approved by the Ethics Committee of the Clinical Health Research Institute of the Hospital Universitario de La Princesa. Patients signed informed consent at the time of inclusion into the registry and another specifically made for performing the PANAS scale.

Statistical analysis was performed using Stata 10.1® software for Windows (StataCorp LP, College Station, TX, USA). We calculated the median and interquartile range (RI) for continuous variables and non-Gaussian distribution and the median and standard deviation for those with normal distribution. To evaluate differences

Table 1
Demographic Characteristics of Patients an Disease at Baseline.

Female gender, n (%)	65 (75.6)
Marital status n (%)	
Married	54 (62.8)
Separated	7 (8.1)
Single	16 (18.6)
Widowed	9 (10.5)
Schooling, n (%)	
None	9 (10.5)
Primary	29 (33.7)
High school	24 (27.9)
Superior	24 (27.9)
Age at onset of disease, median (RI)	54.2 (44.4–68.2)
Months of progression since first visit, median (RI)	5.4 (3.3–7.9)
Positive rheumatoid factor, n (%)	38 (44.2)
Positive AAPCC, n (%)	39 (45.4)
VAS pain, median (RI)	50 (17–65)
HAQ, median (RI)	0.875 (0.375–1.5)
DAS28, median (RI)	4.3 (3.1–5.6)

AAPCC, anti cyclic citrulinated peptide antibodies.