



How Do Mood Disorders Affect Patients with Rhizarthrosis?

¿Cómo influyen los trastornos del estado de ánimo en el paciente con Rizartrrosis?

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Abstract

Objective Anxiety and/or depression play a major role in how the patient copes with osteoarticular pathology. The aim of the present study is to describe the impact of mood disorders in trapeziometacarpal arthrosis, or osteoarthritis of the first carpo-metacarpal joint (CMC-1).

Materials and Methods We conducted a descriptive study in patients diagnosed with rhizarthrosis between January 2018 and January 2020. Clinical and demographic factors were collected: age, gender, body mass index (BMI), and diagnosis of anxiety and/or depression; as well as factors specific to the pathology: laterality, degree of CMC-1 osteoarthritis, grip strength, and pinch strength. The scores on the Visual analogue scale for pain (VAS) and the short version of the Disabilities of the Arm, Shoulder, and Hand (QuickDASH) questionnaire were also assessed.

Results We reviewed 107 patients (85% of them female) with a mean age of 59.48 ± 7.5 years and a mean BMI of 28.29 Kg/m^2 . In total, 21.5% of the patients were diagnosed with anxiety and/or depression; as for laterality, it was left for 51.4% and right for 48.6% of the patients. According to the Eaton Scale, 54.2% of the patients were grade III, and 45.8%, grade IV. The mean grip strength was of 15.64 kg, and the mean pinch strength was of 3.37 kg. The mean score on the VAS was of 8.28 points, and the mean QuickDASH score was of 65.94 points.

Significant statistical associations were found regarding the diagnosis of anxiety and/or depression and gender ($p = 0.023$), pinch strength ($p = 0.007$) and the QuickDASH score ($p = 0.004$). No statistical relationship was observed regarding other parameters. The significance involving pinch strength disappeared when correcting for gender.

Conclusion The presence of anxiety and/or depression in patients with CMC-1 osteoarthritis, is associated with the female gender and with a worse perception of the functionality on the part of the patients (high QuickDASH scores), but not with pain according to the VAS. This indicates the importance of always considering mood disorders when assessing our patients, due to their influence in the perception of the osteoarticular disease.

Keywords

- CMC-1 osteoarthritis
- anxiety
- depression
- upper limb function
- grip strength
- pinch strength

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Resumen

Objetivo La ansiedad y/o depresión juegan un papel fundamental en la forma en la que el paciente afronta la patología osteoarticular. El objetivo de este estudio es describir el impacto de los trastornos del estado de ánimo en la artrosis trapeciometa-carpiana (TMC).

Materiales y Métodos Se realizó un estudio descriptivo en pacientes diagnosticados de rizartrosis entre enero de 2018 y enero de 2020. Se recogieron tanto los factores clínicos y demográficos: edad, género, índice de masa corporal (IMC), y diagnóstico de ansiedad y/o depresión; así como los propios de la patología: lateralidad, grado de rizartrosis, fuerza de puño, y fuerza de pinza. También se evaluaron los puntajes en la escala visual analógica de dolor (EVA) y la versión corta del cuestionario de Discapacidades del Brazo, Hombro y Mano (Quick Disabilities of the Arm, Shoulder and Hand – QuickDASH, en inglés).

Resultados Fueron revisados 107 pacientes (85% de mujeres) con edad media de $59,48 \pm 7,5$ años e IMC medio de $28,29 \text{ Kg/m}^2$. El 21,5% de los pacientes estaban diagnosticados de ansiedad y/o depresión, el 51,4% presentaban lateralidad izquierda, y el 48,6%, derecha. Según la Escala de Eaton, el 54,2% de los pacientes eran grado III, y el 45,8%, IV. La fuerza media de puño fue de 15,64 Kg, y la de pinza, de 3,37 Kg. El puntaje medio en la EVA fue de 8,28, y en el QuickDASH, de 65,94.

Se encontró una asociación estadística significativa entre el diagnóstico de ansiedad y/o depresión y el género ($p = 0.023$), la fuerza de pinza ($p = 0,007$), y el QuickDASH ($p = 0.004$). No se vio esta relación estadística con otros parámetros. La significación respecto a la fuerza de pinza desapareció al corregir por género.

Conclusión La presencia de ansiedad y/o depresión en los pacientes con rizartrosis se asocia con el género femenino y con una peor valoración de la funcionalidad por parte del paciente (puntajes altos en el QuickDASH), pero no con el dolor según la EVA. Esto nos indica la importancia de siempre considerar los trastornos del estado de ánimo cuando estudiemos a nuestros pacientes, dada su influencia en la percepción de la patología osteoarticular.

