

PERSONALITY DISORDERS AND EMOTIONAL VARIABLES IN PATIENTS WITH LUPUS

M. Angeles Coin-Mejías*, M. Isabel Peralta-Ramírez*, José Luis Callejas-Rubio**, Miguel Pérez-García*

SUMMARY

Introduction

Systemic lupus erythematosus (SLE), a prototype of the autoimmune diseases, is a multi-systemic disease characterized by an alteration in the immunological response, where the production of antibodies is directed against nuclear antigens, thus affecting many organs and systems. The course of this disease includes a wide range of clinical manifestations, different anatomo-pathological findings, and a series of immunological abnormalities. It is characterized by outbreaks and remissions. SLE can be manifested by general malaise, fever, fatigue, weight loss, skin rashes or joint inflammation, anemia, inflammation of the lymphatic glands, lowering of the defenses against infection, and cardiac, kidney, pulmonary and neurological alterations. In chronic dermatological lupus, only the skin is affected; this condition can present rash erythemas, etc. The recent introduction of new immunological diagnostic methods (antinuclear antibodies, anti-DNA antibodies, complementary fraction, etc.) has made it possible to recognize less severe forms of the disease, as well as its outbreaks and therapeutic guidelines.

Different psychological variables have been associated with the exacerbation of the disease; one of the most notable is stress, and many patients with lupus also suffer diverse psychiatric and personality disorders associated with the disease, with a prevalence oscillating between 20% and 60%. Furthermore, these alterations have been associated with a lower quality of life, poorer evolution and psychiatric antecedents. In the specific case of personality alterations, previous research has found the existence of a "triad of personality" characteristics in patients with lupus. Depression, hysteria and hypochondria are the factors making up this triad. However, it has not been shown whether these personality disorders are just another symptom of the disease or a consequence of the emotional disorders produced by it.

The purpose of this study was to test the possible existence of personality disorders and their relationship with other affective disorders in SLE.

Methods

In order to do this, we studied 30 patients with lupus and evaluated their possible personality disorders with the MMPI and their levels of depression and anxiety with the BDI and STAI, respectively. Then, after analyzing the results obtained on the tests administered, three groups were established: patients with lupus who had no emotional disorders, patients with lupus who presented

clinical anxiety, and patients with lupus who presented clinical depression. These categories were represented graphically. In order to test the effects of anxiety and depression in the psychopathological personality profile, 10 between-group univariate variance analyses (ANOVA) were carried out, one for each subscale of the MMPI. The variable "presence or non-presence of emotional disorders" was the two-level factor.

Results

In the graphic representation of the personality patterns of the three groups, it can be seen that patients with lupus who did not present emotional disorders (neither depression or anxiety) did not show any alterations in their personality patterns. However, this pattern was altered in those who presented depression or anxiety. Later, the results found show statistically significant differences on the subscales of Hypochondria [$F=9.795$, $df=1$, 29 , ± 0.004], Psychasthenia [$F=15.266$, $df=1$, 29 , $p\leq 0.001$], and Schizophrenia [$F=4.97$, $df=1$, 29 , $p\leq 0.001$] among those patients who presented emotional disorders and those who did not present any emotional disorder, with the latter receiving higher scores.

Conclusion

We can state that the development of personality disorders in patients with lupus is associated with emotional alterations, which probably relate more to processes of adaptation to the disease than to the disease itself.

Key words: Anxiety, depression, lupus, personality disorder.

RESUMEN

Introducción

El lupus eritematoso sistémico (LES) es una enfermedad de carácter autoinmune que afecta principalmente a mujeres en edad fértil. Los síntomas más comunes de los pacientes incluyen dolor articular, erupciones cutáneas, cansancio o fatiga y dificultad en la respiración. Aunque el curso de la enfermedad es crónico, evoluciona normalmente en forma de brotes, que se alternan con períodos de remisión relativa. Si bien la etiología es desconocida, se sabe que existe una base genética predisponente y diversos factores ambientales que pueden actuar como desencadenantes. Entre éstos destacan la luz ultravioleta, las infecciones (especialmente virales), el embarazo y diversos fármacos. Además, diferentes variables psicológicas se han relacionado con la exacerbación de la enfermedad, de las cuales una de las más frecuentes es el estrés.

*Department of Personality, Evaluation and Psychological Treatment. School of Psychology. University of Granada, Spain.

