

Toxoplasma infections in patients with SLE

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In this study; the incidence of toxoplasma infection and the relationship between toxoplasmosis and immunosuppressive treatment were investigated in patients with systemic lupus erythematosus (SLE). In addition, the characteristics of exacerbations in patients and the relationship between the disease activity and toxoplasmosis were determined. Exacerbations in patients with systemic lupus erythematosus were frequently characterized by fatigue (78.94%), malar rash (63.15%), renal involvement (%68.42) neurologic involvement (36.84), hematologic involvement (%68.42), positive anti-nukleer antibody (ANA) test (100%), positive anti-ds DNA test (84.21) and decreased levels of C3 and C4 (68.42%). Our results also suggested that the disease activity in patients with systemic lupus erythematosus might be related to acute toxoplasmosis. We may conclude that the frequency of seropositive toxoplasma IgG antibodies in patients with systemic lupus erythematosus was higher than that of controls and the risk of acute toxoplasmosis might be increased by immunosuppressive treatment. [Turk J Med Res 1996; 14(1):13-15]

Key Words: Systemic Lupus Erythematosus, Immunosuppressive therapy, Toxoplasma infection

Systemic Lupus Erythematosus is a disease of unknown etiology and characterized by inflammations of various organs and production of antibodies which are activated by nuclear, cytoplasmic or cell membrane antigens (1-3).

Because the course of the disease is characterized by exacerbations and remissions, several activity indexes have been suggested to determine how serious the activity is and how we should plan the management (4-6).

Among the factors that effect the quality of life and survival in SLE patients, exacerbations and infections are known to be the most important ones. Though both SLE and toxoplasmosis have high prevalences in many populations, there have been very little number of studies on the relationship between them, besides the patients that were not immunosuppressed were not involved in these studies (7,8). We investigated the frequency of toxoplasmosis

in SLE patients and its relationship with immunosuppressive treatment.

MATERIALS AND METHODS

Study group involved 35 patients with SLE all of whom were followed by Gülhane Military Medical School, clinic of Internal Medicine and they had 4 or more of the criteria for SLE that was updated in 1982. Eleven of the patients had undergone immunosuppressive treatment and 19 patients had exacerbations. Lupus activity index (LAI), which was defined by Petri et al (6) was used evaluating the activity. Lupus activity index (LAI) is the arithmetical mean of the following parameters.

1. Physician's general assessment: 0-3 points
2. Fatigue, rash, involvement of the joints, serositis: 0-3 points for each entity. Then after the mean of total is obtained. For the involvement of joints, arthralgia: 1 point, arthritis: 2 points, limitation of the mobility: 3 points.
3. Neurological, renal, pulmonary and hematological involvement: Each of them is evaluated between 0-3 points and the highest score is taken up.
Neurological involvement: It was evaluated by consultant psychiatrists of psychiatry and neurology-

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Renal involvement it was evaluated by creatinemia and clearance of creatinin.

Hematological involvement: It was evaluated as follows and them highest score is taken up.

•Hemoglobin (%) 10-12 (1 point), 8-9.9 (2 points), <8 (3 points).

"Leucocyte (mm³) 2500-4000 (1 point), 1500-2499 (2 points), <1500 (3 points).

4. Treatment with corticosteroids and cytotoxic agents: The mean value of both is taken up. The dosage of corticosteroid: 1-15 mg/day (1 point), 15-39 mg/day (2 points), >40 mg/day (3 points). 3 points for all the cytotoxic agents.

5. The mean value of the following 3 laboratory test.

a) Proteinurea: (+) 1 point, (++) 2 points, (+++) 3 points.

b) Anti dsDNA: For it was not measured quantitatively it was not considered while having mean values.

c) Total hemolytic complement (instead of that, C3 and C4 were used)

C3 (mg%) 35-54 (1 point, 20-34 (2 point), <20 (3 points).

C4 (mg%) 15-19 (1 point), 13-14 (2 points), <9 (3 points).

Patient group was compared with the control group formed of healthy persons with matching age, sex and serological properties.

ANA (by IFAT in the lab. of microbiology clinic) Anti dsDNA (by latex agglutination with LE-LATEX, anti DNP, Chemelex kits), toxoplasm IgG antibodies (by ELISA IgG), toxoplasm. IgM antibodies (by bioclinica ELISA IgM 48 test with bio-bak kit) were tested and the absorbances of each was determined at 490 nm in EL-311 Bio-tek enzym spectrofotometer. The result value was taken as (+) if it is greater than 1 and (-) if it is less than 1, Cut-off value of the test matches with the reference.

Statistical assessment was performed using X² test, correlation analysis, Student-t test and Yates corrections. P values less than 0.05 were considered significant.

RESULTS

Twelve (34%) of the patients were male and 23 (66%) were female. The ratio of female/male was 2/1. Mean age was 30.28±1.74. The control group was also consisted of 12 male (34%) and 23 (66%) female and the mean age of them was 31.93±1.63. The mean duration of disease was 2.08±0.37 years and mean number of criteria in the patients was 6.00±0.26. The mean value of LAI was 0.90±0.11 (Table 1).

