Rheumatoid Factor in Moroccan Patients with Systemic Lupus Erythematosus: Association with Antinuclear Antibodies and Disease Activity

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Abstract: *Systemic Lupus Erythematosus (SLE) is an autoimmune disease characterized by autoantibody production. This study aims to investigate the prevalence of rheumatoid factor (RF) in SLE patients from Morocco and evaluate its association with antinuclear antibodies (ANA) and disease activity in SLE Moroccan patients. RF was measured using ELISA in 52 SLE patients with and without arthritis. Levels ≥ 24 U/ml defined a positive test of RF. Positive RF was detected in 21.15% of SLE patients. The mean titer of RF in the SLE group was 71.75 U/ml. ANA were tested by indirect immunofluorescence method .We found an increase of level of RF in patient with ANA positive. The frequency of presence of RF was higher in patients with active disease than in those with inactive. In the Moroccan population we demonstrated the presence of high titer of RF in SLE. Results from our study also identified the association between RF and disease activity in SLE patients.*

Keywords: *Rheumatoid Factor, Systemic Lupus Erythematosus, Antinuclear antibodies, arthritis, Moroccan population.*

I. Introduction

Systemic Lupus Erythematosus (SLE) is an autoimmune disease characterized by autoantibody production[1]. Most patients with lupus (90 %) are suffering from arthritis[2,3]. That is a major cause of morbidity in SLE patients[4,5] .

Rheumatoid factor (RF) is found in patients with systemic lupus erythematosus (SLE), and has been associated with a disease course [6,7,8] .

Rheumatoid factors (RF) represent autoantibodies against the Fc portion of IgG and have been found in up 60% of SLE patients [9,10].

The current study evaluates the prevalence of RF in SLE patients and evaluates its association with ANA and disease activity in SLE Moroccan patients.

II. Materials And Methods

Patients and controls:

The study population comprised unrelated patients recruited from the Departments of Nephrology, Rabat Ibn Sina University Hospital between January 2013 and March 2014. The diagnosis of SLE was made by doctor according to the American College of Rheumatology (ACR) criteria[11].

SLE disease activity was assessed by the Systemic Lupus Erythematosus Disease Activity Index (SLEDAI)[12]. SLE Patients with SLEDAI score ≥ 3 were considered as active disease[13,14].

The ethics committee of the Rabat Medicine University approved the study and a written informed consent was obtained from all patients.

Measurement of rheumatoid factor:

IgM-class RF was measured by enzyme-linked immunosorbent assay (AESKU.DIAGNOSTICS). Levels ≥ 24 U/ml defined a positive test as suggested by the manufacturer.

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*Antinuclear antibodies detection***:**
Antinuclear antibodies (ANA) were tested by indirect immunofluorescence method using HEp-2 cells as substrate. According to the manufacturer's instructions, the assay was performed using a screening serum dilution of 1:160.

*Statistical analysis***:**
Calculation was carried out using the commercial SPSS software package for Windows (version 13.0). The frequencies in SLE patients were compared by the Chi-square test or Fisher's two-tailed exact probability test as appropriate. A p-value smaller than 0.05 was considered statistically significant.

III. Results

This study included 52 unrelated Moroccan SLE. Three males and 49 females were recruited with mean age was 34.54 ± 9.16 years.
Positive RF was detected in 11 out of 52 patients (21.15%). 100% patients with positive RF were female. In patients with positive RF, the mean level was 71.75 U/ml.
Arthritis was present in 49 SLE patients (94.23 %). The frequency of RF positive in patients with arthritis 22.4 % was higher than patient without arthritis 0.0 % (Table no1).

Table no1. Demographic and clinical characteristics of SLE patients.

Variables	SLE (n=52)
Gender Female	49
Age (years mean ± SD)	34.54 ± 9.16
Age at disease onset (years)	26.55 ± 7.5
Disease duration ((months Mean ± SD)	94.48 ± 70.74
Arthritis	49
Patients with active SLE active	35

SLE: Systemique lupus erythematosus; n: number of individuals.

At dilution 1:160, 59.62 % of the SLE sera were ANA positive. The levels of RF in SLE patients with positive ANA (30.42 U/ml) were higher than in SLE patients with negative ANA (8.42 U/ml). The difference was significant between the two groups (P = 0.01).
Patients with active disease showed increased frequency of the presence of RF (90.9 %) than the patients with inactive those (61.0 %).No statistically significant difference was found (p = 0.07).
The serum levels of RF were higher in patients with active (26.8 U/ml) than those with inactive disease (10.71U/ml).

IV. Discussion

A few studies examined the relationship between RF and SLE. Our data showed that positive RF was detected in 21.15 % of patients with SLE. Our result of positive RF has been observed in 12.9% [8], 17.9% [15] in SLE patients. This discordant result of frequency can be explained by the disease heterogeneity.
The analysis of the gender frequencies in SLE patients with a positive RF shows the female predominance. This result may be explained by the female predominance observed in SLE.
In Moroccan SLE patients with positive RF, the mean level was higher. Furthermore, RF was more prevalent in SLE patients with arthritis than those without arthritis. It has been suggested that high titers can predict later deterioration of joints[16].
The levels of RF in SLE patients with positive ANA were significantly higher than in SLE patients with negative ANA. Furthermore, like ANA, RF can be present in many conditions including rheumatoid arthritis, SLE and even in normal individuals[17,18]. Thus, it is speculated that ANA and RF can be produced by a common pathophysiological mechanism in SLE.
In the present study, we found a positive relationship between RF positive and disease activity. Similar results have been reported by other studies[15,10]. Thus, it's presumed that RF defines a group of SLE patients characterized by high disease activity of SLE.

V. Conclusion

Our study shows the presence of RF in SLE Moroccan patients. Moreover, we found an increase of level of RF in SLE Moroccan patients. RF can increase the chance to predict SLE disease activity. To confirm the study it would be interesting to increase the samples. Furthermore, a regular follow-up will reveal the real clinical value of RF in SLE patients.

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