

IMPACT OF CHLAMYDIA INFECTION ON QUALITY OF LIFE OF RHEUMATOID ARTHRITIS PATIENTS

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Abstract

The article deals with the estimation of influence of chlamydia infection on life quality (LQ) of rheumatoid arthritis (RA) patients. The presence of chlamydia infection in RA patients complicates the course of a joint syndrome, thus worsening the LQ of patients. All patients are classified in Group III according to the criteria of the American College of Rheumatologists/European Anti-Rheumatic League (ACR/EULAR) [17], who was an inpatient in a multidisciplinary clinic of the Tashkent Medical Academy.

The results of the research showed that bodily pain, general health, vitality and mental health of patients are significantly higher than similar indicators of groups II and III. This suggests that when RA is combined with chlamydia infection, FG scores are significantly lower than those for RA without this infection. As a result of our study, we have found that the presence of chlamydia infection in RA patients hurts LQ of patients. The presence of chlamydia infection in RA patients requires the eradication of chlamydia infection before prescription of basic anti-inflammatory therapy, which contributes to the improvement of skin content in patients.

Keywords: *rheumatoid arthritis, chlamydia infection, lifequality, SF-36.*

Introduction

Rheumatoid arthritis (RA) - immune-inflammatory (autoimmune) rheumatic disease of unknown etiology, characterized by chronic erosive arthritis and systemic lesions of internal organs, resulting in early disability and reduced life expectancy of patients [1]. RA is characterized by a severe progressive lesion of joints and internal organs, the development of which is determined by a complex interaction of environmental factors and genetic predisposition, leading to global disorders in the system of humoral and cellular immunity [2, 3]. RA is a frequent and one of the most severe immune-inflammatory diseases in humans, which determines the great medical and socio-economic importance of this pathology. The prevalence of RA among the adult population in different geographical zones of the world ranges from 0.5 to 2%. The ratio of women to men is 3:1. The disease is found in all age groups, but the peak of morbidity falls on the most working-age - 40-55 years. RA causes persistent loss of disability in half of the patients during the first 3-5 years from the beginning of the disease and leads to a significant reduction in their life expectancy due to both high frequencies of cardiovascular pathology, severe infections, oncological diseases, and complications typical for RA associated with the systemic immune-inflammatory process [1].

RA, as well as the majority of other autoimmune and inflammatory processes, has a multifactorial nature. In essence, 30-60% of the risk of its development is due to genetic predisposition, 40-70% is associated with the influence of environmental factors [6].

The evolution of RA includes several successive (or discretely) developing stages, "preclinical," which are transformed into "symptomatic," culminating in the formation of a clinical-laboratory symptom-complex characteristic of early and then deployed RA [4, 5]. The nature of interaction of environmental factors, genetic predisposition and immune mechanisms that determine the transition from stage to stage, the variants of progression, the nature and severity of non-articular (systemic) manifestations, and the risk of comorbid diseases are not fully clear and are currently the subject of intensive research [2].

Many factors, including infection, affect the course of the disease. During the study of synovial fluid, a higher frequency of *Chlamydia trachomatis* (*C. Trachomatis*) was found in patients with RA by

PCR compared to the control group. [7, 8]. *C. trachomatis* is the most frequent sexually transmitted infection [12]. Chlamydiae is a family of Chlamydia. The latter brings together *C. psittaci*, *C. pneumoniae* and *C. trachomatis*. *C. trachomatis* was isolated from the urogenital tract B. The role of chlamydiae in the etiopathogenesis of articular and rheumatic diseases is largely due to the molecular similarity of their antigens with autoantigens of the macroorganism [15].

Most people with *C. trachomatis* infection are unaware of their infection because they have no symptoms that would encourage them to seek medical attention [13]. However, the persistence of *C. trachomatis* in RA influences the rate of development of destructive joint changes [9,10], and the RA associated with chlamydia infection has its clinical and radiological features and is a kind of variant of the RA current [11].

The influence of *C. trachomatis* on the course of RA and the nature of the lesion of the musculoskeletal system should be taken into account when choosing therapeutic tactics. If chlamydia infection is detected in the urogenital tract or synovial fluid of RA patients, etiotropic therapy should be performed. In recent studies, it has been stated that in some RA patients in association with chlamydia infection, a hyperthermic reaction is seen against the background of basic anti-inflammatory therapy [19]. At the same time, after antibacterial therapy, body temperature normalizes, indicating that the presence of chlamydia infection in RA patients worsens the clinical course of the underlying disease. At the same time, the problem of cohabitation of RA and chlamydia infection is not sufficiently addressed in the literature. At present, there are very few publications on RA associated with chlamydia infection [14].

The presence of chlamydia infection in the body of RA patients complicates the course of a joint syndrome, thereby worsening the quality of life (LQ) of patients.