Table 1. The mean values of SLE and control group

Parameters	Control group (n=35)	SLE group (n=35)	P
Sex (Female/male)	23/12	23/12	p>0.05
Age (year)	31.90±1.63	30.28±1.74	p>0.05
Toxoplasm IgG	0.91±0.14	2.10±0.20	p<0.0005
Toxoplasm IgM	0.58±0.04	0.63±0.08	p>0.05
ARA (+)		6.00±0.26	
Duration of disease year		2.08±0.37	
LAI		0.90±0.11	

The number of the cases seropositive for toxoplasmosis was higher than that of controls (X²=6.93, p<0.01) 5 cases with the value >1 for toxoplasm IgM, did not vary significantly compared with the controls (X²=3.45, p<0.1). Toxoplasm IgG was <1 in two of these 5 cases (Table 2).

Immunosuppressed patients (11) had longer duration of disease compared with the patients that had never taken immunosuppressive treatment (24) (p<0.05). In addition, mean toxoplasm IgM was found to be higher in immunosuppressed patients (Table 3).

Between immunosuppressed and not immunosuppressed it was estimated that a variance for toxoplasm IgG>1 values statistically exist. Moreover, the number of the patients with toxoplasm IgM>1 was higher significantly in immunosuppressed group than untreated group (X²=4.03, p<0.05). ANA positivity was similar between two groups (X²=0.13, p<0.1).

DISCUSSION

Exacerbations and infections are the leading causes of mortality and morbidity in SLE patients (9,12). Most of the studies on infections in SLE patients focus on the bacterial infections and data on opportunistic infections are derived from the case reports mostly (6,9,10,11).

Though the high prevalences of toxoplasmosis, an opportunistic infection, in communities, there are little studies on its relationship with SLE and these studies did not investigate its relationship with immunosuppressed patients with SLE either (7,8).

There is only one study focused on the toxoplasmosis in SLE patients which was performed by Wilcox et al in 1990 (8). They investigated toxoplasm serology

Table 2. The comparison of toksoplasma antibodies between SLE patients and controls

Parameters	SLE (n=35)		Control (n=35)		P
	Case	(%)	Case	(%)	
Toxoplasm IgG>1	24	(69)	12	(34)	p<0.01
Toxoplasm IgG>3	9	(-6)		(3)	p<0.05
Toxoplasm IgM>1	5	(14)	0	(0)	p>0.05

Table 3. The comparison of some parameters in immunosuppressed and not immunosuppressed patients

Parameters	Immunosuppressed (n-11)	Not immunosuppressed (n-24)	P
Age (year)	35.73±3.02	27.79±1.96	p<0.025
Duration of disease (month)	4.09±0.76	1.15±0.27	p<0.0005
LAI	0.94±0.21	0.88±0.13	p>0.05
Toxoplasm IgG	2.19±0.46	2.05±0.28	p>0.05
Toxoplasm IgM	0.91±0.20	0.51±0.06	p<0.05

in 50 patients and found that 51% of SLE patients and 21% of controls seropositive. There was 1 patient with positive IgM demonstrating acute infection. Eleven patients had high titrations which never observed in controls and they concluded it could not attributed to SLE. They reported the polyclonal antibody response was not the cause of the high titrations and no false positive test for ANA or RF occurred.

The frequency of seropositivity of toxoplasm IgM antibody was higher in SLE patients than that of controls statistically (14.28% and 0%, p<0.05). But the frequency of seropositivity of toxoplasm IgG was higher more significantly in SLE patients (68.7% and 34.28%, p<0.01).

The frequency of seropositivity of toxoplasm IgG antibody was not different between immunosuppressed and not immunosuppressed groups (72.72% and 66.66%, p>0.05). But the frequency of toxoplasm IgM antibody was higher in immunosuppressed patients than not immunosuppressed ones (36.36% and 4.16%, p<0.05).

In conclusion, we found the seropositivity of toxoplasm IgG antibody to be higher in SLE patients than that of controls and immunosuppressive treatment increases the risk of acute toxoplazmosis. In this context, we suggest the immunosuppressive treatment in SLE patients to be recommended carefully to avoid opportunistic infections such as toxoplazmosis.

Sistemik Lupus Eritematozuslu hastalarda toksoplazma enfeksiyonları

Bu çalışmada Sistemik Lupus Eritematozus'lu hastalarda alevlenmeler, halsizlik (%78.94), malar raş (%63.15), renal tutulum (%68.42), nörolojik tutulum (%36.84), hematolojik tutulum (%68.42), ANA pozitifliği (%100), AntiDsDNA pozitifliği (%84.21), c3 ve c4 seviyelerinde düşüklük (%68.42) ile karakterize idi. Aynı zamanda sonuçlarımız Sistemik Lupus Eritematozus'lu hastalarda hastalık aktivitesinin Akut Toksoplazmozis ile ilişkili olabileceğini gösterdi (p<0.05). Sistemik Lu-

pus Eritematozus'lu hastalarda Toksoplazma IgG antikorlarının seropozitiflik sıklığının kontrollerden daha yüksek olduğu ve akut toksoplazmozis riskinin immunosupresif tedavi ile arttırılabileceği sonucuna vardık.

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