Palabras clave

- artrosis trapeciometa-carpiana
- ansiedad
- depresión
- función del miembro superior
- fuerza de puño
- fuerza de pinza

Introduction

Anxiety and depression disorders are not uncommon in patients with osteoarthritis, and a prevalence of approximately 20% has been estimated for this population.¹ Considering the continuous increase in degenerative conditions, this rate would imply the existence of a significant number of patients with mood disorders in our consultations, which would affect public health since mental disorders exacerbate osteoarthritis-related issues.² In addition, the coexistence of these conditions increases the economic costs of treating these people.³

Although most existing studies focus on the relationship between mental disorders and degenerative conditions in the spine and lower limbs,⁴ there is a similar association with trapeziometacarpal (TMC) osteoarthritis.^{5,6} Rhizarthrosis is a common pathology in our environment; its prevalence increases with age and is higher in females, who are also the population at risk for mood disorders.

The present study aims to know if the perception of hand pain and functionality by patients with rhizarthrosis in our setting is associated with a diagnosis of a mood disorder (anxiety, depression, or both).

Materials and Methods

The present is a descriptive study based on the review of medical records of patients examined at the Upper Limb Unit of our service from January 2018 to January 2020. The inclusion criteria were the following: patients referred for surgical treatment at the Hand Unit with grade-III and -IV rhizarthrosis according to the Eaton Scale, no history of hand surgery or condition other than rhizarthrosis, presenting pain during basic activities of daily living that required analgesic agents, and no response to rehabilitation treatment, occupational therapy, or both.

We evaluated the following clinical factors: age, gender, body mass index (BMI), and the presence of anxiety, depression, or both diagnoses. In addition, we assessed factors typical of rhizarthrosis, including laterality, Eaton grade, grip strength, and pinch strength. The visual analog scale (VAS) was used to assess pain, while the short version of the Disabilities of Arm, Shoulder, and Hand (QuickDASH) questionnaire was used to determine the functionality.

The statistical analysis was performed using the Statistical Package for the Social Sciences (IBM SPSS Statistics for Windows, IBM Corp., Armonk, NY, United States) software,

Table 1 Values of the variables studied in the total population

	Total population: n (%)	No diagnosis of anxiety, depression, or both: n (%)	With a diagnosis of anxiety, depression, or both: n (%)	p-value
	107 (100%)	84 (78.5%)	23 (21.5%)	
Age (years) : mean \pm SD	59.48 \pm 7.54	59.96 \pm 7.31	57.7 \pm 8.25	0.203
Gender: n (%)				
Male	16 (15%)	16 (15%)	0	0.023
Female	91 (85%)	68 (65.5%)	23 (19.5%)	
Side: n (%)				
Right	52 (48.6%)	44 (41.1%)	8 (7.5%)	0.135
Left	55 (51.4%)	40 (37.4%)	15 (14%)	
BMI (Kg/m ²): mean \pm SD	28.29 \pm 5.12	28.45 \pm 5.02	27.69 \pm 5.54	0.526
Grade on the Eaton Scale: n (%)				
III	58 (54.2%)	46 (43%)	12 (11.2%)	0.825
IV	49 (45.8%)	38 (35.5%)	11 (10.3%)	
Grip strength (Kg): mean \pm SD	15.64 \pm 9.58	16.48 \pm 10.24	12.56 \pm 5.79	0.082
Pinch strength (Kg): mean \pm SD	3.37 \pm 1.9	3.63 \pm 1.94	2.44 \pm 1.44	0.007
VAS: mean \pm SD	8.28 \pm 1.07	8.21 \pm 1.1	8.52 \pm 0.94	0.225
QuickDASH: mean \pm SD	65.94 \pm 15.05	63.78 \pm 15.1	73.82 \pm 12.13	0.004

Abbreviations: BMI, Body mass index; QuickDASH, short version of the Disabilities of the Arm, Shoulder, and Hand questionnaire; SD, standard deviation; VAS, Visual Analogue Scale.

version 25. He Chi-squared (χ^2) test was used to assess the associations regarding mood disorders, gender, and the degree of rhizarthrosis. The Student *t*-test was used to determine this relationship regarding the BMI, pinch strength, grip strength, and the VAS and QuickDASH scores. A two-sided significance level of 0.05 was established.

The Clinical Research Ethics Committee of our center approved the present study.

Results

The data are presented in ► **Table 1**.

In the set of cases reviewed, the population with anxiety, depression, or both presented lower results for pinch and grip strength and higher scores on the VAS and QuickDASH. However, we only observed statistically significant associations regarding gender, pinch strength, and QuickDASH scores ($p = 0.004$). Since no male patient had a mental illness, we performed a separate analysis including only female patients. The previous trend continued, and subjects with mood disorders had lower results for pinch and grip strength and higher scores on the VAS and QuickDASH. Nevertheless, the only statistically significant relationship was with the QuickDASH scores; the association with grip strength disappeared (► **Table 2**).

Discussion

Osteoarthritis is a degenerative disease resulting in joint damage and chronic pain. Its prevalence is higher than 50% in subjects over 60 years of age,⁷ and some authors, including

Heikkinen et al.,⁸ associate mental disorders and osteoarthritis. Anxiety, depression, and pain are related to osteoarthritis and frequently coexist; in fact, 70% of the population with anxiety and depression also suffer from chronic joint pain.⁹

In the analysis, we identified cases of anxiety, depression, or both in patients with rhizarthrosis. Results published by other authors⁵ are quite similar to ours. Other researchers found an even higher percentage. Schloemman et al.,⁶ for instance, observed 31% of cases of TMC osteoarthritis in subjects under treatment for anxiety, depression, or both.