** Internal Medicine Service. "Hospital Clínico San Cecilio", Granada, Spain.

Correspondence: María Isabel Peralta-Ramírez. Facultad de Psicología, Campus Universitario de Cartuja, s/n, Universidad de Granada, 18071 Granada (España). Telephone: (+36)958242948, Fax: (+36) 958243779, E-mail: mperalta@ugr.es

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Distintos estudios han mostrado que el estrés cotidiano produce un incremento en la sintomatología lúpica. Asimismo, los pacientes con lupus padecen también diversos trastornos psiquiátricos asociados a su enfermedad, cuya prevalencia oscila entre 20 y 66%, y se relaciona con una peor calidad de vida y una peor evolución y posesión de antecedentes psiquiátricos. En referencia concreta a las alteraciones de personalidad, investigaciones anteriores han hallado la existencia de una "tríada de personalidad" característica en pacientes con lupus, en que la depresión, la histeria y la hipocondriasis son sus componentes. Por lo anterior, el objetivo de este estudio ha sido comprobar la posible existencia de trastornos de la personalidad y su relación con otros trastornos afectivos en pacientes con lupus.

Material y método

Hemos estudiado a 30 pacientes con LES, en los que evaluamos sus posibles trastornos de personalidad (mediante el MMPI) y sus posibles alteraciones emocionales (ansiedad y depresión). Para evaluar la ansiedad hemos utilizado el STAI (Inventario de Ansiedad de Spielberg) y para la depresión hemos administrado el Inventario de Depresión de Beck. Posteriormente, y tras analizar los resultados obtenidos en las pruebas administradas, hemos establecido tres categorías: pacientes con lupus sin ningún trastorno emocional, pacientes con lupus que presentaban ansiedad clínica y pacientes con lupus que presentaban depresión clínica. Estas categorías se representaron gráficamente y se analizaron estadísticamente. Para esto se llevaron a cabo diez análisis de varianzas en que la variable "presencia o no de trastornos emocionales" fue el factor con dos niveles (G1: pacientes que no presentan ansiedad ni depresión; G2: pacientes que presentan depresión, ansiedad o ambas) y la puntuación obtenida en cada una de las subescalas del MMPI fue la variable dependiente.

Resultados

En la representación gráfica del patrón del personalidad de los tres grupos se puede apreciar que los pacientes de lupus sin trastornos emocionales (depresión o ansiedad) carecían de alteraciones en el patrón de personalidad; aun así, este patrón se hallaba alterado en quienes presentaban depresión y/o ansiedad. En concreto, los pacientes que presentaban depresión clínica puntuaban por encima del percentil 60 en hipocondria, depresión, histeria de conversión, paranoia, psicasteria, esquizofrenia e introversión social. En esa línea, los pacientes que presentaban altos niveles de ansiedad mostraban puntuaciones por encima del percentil 60 en hipocondria, depresión e histeria de conversión. Resultados posteriores mostraron diferencias estadísticamente significativas en las subescalas de Hipocondria (Hs) [$F(1.29)=9.795$; $p\leq0.004$], Psicasteria (Ps) [$F(1.29)=15.266$; $p\leq0.001$], y Esquizofrenia (Sc) [$F(1.29)=4.97$; $p\leq0.001$], entre los pacientes con lupus que presentaban trastornos emocionales y los pacientes con lupus que no presentaban ningún trastorno emocional, siendo menores las puntuaciones de estos últimos.

Discusión

Tras estos resultados podemos afirmar que los trastornos de personalidad que caracterizan a numerosos pacientes con lupus eritematoso sistémico están muy asociados con diversas alteraciones emocionales como la depresión y la ansiedad, emociones que, además, se relacionan más con los procesos de adaptación de la enfermedad que con ésta en sí. Estos resultados avalan una vez más el abordaje biopsicosocial de la enfermedad ya que sabemos que el desarrollo de muchos trastornos autoinmunes depende de una desregularización del eje hipotalámico-pituitario-adrenal, que es especialmente vulnerable a los efectos psicológicos del estrés, la depresión y la ansiedad. Sin embargo, estos estados emociona-

les no sólo pueden alterar dicho eje, sino que psíquicamente pueden producir trastornos de carácter psicológico entre los que pueden destacar diversos trastornos de la personalidad. Estos resultados se deberían tener en cuenta en el abordaje de estos pacientes ya que considerar estos aspectos propiciaría una mejoría psíquica y un aumento de la calidad de vida de éstos.

