Original Investigation

Mental health status can reflect disease activity in rheumatoid arthritis

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Abstract

Objective: A significant number of patients with rheumatoid arthritis (RA) link the start of illness with psychological trauma or severe stress. Impaired mental health (IMH), defined as depression and anxiety with psychoneuroimmunological factors, can play a significant role in RA. The main objective of this research was to investigate the mutual correlation of IMH and RA activity, estimated by the laboratory and clinical parameters in RA patients.

Material and Methods: An open clinical prospective study that lasted for 6 months was designed. There were 72 patients included, 58 women and 14 men, aged 34 to 80 years and screened for mental health status. The study population was randomized following the Brief Symptoms Inventory (BSI) scale, comprised of 53 questions with a range from 0 (no symptoms) to 4 (severe). This mental test was done only once during the study. Following the results from the BSI scale, RA patients were divided into mentally stable and mentally unstable patients to investigate the influence of RA activity on mental health. The following laboratory and clinical parameters were analyzed: sex, age, erythrocyte sedimentation rate (ESR), rheumatoid factor (RF), C-reactive protein (CRP), anti-cyclic citrullinated peptide (anti-CCP) antibody, and disease activity score (DAS28). All RA patients did not express extra-articular manifestations or Sjögren's syndrome. The chi-square test, ANOVA, Pearson's coefficient, and IBM Statistics - SPSS v19 were used.

Results: From a total of 72 RA patients, there were 44 mentally stable and 28 mentally unstable patients. All patients had either moderate or severe active disease. The only significant correlation of IMH and activity of RA was found in CRP and DAS28, but no significance was observed in ESR, RF, and anti-CCP. The DAS28 showed high disease activity with an average of 5.3 and CRP of 20.9 mg/L in patients with unstable mental health compared to stable mental health patients, where RA was associated with a moderate DAS average value of 4.35 and CRP of 14.1 mg/L. Depression and anxiety were found in all 28 (39%) RA patients.

Conclusion: Mentally unstable RA patients correlate more with severe disease activity, while mentally stable patients express moderate disease activity.

Key words: Mental health, rheumatoid arthritis, DAS28

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Introduction

Rheumatoid arthritis (RA) is systemic autoimmune rheumatic disorder with progressive evolution, leading to disability and increased mortality. The cause is still unknown, although many environmental and individual factors precipitate the onset of disease. The defect in cellular and humoral immunity is the key factor in the evolution of disease. Mental health and disturbed psychosocial status affect the whole body system, including the musculoskeletal system as well. Many RA patients connect their psychological trauma with the onset of disease and worsening of symptoms. Disease duration and treatment response depend partly on mental and emotional health. The new scientific findings indicate the association between emotional factors and inflammatory activity. Psychological stress through chemical mediators affects the immune system and release of prostaglandins. Individual personality is also linked to RA, but it is not known whether this specific personality is acquired or hereditary. The most common impaired mental health disorders are depression, neurosis, and reduced abilities in communication. In RA, the adaptation process is inadequate. The somatic response caused by stress is the leading factor in many mental and somatic disorders. The mortality rate related to stress is up to 70%-80% and is related to infectious diseases and cardiovascular, endocrine, gastrointestinal, and autoimmune disorders. Mental health stability is considered when adaptation to new life demands is appropriate, while unstable mental health occurs when defense mechanisms are weak to cope with stress situations (1). The most common mental health disorders in RA are: depression, somatization, anxiety, the obsessive-compulsive disorder, vulnerability to interpersonal relations, suspicion, phobia, paranoid ideas, psychosis, and others. Depression occurs in about 20% of RA patients, compared to 5%-13% in the general population. Depression in RA has been associated with increased mortality and risk for comorbidities (2). A large, longitudinal study found that over time, depressed RA patients had sig-