LQ, which is a complex character of physical, psychological, emotional and social functioning of a person based on his or her subjective perception of the person, in the medical sense of it, the term is always about health. LQ evaluation tools - general and specific questionnaires developed by experts from the world's leading clinical centers per the principles of evidence-based medicine and the Good Clinical Practises (GCP), created the possibility of quantitative evaluation of this subjective concept, which allowed to expand the idea of the doctor about the patient's condition in general [16].

The research aimed to evaluate the influence of chlamydia infection on GCP of RA patients.

Material and methods.

There were examined 120 patients with RA. Patients of RA who met the classification criteria of the American College of Rheumatologists/European Anti-Rheumatic League (ACR/EULAR) [17] and were inpatient in a multidisciplinary clinic of the Tashkent Medical Academy were included in the research. The patients were divided into 3 groups: I group - 53 patients of RA, II group - 32 patients of RA in combination with chlamydia infection, who had no eradication of chlamydia infection, III group - 35 patients of RA in combination with chlamydia infection, who had no eradication of chlamydia infection. Methotrexate, in a dose of 20 mg/week, was administered as a basic treatment to all patients with RA for three months.

Duration of the disease at the initial examination was from 1 to 7 years (on average in the first group 4.3 ± 1.6 years, in the second group 4.5 ± 1.5 years, in the third group 4.2 ± 1.5 years); the average age of patients in the first group 41.2 ± 5.5 years, in the second group 40.8 ± 4.9 years, in the third group 41.9 ± 5.2 years. The majority of patients in Group I (45 patients - 84,9%), 27 patients (84,3%) in Group II and 30 patients (85,7%) in Group III with RA are seropositive due to rheumatoid factor (RF), antibodies to the cyclic citrullinated peptide (ACCP) were detected in 41 patients (77,3%) in Group I, 25 patients (78,1%) in Group II and 27 patients (77,1%) in Group III.

LQ was assessed using one of the most widely used general surveys for LQ evaluation - Short Form Medical Outcomes Study (SF-36) [18]. The statistical data were evaluated using the Statistica 10 license program. The t-criterion of the Student was used to compare quantitative data.

LQanalysis was carried out on the following scales:

1. Physical Functioning (PF) - a scale, evaluating physical activity, including self-service, walking, carrying weights, climbing stairs, and performing significant physical exercises. The scale reflects the amount of daily physical activity that is not limited by health: the higher it is, the greater the amount of exercise it can perform, according to the study. Low scores on this scale indicate that physical activity is significantly limited by health.

2. Role Physical (RP) - A scale that shows the role of physical problems in restricting activity reflects the extent to which health limits the performance of normal activities, i.e., the extent to which work or daily tasks are restricted by health-related problems: the higher the rate, the less health problems the respondent or patient feels are restricting their daily activities. A low score on this scale indicates that daily activities are significantly restricted by physical health.

3. The Bodily Pain Scale (BP) assesses the intensity of the pain syndrome and its impact on the ability to perform normal activities, including home and outdoor work, over the past month: the higher the score, the less pain the respondent or patient feels they have experienced. Low scale values indicate that the pain significantly limits the physical activity of the subjects.

4. General Health (GH) - evaluates current health status, treatment prospects, and disease resistance: the higher the indicator, the better the respondent or patient's health status.

5. Vitality Scale - Vitality (VT) - refers to evaluating the respondent's or patient's feeling of full strength and energy. Low scores indicate fatigue of the respondents and decrease in their vital activity.

6. Social Functioning Scale (SF) - assesses satisfaction with the level of social activity (communication, spending time with friends, family, neighbors, and in the group) and reflects the degree to which the respondent's or patient's physical or emotional state limits them: the higher the score, the higher the social activity over the last 4 weeks. Low scores correspond to a significant limitation of social contacts and a decrease in the level of communication due to deteriorating health.

7. Role Emotional (RE) - Evaluates the extent to which the emotional state interferes with the performance of a job or other normal daily activity, including a large amount of time spent doing it, a decrease in the amount of work done, and a decrease in its quality: the higher the score, the less emotional state limits the respondent's or the patient's daily activity.

8. Mental Health (MH) describes mood, depression, anxiety and measures overall positive emotions: the higher the indicator, the more time the respondent or patient felt calm, peaceful, and peaceful during the last month. Low scores indicated depression, anxiety, and psychological ill-health.

For all scales with no health restrictions or impairments, the maximum value was 100. The higher the value on each scale, the better the LC for this parameter.

Results and discussion.

The results of the conducted research showed that such an index of LQ, as physical functioning, of the patients of Group I ($44,23 \pm 2,12$, $p < 0,05$) is reliably higher than this index of Groups II and III ($32,13 \pm 5,96$ and $33,09 \pm 4,83$ respectively) (Table 1). It is also seen that such indicators as bodily pain, general health status, vitality and mental health of patients are significantly higher than similar indicators of II and III groups. This suggests that when RA is combined with chlamydia infection, LQ indicators are reliably lower than those for RA without this infection.

