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Ramadan Fasting and Rheumatoid Arthritis

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Objective: **To study the effect of Ramadan fasting on patients with Rheumatoid arthritis (RA).**

Methods: **Thirty one patients with rheumatoid arthritis divided into a fasting group (n=17) and a non-fasting group (n=14) were assessed clinically for disease activity (morning stiffness, number of painful and swollen jointsand grip strength), laboratory variables (Erythrocyte sedimentation rate, hemoglobin and leukocytes count) and patients global assessment, initially and at the end of Ramadan.**

Results: **The rheumatoid patients in the fasting group had a mean age of "46years", disease duration of three and a half years" and mild disease activity. The majority of them were in functional class I. Those in the non-fasting group had a mean age of 50 years, mean disease duration of five years and moderate-disease activity, 57.2% of them were in functional class II. There were significant improvement ($p<0.05$) both in clinical and in global patient assessment in the fasting group at the end of Ramadan. Apart from number of painful joints, the non-fasting group showed no significant clinical improvement at the end of Ramadan. Laboratory variables were not changed significantly in both groups in Ramadan.**

Conclusion: **Ramadan fasting may impart a clinical improvement in rheumatoid patients with mild course. Further studies are required with better patient selection in respect to duration and activity of the disease, functional ability and drugs regimens.**

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Patients suffering from chronic and incurable diseases try to influence their symptoms by dietary modification. Patients with rheumatoid arthritis 'RA' often claimed that certain foods and diets provoke or alleviate their symptoms[1].

Because of lack of understanding of the nutritional requirements in patients with RA plus the variability in its clinical course, it is difficult to produce specific dietary recommendation for RA[2]. It has been reported that fasting may represent the most

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rapid and attainable way of relieving joint pain and swelling in RA[3]. A significant clinical improvement from fasting 7-10 days in well nourished patients with RA was reported by Skoldstam[4].

Ramadan is the nineth lunar month of the Muslim year, during which all healthy adult Muslims fast from dawn to sunset, after that they can eat and drink leisurely.

Ramadan fasting and its effect on RA patients have not been studied; therefore the present study was conducted to show the effect of Ramadan fasting on RA patients.

METHODS

Thirty-one patients with RA in functional class I or II based on revised criteria of American College of Rheumatology (ACR)[5,6], attending Basrah Rehabilitation Center and Basrah Teaching Hospital, were followed in Ramadan from the16th of November 2001 to the 16th of December 2001. There were three men and 28 women, with mean age of 47.8 years and disease duration of 4 years.

All patients had assessment one week before Ramadan and at last week of Ramadan. The domains of assessment of disease activity according to criteria reported by ACR, included: duration of morning stiffness, number of painful joints, number of swollen joints, grip strength and laboratory test "erythrocyte sedimentation rate, haemoglobin and leucocytes count[7,8]. The disease activity can be divided in to mild, moderate and severe[7].

We assigned changes in arthritic condition as assessed by patient global assessment in to improved, unchanged or deteriorated[9].

During Ramadan, the period between sunset and dawn, there is no restriction on the amount or types of food and drink. RA patients had their medical treatment during that time. Information about types of medical treatment taken by the patients was reported. RA patients who did complete fasting Ramadan month were called fasting group (17 patients), those who didn't fast "or complete fasting Ramadan" were called non-fasting group (14 patients).

Four rheumatoid patients (1 from fasting group and 3 from non-fasting group) who did not attened at follow up visits were excluded from the study.

RESULTS

Table 1 shows the baseline characteristics of RA patients in both groups. The mean age was 46 years for fasting group and 50 years for non-fasting group. The mean duration of the disease was 5 years and 3.5 years for non-fasting and fasting group respectively.

Most patients in the fasting group (82.3%) were in the functional class I compared to 42.8% of patients in the non fasting group.

Table 1. ***Demographic and baseline characteristics of the patient***

	Fasting group (n=17)	Non-fasting group (n=14)
Males / females	2/ 15	1/13
Age Mean ± SD (year) Range (year)	 46+8.82 35-52	 50±7.74 38-60
Median duration of RA (year)	3.5	5
Functional category: - Class I - Class II	 14(82.3%) 3(17.6%)	 6(42.8%) 8(57.2%)
Current medication: NSAID Antimalarial drugs Sulphasalazine Methoterxate Corticosteroids	 17 4 2 4 -	 13 - 7 2 2

Patients in the fasting group who had mild disease activity (class 1) were compared with their corresponding patients in the non-fasting group (Table 2).

There was significant clinical improvement ($p<0.05$) in morning stiffness, number of painful joints, number of swollen joints and grip strength in the fasting group at the end of Ramadan. However, only number of painful joints improved significantly in the non-fasting group, (Table 2).