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Table 1. Inflammatory markers and DAS28 in Mentally Stable and Unstable RA

|		N	AS	SD	SEM	Minimum	Maximum	p value	P
ESR	M.S.	44	35.8636	26.90171	4.05559	4.00	122.00	.399	,666
	M. U.	28	39.1875	24.39185	6.09796	6.00	78.00		
	Total	72	36.7500	26.09411	3.36874	4.00	122.00		
RF	M.S.	44	249.1114	813.20421	122.59515	3.00	5330.00	1.000	,718
	M.U.	28	331.6500	665.38239	166.34560	5.00	2510.00		
	Total	72	271.1217	771.93228	99.65603	3.00	5330.00		
CRP	M.S.	44	14.1834	17.09818	2.57765	.30	58.20	0.265	,265
	M.U.	28	20.9481	28.34336	7.08584	3.08	113.00		
	Total	72	15.9873	20.64965	2.66586	.30	113.00		
Anti-CCP	M.S.	44	12.6163	35.35963	8.83991	.33	145.00	.609	,596
	M.U.	28	23.5618	78.91150	11.89636	.00	421.70		
	Total	72	20.6430	69.85728	9.01854	.00	421.70		
DAS28	M.S.	44	4.3595	1.17267	.17679	1.54	6.44	.002	,003
	M.U.	28	5.3363	.84941	.21235	2.99	6.47		
	Total	72	4.6200	1.17276	.15140	1.54	6.47		

MS: mentally stable patients; MU: mentally unstable patients; N: number of RA patients; AS: average score; SD: standard deviation; SEM: standard error of the mean; P: p value

nificantly poorer functional outcomes, including disability, and self-rated health than non-depressed patients (3). Dysfunctional belief about RA may also lead to maladaptive coping that, in turn, contributes to depression. The helplessness has been associated with passive or avoidant pain- coping strategies that negatively impact mood (4). The most common reactions are: self-accusation, rigidity, high level of moral norms, inhibition and perfectionism. A large epidemiological study conducted in the Netherlands revealed that having arthritis (of any type) significantly increased the odds of developing depression 2 years later, while prior depression had no effect on the development of arthritis (5). The presence of somatization and RA is 3 times more frequent in the normal population (5).

Material and Methods

An open clinical prospective study in a period of 6 months was done. A total of 72 patients, with 58 women (80.5%) and 14 (19.5%) men, aged between 34 to 80 years, divided in two groups, stable and unstable mental health RA patients, were randomized. The initial step was a BSI scale test in order to differentiate stable from unstable mental health patients.

This mental status evaluation test was done only once during the study. All RA patients did not express extra-articular manifestations or Sjögren's syndrome. The following laboratory and clinical parameters were analyzed: sex, age, ESR, RF, CRP, anti-CCP, DAS28, mean disease duration, and disease stage progression. The chi-square test and one-way analysis of variance (ANOVA) and the mutual influence of the individual parameters, tested with Pearson's coefficient linear correlation, was used
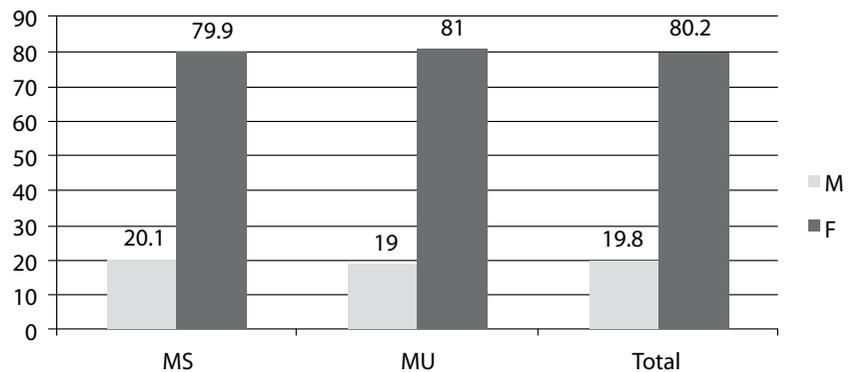
Figure 1. Gender and mental health (%)
MS: mentally stable RA; MU: mentally unstable RA; total No. of RA patients

for statistical analysis using the package IBM Statistics - SPSS v19. The referral values >63 points were considered disturbed mental health. DAS28 (disease activity score for 28 joints) was estimated as: >5.1 (severe activity), 3.2-5.1 (moderate activity), 2.6-3.2 (mild activity), and <2.6 (remission). Mental health status was determined by BSI (Brief Symptoms Inventory), a scale comprised of 53 questions with a range from 0 (no symptoms) to 4 (severe). The answers may indicate depression, somatization, anxiety, obsessive-compulsive disorder, vulnerability to interpersonal relations, enemy, phobia, paranoid ideas, and psychosis, etc.

