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Imagined exposure as treatment of catastrophizing in fibromyalgia: a pilot study

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Introduction. We want to assess the effectiveness of a new approach (imagined exposure) for the Cognitive Behavioural Treatment (CBT) in fibromyalgia.

Study design. Quasi-experimental design of a temporary nature in a single group with pre and post and with/without treatment.

Subjects and methods. Fibromyalgia patients, who met the American College of Rheumatology's criteria for FM. In this study eight people took part, seven females and one male, selected from fibromyalgia Cantabria Association. The CBT consisted of 11 group sessions and lasted 15 weeks. All patients were evaluated before and after the program. The data were based on the following scales: visual-analog scale (VAS) for pain intensity, the Fibromyalgia Impact Questionnaire (FIQ), the Pain Catastrophizing Scale (PCS) and the Hospital Anxiety and Depression Scale (HADS).

Results. Despite finding improvements in every variable, no significant differences were found between pre and posttreatment in VAS, HADS and FIQ. However, after treatment, significant differences were found in PCS ($p < 0.05$), and its three subscales. Moreover, rate decrease in rumination was higher after imagined exposure.

Conclusion. These results suggest that CBT is effective either in catastrophizing decreasing or in rumination. Imagined exposure may enhance the results in particular cases. Further studies with larger samples are needed to confirm these results.

Key words:

Pain. Catastrophizing. Rumination. Cognitive-behavioural therapy.

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Exposición en imaginación como tratamiento del catastrofismo en fibromialgia: un estudio piloto

Introducción. Se requiere determinar la eficacia de un nuevo componente (exposición en imaginación) den-

tro de un tratamiento cognitivo-conductual (TCC) en el dolor crónico.

Diseño. Diseño cuasi-experimental, de serie temporal, de un solo grupo. Con medida pretratamiento y posttratamiento con y sin tratamiento.

Pacientes y método. Un grupo de pacientes ($n = 8$) (siete mujeres y un hombre) con fibromialgia diagnosticados según los criterios del American College of Rheumatology (ACR). El TCC consistió en 11 sesiones de grupo y tuvo una duración de 15 semanas. Los pacientes fueron valorados al inicio y al final del programa. Se estudiaron las siguientes variables: la escala analógica visual (EAV), el nivel de catastrofismo y rumiación (PCS), el Cuestionario de Impacto de Fibromialgia (FIQ) y la sintomatología ansioso-depresiva (HADS).

Resultados. Aunque se encontraron mejoras en todas las variables, no se evidenciaron diferencias estadísticamente significativas en la EAV, el FIQ ni en la HADS. Sí se evidenciaron diferencias estadísticamente significativas en el PCS ($p < 0,05$) y en sus tres subescalas. Además el descenso en la puntuación de la rumiación con la exposición en imaginación fue superior.

Conclusiones. El TCC es un tratamiento eficaz tanto para el descenso del catastrofismo como de la rumiación. La técnica de exposición en imaginación pudiera potenciar en determinados casos esos resultados. Se necesitan estudios con muestras más amplias para corroborar estos resultados.

Palabras clave:

Dolor. Catastrofismo. Rumiación. Tratamiento cognitivo-conductual.

INTRODUCTION

According to the current cognitive-behavioral models, one of the most relevant mediating variables in chronic pain (CP) is catastrophism (C)¹. For most individuals, pain is interpreted as unwanted and unpleasant, but not as catastrophic or terrible. On the contrary, for a minority of the subjects, the experience of pain would have a catastrophic interpretation and would lead to fear (of pain or of re-in-

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jury) and towards a vicious circle of fear-avoidance that would limit activities and cause incapacity and pain. Catastrophism refers to a combination of negative thoughts and expectations regarding pain that positively correlates with greater intensity of the pain, emotional malaise, muscle and joint weakness, incapacity, and worse results from the treatment². C is made up of three dimensions: magnification, rumination and helplessness³. Rumination refers to the fact that the patient cannot get the idea out of his/her head, cannot stop thinking about the pain; magnification, the exaggeration of the threatening properties of the painful stimulus and helplessness refers to the estimation that the person has of not being able to do anything to influence the pain. Of these three components, that which has the most consistent relationship with pain intensity is rumination⁴. That is, the recurrent character of these thoughts plus their negative aspect is that which is associated to greater pain and worse functioning.