Palabras clave: Depresión, ansiedad, lupus, trastornos de personalidad.

INTRODUCTION

Systemic lupus erythematosus (SLE), a prototype of the autoimmune diseases, is a multi-systemic disease characterized by an alteration in the immunological response, where the production of antibodies is directed against nuclear antigens, thus affecting many organs and systems. The course of this disease includes a wide range of clinical manifestations, different anatomo-pathological findings, and a series of immunological abnormalities. It is characterized by outbreaks and remissions. The treatment for lupus is based on anti-malarial, anti-inflammatory (AINES), and corticosteroid treatments. In some cases, the association of other immunosuppressives (methotrexate, azathioprine, etc.) is necessary in order to reduce the necessary dosage of corticosteroid and its side effects as well. These pharmacological dosages have been optimized and individualized according to the side effects associated with them and the clinical evolution of the patients.

Different psychological variables have been associated with the exacerbation of the disease; one of the most notable is stress. Diverse studies have shown that daily stress produces an increase in lupic symptomatology (14, 17). However, the relationship between psychological factors and the worsening of the disease has a bi-directional nature, as many patients with lupus also suffer from diverse psychiatric and personality disorders associated with the disease, with a prevalence oscillating between 20% and 60%. The frequency is even greater in some studies that considered the presence of mean cognitive impairments (12). Among the reasons for this broad range may be that the samples used were not very uniform or that different diagnostic methods were used (22).

On the other hand, the mood and anxiety disorders are included in neuropsychiatric lupus, as are other central nervous system syndromes, such as aseptic meningitis, cerebrovascular disorders, demyelinating syndrome, headache (migraine and benign intracranial hypertension), movement disorders (including chorea), myelopathy, tissue disorders, confusional states, cognitive impairment and psychosis, peripheral nervous system syndromes, such as Guillain-Barré, autonomic dis-

orders, mononeuropathy, myasthenia grave, cranial neuropathy, plexopathy and polyneuropathy (1, 4, 11, 22). Of all these alterations, the most common are: headaches, mood disorders, acute confusional states, anxiety, cerebrovascular disease and cognitive dysfunction. These alterations also occur in other autoimmune diseases, such as rheumatoid arthritis (9).

There are different causes for these alterations, the most important being affection of the CNS, uremia, infections, iatrogenic effects of steroid treatment, stress caused by the diagnosis, and difficulties arising in the process of adaptation to a chronic disease (18). Furthermore, these alterations have been associated with lower quality of life, poorer evolution and psychiatric antecedents (16).

Referring specifically to the personality alterations, previous research has found the existence of a "triad of personality" characteristics in patients with lupus. Depression, hysteria and hypochondria are the factors making up this triad (13, 21). Although there seems to be a consensus that these are the three parameters of personality altered in these patients, something which has not yet been confirmed, due to the bi-directional nature of the illness, is whether this alteration is produced by the disease itself or is due to emotional disorders stemming from it (21).

For all of these reasons, the objective of our study was to first corroborate the possible existence of a characteristic personality pattern in these patients. Then, if a pattern was found, the idea was to test whether the alterations in these parameters were related to emotional factors characteristic of the adaptation to the disease, such as depression and anxiety. At this level, we must not underestimate the possible effect of the emotional variables on cognitive functioning. In fact, the depressive state in patients with lupus has been shown to be closely related to a cognitive bias (11). On the other hand, Hanly et al found that SLE patients with neuropsychiatric syndromes had more symptoms of depression and cognitive dysfunction than rheumatoid arthritis patients with neuropsychiatric syndromes (9).

The instruments used in this study were selected due to their appropriate psychometric properties and the fact that they were translated and validated with a Spanish population. They were the following:

- *Minnesota Multi-phasic Personality Inventory (MMPI)* (Hathaway-McKinley) (5). This inventory is considered a stable instrument for evaluating personality psychopathology, and it has been widely used to evaluate mental functioning in medical and neurological disorders.

Scores equal to or greater than 70 on the successive subscales are considered clinical, based on the normative data from the test, although values greater than

60 must be considered. The subscales evaluated are: Hypochondria (HS), Depression (D), Hysteria (HY), Psychopathic Deviation (PD), Masculinity-Femininity (MF), Paranoia (PA), Psychasthenia (PT), Schizophrenia (ES), Hypomania (MA) and Social Introversion (SI). The score obtained on these 10 subscales gives us the representation of the psychopathological personality profile of the people studied. The psychometric properties described are highly reliable, showing a Cronbach's alpha of 0.91 and a high interscale correlation.