Results
The data obtained in this study have shown that from 72 RA patients, 44 (61%) had stable mental health and 28 patients (39%) expressed unstable mental health status (BSI-used surveys). No significant difference was seen between two groups in terms of disease duration and stage of disease. In our clinical study, fe-

male RA patients were predominant (80.5%), but no statistically significant difference was seen between normal and impaired mental health concerning the gender. (p>0.05). A significant correlation of depression and anxiety and activity of rheumatoid arthritis was expressed in the DAS and CRP. Unstable mental health status was associated with severe DAS28 with values of 5.33 and significantly elevated in average CRP of 20.9 mg/L. Stable mental health status was associated with moderate DAS, with average value of 4.35 and CRP of 14.1 mg/L.

The most frequent stage of disease in stable mental health was anatomical stage I, while stage II was most frequent in RA patients with unstable mental health. Impaired mental health was observed more in younger RA patients (55.1±10.7 y) aged from 34-73 y compared with those with stable mental health (59.9±9.4 y) aged from 39-80 y (p>0.05). In the comparison with treatment strategy, applied

medications, and mental health, no significant difference was found between two groups. (p>0.05)

No statistically significant difference between normal and impaired mental health concerning gender (p>0.05) (Figure 1).

Statistical significance of DAS28 (p<0.05) and CRP (p<0.05) in RA between stable and unstable mental health and no statistical significance were seen in ESR, RF, and anti-CCP (Table 1). Severe DAS28 was found in 39% of RA patients with unstable mental health, compared to 61% of mentally stable with moderate DAS. The average CRP level in unstable mental health patients was 20.9±28.3, while in stable mental patients, it was 14.2±17.1. The average ESR value in patients with impaired mental health patients was 39.2±24.4, while in stable mental health patients, it was 35.9±26.9 (p>0.005). Rheumatoid factor was also increased in 75% of total RA patients, with 331.7±665.4 in unstable vs 249.1±813.0 in stable ones (p>0.005). Anti-CCP was elevated in 86% of total RA patients. There was no significant difference between two groups, although it was lower in stable patients compared to unstable mental health status (12.6±35.4 vs 23.6±78.9) (p>0.05).

Discussion
Our study has indicated that all laboratory and clinical parameters, defined as ESR, CRP, RF, DAS, and anti-CCP, were increased in moderate or severe RA. A significant correlation between unstable and stable mental health status in RA was found in DAS28 and CRP. No statistical significance was observed in ESR, rheumatoid factor, and anti-CCP between groups. The relation between anxiety and RA is stronger than in depression patients. (6). In our study, depression and anxiety were present in 39% of RA patients, compared to 20% in RA and 5%-13% in the general population reported by other authors (7). Depression is the most common and important psychological factor in RA (7).

Mental health plays an important role in the activity of RA and in the therapeutic response. Our study has shown that impaired mental health status has a negative impact on disease activity commonly associated with severe disease progression. The high prevalence of depression in RA increases the importance of adopting an integrated approach to clinical management. Depression and anxiety can be easily identified in a rheumatology practice. Mental health counseling and psychosocial intervention have a great impact on RA. The evaluation of mental health status in every RA patient should be determined by BSI (Brief Symptoms Inventory) scale. Brief self-report instruments can be completed within a few minutes and give high specificity and sensitivity for detecting symptoms on a psychological level of functioning. The outlook for managing depression in RA patients is positive. Arthritis-specific self-management programs lead to improve health outcomes, including reduced rates of depression.

Limitation of the study
This study looked at the causal relation between mental health status and RA activity but could not realize whether depression and anxiety are risk factors for RA or if RA provokes impairment of mental health.

Also, this study did not include a healthy control group and/or disease control group. The number of RA patients was rather limited for a more appropriate evaluation of mental health as a reflection of disease activity. This study only looked at the BSI scale test for the evaluation of mental health status in RA and did not use and compare other mental health status modalities and tests, since there might be significant differences between each other. This was done due to the psychiatrist's decision on what test to use in this study.

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