Table 1.

Life Quality SF Indicators - 36 patients of RA before treatment.

SF scale – 36	Igroup n=53	IIgroup n=32	IIIgroup n=35
PF	44,23±2,12*	32,13±5,96	33,09±4,83
RP	49,83±9,26	39,63±5,54	38,45±4,94
BP	52,31±4,25*	39,24±4,09	38,64±3,89
GH	48,93±3,12*	38,79±6,21	37,92±5,78
VT	55,71±4,62*	42,31±6,99	44,12±5,23
SF	49,21±7,82	42,81±8,86	43,12±7,56
RE	47,62±6,78	41,79±9,14	42,59±8,76
MH	54,32±4,12*	41,65±8,11	41,73±7,88

Note: PF - physical functioning; RP - role physical functioning; BP -bodily pain; GH - general health; VT - vitality; SF - social functioning; RE - role emotional functioning; MH - mental health;

* - $p < 0,05$ - reliable differences between the indicators of the first group and the corresponding values in the second and third groups.

The assessment of LQ indicators against the background of the therapy revealed the following changes. As mentioned above, methotrexate 20 mg/week baseline anti-inflammatory therapy was administered to RA patients in all groups for three months. At the same time, group II patients were treated with methotrexate 20 mg/week for 10 days before baseline treatment and only after negative PCR on *C. trachomatis* were treated with methotrexate 20 mg/week for 3 months. After the treatment, it was compared the LQ rates in each group (Table 2).

Table 2

Dynamics of LQ indices by SF - 36 patients of RA

SF scale – 36	Igroup n=53		IIgroup n=32		IIIgroup n=35	
	Initially	In 3 months	Initially	In 3 months	Initially	In 3 months
PF	44,23±2,12	56,19±5,42*	32,13±5,96	42,18±3,21*	33,09±4,83	33,21±7,89
RP	49,83±9,26	57,29±5,24	39,63±5,54	43,22±5,12	38,45±4,94	41,29±8,73
BP	52,31±4,25	54,75±5,18	39,24±4,09	42,26±4,15	38,64±3,89	43,61±9,32
GH	48,93±3,12	57,42±3,32*	38,79±6,21	50,32±4,23*	37,92±5,78	42,45±5,86
VT	55,71±4,62	66,21±5,19*	42,31±6,99	54,62±4,19*	44,12±5,23	41,54±2,67
SF	49,21±7,82	61,73±5,18*	42,81±8,86	57,12±6,06*	43,12±7,56	47,90±7,66
RE	47,62±6,78	51,62±5,21	41,79±9,14	51,62±8,18	42,59±8,76	41,84±1,36
MH	54,32±4,12	59,89±4,62	41,65±8,11	49,15±9,21	41,73±7,88	42,66±3,77

Note: * - $p < 0,05$ - valid differences with corresponding values in the group.

As can be seen from Table 2, in Group I, basic methotrexate therapy with 20 mg/week methotrexate had a positive effect on the LQ values of patients for three months. Such parameters as physical functioning (44,23±2,12 before treatment and 56,19±5,42 after treatment, $p < 0,05$), a general state of health (48,93±3) differed especially reliably in treatment dynamics, 12 before treatment and 57,42±3,32 after treatment, $p < 0,05$), viability (55,71±4,62 before treatment and 66,21±5,19 after treatment, $p < 0,05$) and social functioning (49,21±7,82 before treatment and 61,73±5,18 after treatment, $p < 0,05$). In the II group after the eradication of chlamydia infection, the positive dynamics of LQ indices of patients were also noted, such LQ indices as physical functioning (32,13±5,96 before treatment and 42,18±3) reliably increased, 21, $p < 0,05$), general health status (38,79±6,21 before treatment and

50,32±4,23 after treatment, $p<0,05$), viability (42,31±6,99 before treatment and 54,62±4,19 after treatment, $p<0,05$) and social functioning (42,81±8,86 before treatment and 57,12±6,06 after treatment, $p<0,05$). At the same time, in Group III, where chlamydia infection was not eradicated in RA patients, positive DAL dynamics were not observed in any of the eight indicators. Comparing Group II and Group III, we concluded that to achieve significant changes in the LQ parameters in the treatment of RA in combination with chlamydia infection, eradication of the infectious agent should be performed first.

Conclusion.

Thus, in our study, we found that the presence of chlamydia infection in RA patients has a negative effect on the LQ of patients. The presence of chlamydia infection in RA patients requires the eradication of chlamydia infection prior to the prescription of basic anti-inflammatory therapy, which contributes to the improvement of patients' LQ.

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