- *State-Trait Anxiety Inventory (STAI)* (Spielberg, Gorsuch, Lushene) (19). This inventory includes two separate self-evaluation scales that measure two independent concepts of anxiety: state (S) and trait (T). Although it was originally thought of as an instrument to investigate anxiety phenomena in adults without psychiatric alterations, it has proven useful in measuring both concepts in patients in diverse clinical groups. This instrument shows a high reliability using the two-halves procedure (0.86). Likewise, its Cronbach's alpha is between 0.86 and 0.92. It also shows a high convergent validity with other instruments. A person is considered to have clinical anxiety when he/she presents typical scores higher than 70, so we have established this score as the cut-off point.
- *Beck Depression Inventory (BDI)* (2). This self-applied inventory consists of 21 items that include the cognitive components of depression to a large degree. Although this is not a diagnostic instrument, it provides a measure of the depth of the depression in patients with any diagnosis. The scores from this instrument can be classified into: [10] no depression, [18] slight depression, [25] moderate depression and [30] serious depression. The cut-off score for this instrument is 18, showing a specificity of 89% and a sensibility of 83%, with the percentage of correct diagnoses with this cut-off score being 88.6.

SUBJECTS AND METHODS

Subjects

All participants (30 patients with lupus) were patients at San Cecilio University Hospital in Granada, Spain. All of these patients gave their signed informed consent to participate in this study, which was carried out in April 2004. The study protocol was reviewed and approved by local regulatory authorities and an ethics protocol.

Depending on the scores obtained on the evaluation instruments, the patients were classified into three groups: SLE patients with depression; SLE patients with anxiety; SLE patients without any emotional disorder. All of the patients included in this study are

medicated with the appropriate dosages to control the activity of the disease.

Procedures

Patients diagnosed with lupus who met at least four criteria from the ACR (20) were selected by their doctors according to these criteria, and they were later invited to participate in the study. After they had agreed to participate, the procedure and characteristics of the study were explained to them, and then they proceeded to sign the informed consent form. Later, they were interviewed briefly with the purpose of obtaining demographic data, and then they were given the psychological evaluation. In this, patients completed the three instruments described above. There was an experienced clinical psychologist present at all times, in order to answer any questions posed by the patients during the process of filling out the questionnaires.

Statistical analysis

In the first place, a descriptive analysis was carried out of the personality profiles of the patients.

Secondly, in order to test the effects of anxiety and depression on the psychopathological personality profile, 10 between-group univariate variance analyses (ANOVA) were performed, one for each subscale of the MMPI. The variable "presence or non-presence of emotional disorders" was the two-level factor (G1: patients who presented neither anxiety nor depression; G2: patients who presented depression, anxiety or both), and the score obtained on each of the MMPI subscales was the dependent variable. The comparisons were carried out using the Bonferroni correction, with a level of $P=0.005$ ($0.005/10$). Although the number of subjects was different in each group, the prior application of the test of variance homogeneity showed that the ANOVA was an appropriate analysis. The analyses were performed with the Statistical Package for the Social Sciences (SPSS) V.12.

RESULTS

1. Description of demographics, emotional data in a group of patient with lupus

In this study, 30 patients with lupus participated, four of which had chronic discoid lupus, and 26 had systemic lupus erythematosus. There were 24 women and six men in the population studied. All of the subjects met at least four criteria from the American College of Rheumatology (ACR) (20). The mean age was 44.7 years ($ST=12.40$), with a mean number of schooling years of 9.88 ($ST=3.55$). There were two requisites for inclusion. The first was meeting at least four of the cri-

teria from the ACR, and the second was knowing how to read and write.

Regarding the emotional variables, the sample studied showed a mean on depression of 11.03 ($SD=7.47$) and for anxiety of 60.80 ($SD=30.8$). The group of patients with depression consisted of 10 people who had a depression mean of 19.9 ($SD=2.7$). The group of patients with anxiety consisted of 20 patients and had an anxiety mean of 79.8 ($SD=13.6$). Finally, the group of patients with no emotional disorder consisted of 10 people with a mean depression of 4.5 ($SD=3.3$) and a mean anxiety of 22.8 ($SD=16.22$).