The thought-stopping technique has long been used in the treatment of emotional disorders in which there is ruminations, obsessions or worries (such as Post-traumatic Stress Disorder, Obsessive-Compulsive Disorder or Generalized Anxiety Disorder). Currently, it is known that even though thought stopping can be effective in the short term, this technique seems to have a negative long term impact in this type of thinking, since these thoughts are accompanied by greater emotional malaise⁴⁻⁶. Another cognitive technique proposed as treatment has been distraction. The results obtained are similar to those of thought stopping so that it is currently considered that this technique does not provide much help for patients with chronic pain⁷. On the contrary, one of the techniques that has been shown to be most effective for the treatment of ruminations is imagined exposure⁸. This consists in exposing the patient to the feared stimuli in a hierarchical way to activate all the feared areas (memory, emotion, cognition) without permitting avoidance or escape (neutralization, suppression, distraction) until the anxiety level is reduced. The results support the effectiveness of this technique for a true suppression of the undesired thought. Although it is considered that the ruminations do not seem to be as intense in CP as in other emotional disorders as, for example, generalized anxiety disorder⁸, this technique could be of great utility in patients with excessive ruminations. Thus, the objective that we propose in this pilot study is to check if the imagined exposure can reduce rumination in patients with CP, specifically in fibromyalgia. In addition, it is hypothesized that when rumination is reduced, C and pain intensity is also decreased.

METHOD

Design

Quasi-experimental design, temporal series, of a single group, with pre- and post measurements, with and without treatment.

Participants

The sample is made up of 8 adult persons, 7 women and 1 man who met the American College of Rheumatology criteria for fibromyalgia. The patients participating in this pilot study were obtained from the Cantabria Association of fibromyalgia which is a reference site for the Regional Community of Cantabria (approximately 550,000 inhabitants).

Evaluation tests

Fibromyalgia was diagnosed with the clinical interview according to the diagnostic criteria. The interview was conducted by a Rheumatologist with wide clinical experience. The tests used were:

- *Visual analogue scale (VAS)*. On a 10 cm. long straight line whose tips represent the limits of pain intensity (none-unbearable). The patients estimated the pain intensity experienced on the same day and in the last week between 0-10.
- *Fibromyalgia Impact Questionnaire (FIQ)*⁹. This evaluates the current condition of women with fibromyalgia syndrome. The FIQ is a self-administered instrument made up of 10 items that measure physical impairment, work functioning, depression, anxiety, sleep, pain, stiffness, fatigue and well-being. This instrument has adequate reliability and validity, which justifies its use in the clinical practice and in research.
- *Hospital Anxiety and Depression (HADS)*¹⁰. This is aimed at evaluating anxiety and depression without confusing the somatic symptoms characteristic of depression and anxiety with the medical disease of the patient. This self-administered questionnaire consists in 14 items, and is made up of two subscales of 7 items, one aimed at evaluating depression and the other anxiety.
- *Pain Catastrophizing Scale (PCS)*³. It was used to measure catastrophist thinking regarding the pain. It is a scale made up of 13 items and three subscales: magnification, rumination and helplessness. The score used is a Likert scale from 0 to 4 points. This instrument has been validated in Spanish by our team¹¹.

Procedure

Evaluation

The evaluation measures were those of pre-treatment and post-treatment, except for C that was also measured two months prior to the intervention. All the scales are self-administered by the patient.

Treatment

Different studies and meta-analyses have indicated the great clinical utility and low cost of cognitive-behavioral

treatments (CBT) for CP¹². The manual proposed by Thorn¹³ was used for the treatment. This is a 10 session CBT to which we added one "«extra» session.

Session 1: the connection between stress and pain. Session 2: identification of automated thoughts. Session 3: evaluation of automated thoughts. Session 4: questioning the automatic thoughts and constructing alternatives. Session 5: nuclear beliefs. Session 6: nuclear beliefs on the pain. Session 7: changing the coping. Session 8: coping with ruminations-obsessions-worrying. Session 9: expressive writing. Session 10: assertive communication. Session 11: final session.

The session added corresponds to number 8, after beginning with the coping section. This is especially directed at the subjects who show high rumination and consists in instructing the patients to write a story about the worse possible scenario imaginable for the future based on their greatest fear, stressing those aspects that would generate the greatest emotional malaise (How do you see yourself in this situation? What do you think?, How do you feel?, etc.). The story is recorded on a tape for subsequent presentation to the patient. It is then recommended to them that they should listen to this story between 30 and 60 minutes (enough time for them to become habituated) until said story no longer causes anxiety (in general between 10 and 15 sessions of exposure)¹³.

Statistics

Means and standard errors of mean, T test for comparison of two dependent samples and contrast for the significance of the Pearson correlation between two quantitative variables were obtained.