Table 2. **Clinical Assessment**

Disease assessment Variables	***Fasting group (n=14)***		***Non-fasting group (n=6)***	
	Baseline Mean ± SD	***Follow up Mean*** ± SD	***Baseline Mean*** ± SD	***Follow up Mean*** ± SD
Morning stiffness(min)	60.26 ± 59.07	24 ± 19.04*	93.29 ± 80.22	91 ± 66.22
No. of painful joint	6 ± 4.1	1.58 ± 1.87*	11 ± 5.23	9 ± 4.83*
No. of swollen joint	4 ± 2.07	1.15 ± 1.01*	10.71 ± 4.66	10 ± 5.44
Gripstrength (per mmHg)	138.23 ± 69.76	200 ± 45.33*	136.43 ± 50.62	150 ± 48.63

**Differences between baseline and end of Ramadan are statistically significant ($p<0.05$)*

There were no significant changes seen in the hematological variables (erythrocyte sedimentation rate, haemoglobin and leucocytes count) in both groups (Table 3).

Table 3. ***Haematological parameters***

Variables	***Fasting group***		***Non-fasting group***	
	Baseline	***Follow up***	***Baseline***	***Follow up***

"ESR" "mm/hour"	41.21 ± 6.3	37.4 ± 18.4	72 ± 21.5	69 ± 23.7
Haemoglobin "g/dl"	10.2 ± 34	9.5 ± 2.4	9.8 ± 4.9	9.5 ± 3.6
Leucocytes count "cell 10^9/L"	5 ± 2.2	4.3 ± 2.9	7.42± 3.53	7.3 ± 2.77

Table 4 demonstrated that 78% of the patients in the fasting group experienced improvement in their over all assessment compared to 16.6% of patients in non-fasting group at the end of Ramadan fasting and the difference is statistically significant.

Table 4. **Global assessment of RA patient at the end of Ramadan**

Global assessment	Fasting group (n=14)		Non-fasting group (n=6)	
	No	%	No	%
Improvement	11	78	1	16.6
Unchanged	2	14.28	3	50
Deteriorated	1	7.14	2	33.33

P-value=0.034 Chi-square=6.74

Of the non-fasting group the majority got no changes in their symptoms (50%) or they got worse (33.33%).

DISCUSSION

In this study patients with rheumatoid arthritis who fast Ramadan had significant clinical improvement as well as in their assessment. A study of 11 RA patients showed that reduction in their diets had markedly positive effect on the symptoms and lead to better quality of life[10]. The beneficial effect of fasting has been shown in the Haugen study, which showed decreased joints pain and stiffness in 2/3rd of the patients with RA and ankylosing spondylitis[11].

The mechanisms of improvement are complex and involves diminished activation of neutrophils, lymphocytes, and decreased generation of leukotriens and of serum complement factors, as well as, other prioinflammatory system[3,12]. Clinical improvement after the fasting period correlated with decrease in the proportion of agalactasyl IgG[13].

In this study there were no significant changes in variables "haemoglobin level, leucocyte count, ESR", this in agreement with the findings of Haugen et al who fail to report any significant difference in laboratory data in patients who fast 7-10 days followed by 3 months of vegetarian diet[14].

However, a study from Saudi Arabia reported that during Ramadan fasting there was slight reduction in the haemoglobin level and red blood count, but other haematological parameters showed no significant fluctuations[15]. Laboratory variable had also been reported to be improved after fasting in several other studies[16,17]. A

report from Norway showed an improvement in the erythrocytes sedimentation rate, c-reactive protein and white blood cell count after fasting 7-10 days followed by vegetarian diet for 3 months[10].

The response to treatment is affected by functional class, disease activity and duration[19]. Rheumatoid patients with mild disease activity and functional class 1 may tolerate fasting, However Those with moderate disease activity and functional class II could not fast. That may be because the rest energy expenditure (REE) was significantly higher in patients with high disease activity [18], while during Ramadan fasting there was a decrease in total energy intake[15].

It is well known that malnutrition suppresses immunity[20] and that treatment with immunosuppressive drugs is one of the most efficient means of reducing disease activity in RA, unloading diets appeared beneficial for RA patients, allowing reduction in anti-rheumatic drug dosage [21].

CONCLUSIONS

Ramadan fasting appear to improve clinical symptoms in patients with RA and mild disease course. Further studies are needed in which RA patients better selected in regard to sex, functional class, disease duration, disease activity as well as type and dosage of the drugs. Although of little therapeutic value, the anti-inflammatory effect of fasting is of significant interest and better understanding of the mechanism is desirable.

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Table 5
Fasting and clinical effect on RA patients[3,9,22]

Study	***No. of patients***	***Study design***	***Result***
Skoldstam et al 1979	15 RA. Pat	7-10 day fast	Subjective improvement
Trang et al	12 RA. Pat	7-day fast	Clinical improvement

1980		7-day normal diet	
Skoldstam et al 1983	10 RA. Pat 8 control	10 day fast	Pain relief, 8 improved in Ritchie index and morning stiffness
Unden et al 1983	13 RA. Pat	7 day fast	Reduced joint tenderness and swelling
Kroker et al 1984	43 RA. Pat	7 day fast	Significant improvement in joint tenderness and swelling
Hafstorm et al	14 RA. Pat	Fasting	Decreased diseases activity variables
Palmblad et al 1991	RA. Pat	Total fasting few days	Significant improvement
Handen et al 1991	RA. Pat	Fast few days	Less pain and morning stiffness
Jajic Z et al 1998	46 RA. pat	Fast few days	Improve clinical symptoms