2. Representation of the profile of personality disorders in patients with lupus according to their emotional variables

With the purpose of testing whether there were any differences on the MMPI profile depending on the emotional variables, three personality profiles were represented: one with the mean score obtained for each of the MMPI subscales for those patients who presented neither anxiety nor depression; a second profile with the mean of the scores obtained for each of the MMPI subscales in the group of patients who presented clinical trait anxiety; and, finally, a third MMPI profile with the mean obtained for each of the MMPI subscales in the group that presented clinical depression. As can be seen in graph 1, patients with lupus without anxiety or depression presented a completely normal personality profile, with none of the scores on the MMPI subscales reaching 60. However, patients who obtained clinical scores for depression and/or anxiety presented an alteration in the personality profile, reaching scores higher than 70 for hypochondria and scores between 60 and 70 on the depression, conversion hysteria, paranoia, psychasthenia and schizophrenia subscales (graph 1).

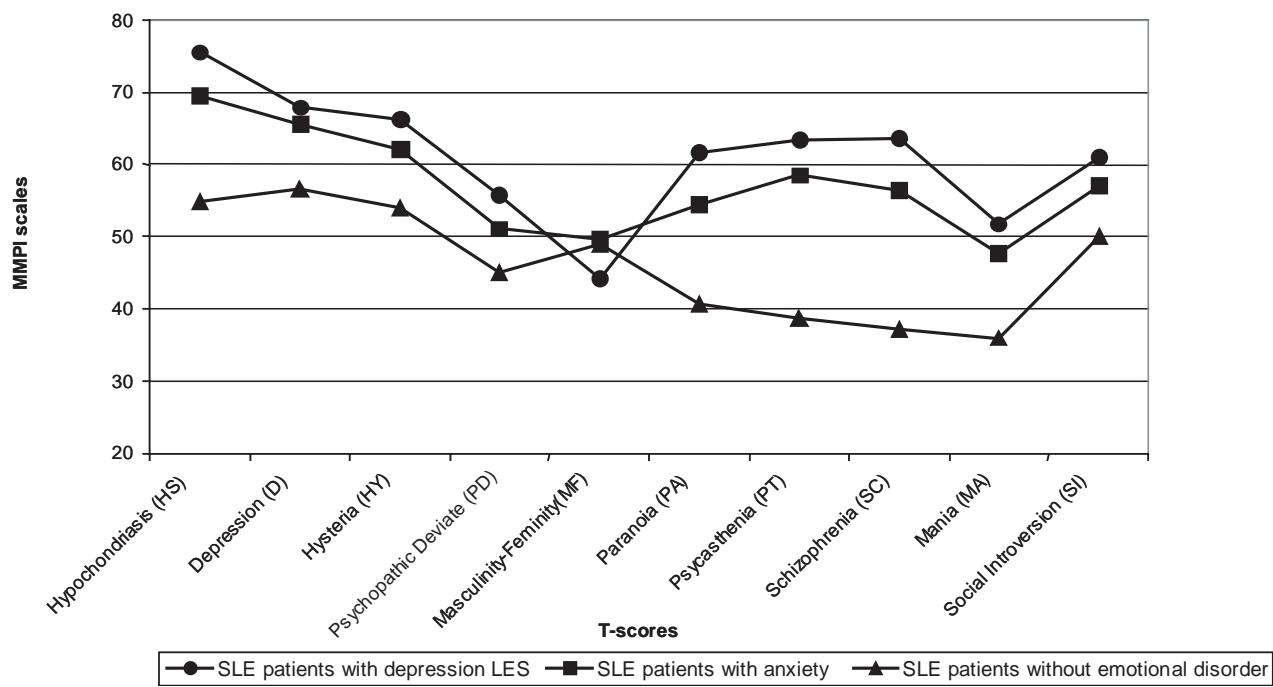
3. Effect of the emotional variables depression and anxiety on the personality profile of a group of patients with lupus

Results found showed statistically significant differences on the subscales of Hypochondria (HS) [$F=9.795$, $df=1.29$, $p<0.004$], Psychasthenia (PS) [$F=15.266$, $df=1.29$, $p<0.001$], and Schizophrenia (SC) [$F=4.97$, $df=1.29$, $p<0.001$] between groups G1 and G2, with patients in group G2 presenting higher scores on these subscales (table 1).