The distribution per gender and age in our sample is very similar to those of other studies.^{5–7} We also agree with previous findings^{5,6,10} of a clear association involving the female gender and the diagnosis of anxiety, depression, or both in patients with rhizarthrosis.

The association between BMI and mood disorders has been described in patients with degenerative conditions of the lower limbs, but not of the upper limbs;¹¹ in our analysis, we did not find this relationship.

Regarding grip and pinch strength, the latter had a statistically significant association with the diagnosis of anxiety, depression, or both. However, this relationship disappeared when we performed the analysis excluding the male population. Women have lower levels of pinch and grip strength.^{12,13} The false association initially observed results from the higher frequency of mental conditions among the female population, who also presents lower levels of grip strength.

A recent review by Wang and Ni² revealed studies confirming and denying an association between depression and

Table 2 Values of the variables studied in the population of female patients

	Female population: n (%)	No diagnosis of anxiety, depression, or both: n (%)	With a diagnosis of anxiety, depression, or both: n (%)	p-value
	91 (100%)	68 (74.7%)	23 (25.3%)	
Age (years): mean \pm SD	59.36 \pm 7.54	59.93 \pm 7.26	57.7 \pm 8.24	0.222
Side: n (%)				
Right	41 (45.1%)	33 (36.3%)	8 (8.8%)	0.252
Left	50 (54.9%)	35 (38.5%)	15 (16.4%)	
BMI (Kg/m ²): mean \pm SD	28.34 \pm 5.36	28.56 \pm 5.32	27.69 \pm 5.54	0.504
Grade on the Eaton Scale: n (%)				
III	46 (50.5%)	34 (37.4%)	12 (13.1%)	0.857
IV	45 (49.5%)	34 (37.4%)	11 (12.1%)	
Grip strength (Kg): mean \pm SD	13.56 \pm 6.7	13.91 \pm 7.37	12.56 \pm 5.79	0.425
Pinch strength (Kg): mean \pm SD	3.03 \pm 1.68	3.23 \pm 1.71	2.44 \pm 1.44	0.052
VAS: mean \pm SD	8.34 \pm 1.09	8.27 \pm 1.13	8.52 \pm 0.93	0.343
QuickDASH: mean \pm SD	67.51 \pm 13.52	65.38 \pm 13.37	73.82 \pm 13.14	0.009

Abbreviations: BMI, Body mass index; QuickDASH, short version of the Disabilities of the Arm, Shoulder, and Hand questionnaire; SD, standard deviation; VAS, Visual Analogue Scale.

pain in osteoarthritis. According to the review,² since pain alone is a risk factor for a mental disorder, a relationship between both parameters would be coherent. However, using the VAS for pain, we did not observe this association.

We found a clear association regarding anxiety, depression, or both and a poor perception of the functionality of the affected limb, as described by other authors.^{5,6,10} Subjects with anxious-depressive disorders who perceive this dysfunction come for visits more frequently.¹⁰ Although Wouters et al.¹⁴ suggest that a worse psychological profile may seem to force a surgical intervention, other articles⁶ indicate the complete opposite given that the orthopedic surgeon may tend to reject this kind of patient.

In a study¹⁵ with hand surgeons, the parameters that most encouraged a referral for surgical treatment included limiting pain, unsuccessful infiltration, radiological evidence of severe TMC osteoarthritis, and low presence of depressive symptoms.

The limitations of the present study include the small sample size, which hindered the division of the sample into groups per their psychiatric diagnosis (anxiety disorder, depression, and anxious-depressive disorder) because we would lose significance. Other issues were the retrospective design, the previously-assigned diagnosis, and the lack of an objective tool to measure anxiety, depression, or both. We would also like to point out that since the present is a cross-sectional and not a longitudinal study, we cannot ascertain the influence of mental disorder treatment on changes in hand functionality.

To conclude, we would like to emphasize the importance of the diagnosis of mental illness in our patients, since we know that treatment improves their symptoms. Although the evidence of benefits in terms of pain and other physical symptoms is less robust, the successful treatment of mental disorders improves functioning and comorbid symptoms. It

is unknown whether this approach in subjects with associated osteoarthritis would reduce costs or alleviate symptoms,¹⁶ but this is a challenge for future studies.

While the reasons why we should identify patients with anxiety, depression, or both are clear, how to do it is not. Surgeons are willing to assess psychological factors, but lack of time, discomfort in dealing with mental and social problems, and the stigma associated with mental illness may hamper their efforts.¹⁷ The most important thing is to make physicians and patients understand these conditions are not inevitable and normal.⁹ Then, we can implement changes and achieve an integrated approach, in collaboration with primary care, to better manage physical and mental problems.

Conflict of Interests

The authors have no conflict of interests to declare.

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