RESULTS

A total of 8 patients finally participated in the study, 2 of whom were lost to follow-up. There were no statistically significant differences of the two patients who dropped out in relationship with the total of the participants in the study regarding the demographic variables analyzed. All the patients were women except for one. Mean age was 50.5 years. Almost all had a basic educational level-primary education or similar (57%). Only one patient had university studies. A high proportion of the cases were married or living with their mate and were housewives or early retired. Manifestation time they had been suffering pain was a mean of 14.5 years. Table 1 summarizes the results of the variables studied, including the 2 subjects who did not participate in the Imagined exposure. The Last Observation Carried Forward (LOCF) method was used. It should be stated that although the pre and post-treatment score improves in all the variables, significant differences were only found in PCS catastrophism ($p < 0.05$) and in its three subscales. The differ-

Table 1	Summary of the treatment efficacy results		
	Pretreatment	Posttreatment	Grade of pretreatment-posttreatment significance
PCS			
Total	25.33±3.54	16±3.60	p=0.018
Magnification	5.12±1.46	3.16±0.87	p=0.050
Rumination	7.66±0.99	4.5±1.17	p=0.032
Helplessness	11.37±1.46	8.33±1.66	p=0.007
VAS	12.12±1.23	9.66±1.38	p=0.079
FIQ	50.12±5.09	40.16±5.09	p=0.116
HADS depression	8.5±1.45	6.83±1.24	p=0.119
HADS anxiety	9.12±1.21	9±2.06	p=0.702

PCS: Pain Catastrophizing Scale; VAS: Visual Analogue Scale of Pain; FIQ: Fibromyalgia Impact Questionnaire; HADS: Hospital Anxiety and Depression.

ence in the VAS intensity of pain ($p=0.079$) was not significant, although it was close to significance level $\alpha=0.05$. It is relevant to mention that neither C nor any of its subscales (especially rumination) correlated with pain intensity. Another relevant piece of data is the stability of the C score if there is no intervention. There are no significant differences between the pre-treatment measurement and that conducted 2 months before subject selection ($p=0.416$). Finally, in relationship to the two subjects who did not participate in the imagined exposure, it can be stated that the direct scores obtained in the rumination subscale for these (23%) were different from the rest of the subjects if the Imagined Exposure was performed and that they obtained a mean of 38% in the decrease of their scores. The mean difference in the group without exposure was 1.5 ($p=0.656$). However, in the group that did perform exposure, the mean difference was 4 points although significant differences were not obtained ($p=0.120$). This result may suggest that significance would be found in this tendency with a larger sample.

DISCUSSION

This is the first study on the application of an imagined exposure technique for chronic pain. We have studied if the incorporation of this new component (imagined exposure) into a treatment program that has already been shown to be effective in successive occasions¹³ would improve the therapeutic effect by reducing rumination or if a similar result would be produced. The most important limitation of this research, that is justified as it is a pilot study, is its small sample size. Our results are in line with previous studies that demonstrate that catastrophizing correlates with reduc-

tions in depressive symptoms and in pain behaviors as well as with improvements in pain intensity¹⁴. One of the treatments has been effective in reducing C of the CBT, with decreases of up to 40% in the PCS¹⁴. Although we have not been able to demonstrate it in our study, rumination seems to be the subscale of C that would best correlate with pain⁴. To improve treatment of rumination, we used the imagined exposure technique of irrational fears. Perhaps patients diagnosed of fibromyalgia are not the best sample to use as a test of the imagined exposure. In generally these are cases in whom most of the patients are elderly subjects (50.5 years), in whom the years of evolution of their pain has existed for many years (14.5 years) and who have high psychiatric comorbidity.

The CBT is shown to be beneficial «per se» for the treatment of rumination. In fact, two subjects who did not participate in the specific exposure session (as they had a lower cultural level and understanding difficulties) also decreased their rumination, although 15% less than the subjects who did participate in it. On the other hand, imagined exposure showed the greatest success in a young woman with university education and with high score in rumination (above the 70 percentile). After the exposure, the patient reported some less frequent, intense and long-lasting ruminations that were also accompanied by an objective improvement in the VAS and in the FIQ. Thus, it does not seem to be advisable to propose imagined exposure to patients with lower educational level or with poor cognitive level. On the other hand, this technique could be very helpful, especially in those patients with a high score in rumination (above the 70 percentile), with a middle-high education level and who have a very intense irrational fear¹⁵. In any event, the existence of new studies that confirm these preliminary findings and that approach another type of patients other than those with FM is necessary.

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