However, there were no statistically significant differences for the other subscales studied.

DISCUSSION

Results found show the possible existence of different personality disorders in the population studied, these



Graph 1. Systemic lupus erythematosus MMPI profile

being evident in the group of patients who showed emotional alterations. Specifically, it was shown that the patients with lupus who presented low scores on anxiety and/or depression did not manifest any personality alterations either. Likewise, results showed patients with lupus who presented high scores on anxiety and/or depression showed alterations in the personality subscales of hypochondria, psychasthenia, depression, schizophrenia, conversion hysteria and paranoia. For all of these reasons, the personality disorders found here are quite related to alterations in the emotional variables, such as anxiety and depression.

These results once again support the biopsychosocial approach to the disease. We must not forget that the development of many autoimmune disorders depends on the de-regularization of the hypothalamic-pituitary-adrenal axis, which is especially vulnerable to the psychological effects of stress, depression and anxiety (10).

However, these emotional states may not only alter the axis, but they may also produce disorders of a psychological nature among which diverse personality disorders can be highlighted.

We must also consider the bi-directional nature of the disease; in fact, some authors have found a relation between personality factors and abnormalities in the skin and articulations that are typical in these patients. These abnormalities may cause problems related to social functioning, social non-conformity and depressive moods, which affect the psychological state of the patient (21). All of this has also been confirmed in other autoimmune diseases like rheumatoid arthritis (3).

On the other hand, our results confirm the existence of the personality triad found by other authors (13, 21), although these alterations would only occur in patients who present a parallel alteration of anxiety and/or depression. This triad is not present in patients with lupus who do not present associated emotional disorders. Likewise, our study also points out that other personality disorders in these patients, such as paranoia, psychasthenia and schizophrenia, are associated, once again, with emotional disorders. Here it is interesting to note the importance of depression as a variable related to other mental disorders, where not only the emotional disorders found in this study stand out, but also neuropsychiatric disorders (9) and cognitive biases in these patients (18). Therefore, as anxiety and depression are related to the existence of personality disorders in lupus, and as both depression and anxiety make up one of the syndromes of neuropsychiatric

TABLE 1. Variance analysis between G1 and G2 for each of the personality subscales

Subscale	G1		G2		F	p
	Mean	ST	Mean	ST		
HS	55.0	11.13	69.5	12.33	9.79	.004
D	56.6	6.6	65.55	10.7	5.8	.023
HY	54.0	8.3	62.15	11.73	3.81	.061
PD	45.2	10.54	51.0	10.91	1.92	.176
MF	48.9	7.14	45.5	10.94	.766	.389
PA	40.6	12.81	54.4	13.25	7.38	.011
PT	38.7	16.83	58.65	11.04	15.26	.001
SC	37.2	13.99	56.45	12.26	14.97	.001
MA	36.0	9.7	47.7	11.9	7.18	.012
SI	50.1	11.29	57.0	9.48	3.15	.087

lupus that appears most frequently, in these patients personality disorders must be understood as a consequence of this neuropsychiatric alteration rather than as a characteristic pattern in these patients.

One possible deficiency of this study was the small sample used, so that future research should increase it or even compliment it with other autoimmune populations, such as rheumatoid arthritis patients. Furthermore, another interesting question might be the relationship of these personality alterations, not only with emotional factors, but also with possible physical damage resulting from the disease.

It becomes evident, therefore, that there is a need to detect early on these personality factors and emotional alterations with the purpose of resolving the psychological manifestations stemming from the disease. Furthermore, we must not forget that there is considerable empirical evidence demonstrating the effectiveness of certain psychological therapies directed towards controlling the negative consequences produced by the chronic disease (7, 8, 15). Undoubtedly, a psychological approach which contemplates these aspects would help in achieving an improvement and increasing the quality of life of these patients.

REFERENCES

1. ACR AD HOC COMMITTEE ON NEUROPSYCHIATRIC LUPUS NOMENCLATURE: The American college of rheumatology nomenclature and case definitions for neuropsychiatric lupus syndromes. *Arthritis Rheum*, 42:599-608, 1999.
2. BECK AT, STEER RA, GARBIN MG: Psychometric properties of the Beck Depression Inventory: Twenty-five years of evaluation. *Clin Psychol Rev*, 1:77-100, 1988.
3. BEKKELUND SI, HUSBY G, MELLGREN SI: Quality of life in rheumatoid arthritis: a case-control study in patients living in northern Norway. *Clin Exp Rheumatol*, 13:471-5, 1995.
4. BREY R L, HOLLIDAY S L, SAKLAD A R, NAVARRETE M G, HERMOSILLO-ROMO D et. al.: Neuropsychiatric syndromes in lupus. Prevalence using standardized definitions. *Neurology*, 58:1214-1220, 2002.
5. DAHLSTROM WG, WELSH GS, DAHLSTROM LE: *An MMPI Hand-book: Volume II: Research Applications*. University of Minnesota. Minneapolis, 1975.
6. DENTON FJ, SHARPE L, SCHRIEBER LE: Cognitive bias in systemic lupus Erythematosus. *European J Pain*, 9:5-14, 2005.
7. DWORTHY S M, DOBKIN P L, CLARKE A E, DA COSTA D, DRITSA M et. Al: Group psychotherapy reduces illness intrusiveness in systemic lupus Erythematosus. *J Rheumatol*, 30:1011-6, 2003.
8. GRECO CM, RUDY TE, MANZI S: Effects of stress-reduction programs on psychological function, pain, and physical function of Systemic lupus erythematosus patients: a randomized controlled trial. *Arthritis Rheum*, 51:625-34, 2004.
9. HANLY JG, FISK JD, MCCURDY G, FOUGERE L, DOUGLAS JA: Neuropsychiatric syndrome in patients with systemic lupus erythematosus and rheumatoid arthritis. *J Rheumatol*, 32:1459-1466, 2005.
10. HARBUZ M: Neuroendocrine function and chronic inflammatory stress. *Exp Physiol*, 87:519-25, 2002.
11. HARRISON MJ, RADVIN LD: Cognitive dysfunction in neuropsychiatric systemic lupus erythematosus. *Current Opinion Rheumatology*, 14:510-514, 2002.
12. HAUPT M: Psychiatric disorders in rheumatic diseases, as exemplified by systemic lupus erythematosus. *Zer Rheumatol*, 63:122-130, 2004.
13. OMBAL R, WATERLOO K, KOLDINGSNES W, HUSBY G, MELLGREN SI: Fatigue in patients with lupus erythematosus: the psychosocial aspects. *J Rheumatol*, 30:283-7, 2003.
14. PERALTA-RAMIREZ MI, JIMENEZ-ALONSO J, GODOY J, PEREZ-GARCIA M: The effects of daily stress and stressful life events on the clinical symptomatology of patients with lupus erythematosus. *Psychosom Med*, 66:788-94, 2004.
15. ROBLES-ORTEGA H, PERALTA-RAMIREZ M I: *Programa para el Control del Estrés*. Pirámide, Madrid, 2006.
16. RUBIO G, GIL-AGUADO A, BALSA A, FERRE F, MORENO DE LA SANTA C y cols.: Prevalencia de trastornos psiquiátricos y estado psicopatológico en pacientes con lupus eritematoso sistémico. *Rev Clin Esp*, 198:61-5, 1998.
17. SCHUBERT C, LAMPE A, RUMPOLD G, FUCHS D, KÖNIG P et. Al.: Daily psychosocial stressors interfere with dynamics of urine neopterin in a patient with systemic lupus erythematosus: An integrative Single-Case Study. *Psychosom Med*, 61:876-882, 1999.
18. SHAPIRO H: Psychopathology in the lupus patient. En: Wallace DJ (ed). *Dubois Lupus Erythematosus* (4th ed). Lea and Febiger, Philadelphia, 1993.
19. SPIELBERG CD, GORSUCH RL, LUSHENE RE: *STAI. Cuestionario de Ansiedad Estado-Rasgo*. Manual (Cuarta edición revisada). TEA Ediciones S.A, Madrid, 1993.
20. TAN EM, COHEN AS, FRIES JF, MASI AT, MCSHANE DJ y col.: The 1982 revised criteria for the classification of systemic lupus erythematosus. *Arthritis Rheum*, 25:1271-7, 1982.
21. WATERLOO K, OMDAL R, MELLGREN SI: Emotional Status in systemic lupus erythematosus. *Scand J Rheumatol*, 27:410-4, 1998.
22. WEKKING EM: Psychiatric symptoms in SLE an update. *Psychosom Med*, 55:219-28, 1993.