EVALUATION OF THE MORTALITY IN SYSTEMIC LUPUS ERYTHEMATOSUS (SLE): ANALYSIS OF 2021 PATIENTS

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Abstract- Lupus erythematosus (LE) is an autoimmune disease. The mortality rate and causes of death are different in various countries. The present study is done to find out the causes of mortality in the systemic lupus erythematosus (SLE) patients in lupus unit of Rheumatology Research Center and other wards of Shariati Hospital. This study was retrospective according to medical records of patients who were referred to Lupus Unit of Rheumatology Research Center, ICU, Gynecology and Nephrology wards of Shariati hospital during 10 years, from 1991 till 2001. Of 2021 recorded patients' files, 165 (7.8%) deaths were already recorded. 84.8% were female and 15.2% male. The duration of disease was 36±12 months. The mean duration of follow up from entering the study till time of death was 25.9±16.8 months. The causes of mortality were as follows: infection (12.1%), respiratory (8.5%), CNS (13.9%), kidney (3.6%), malignancy (1.2%), unknown (7.8%), active lupus (3%). Infection accompanied with other causes (27.9%), respiratory with other causes (11.5%), CNS with other causes (5.5%) and renal with other causes (4.8%). Infection is the most common cause of death in SLE Iranian patients, which is compatible with some multicentric studies. But in some previous studies myocardial infarction was reported as the main cause of death.

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Key Words: Systemic lupus erythematosus (SLE), mortality, IRAN

INTRODUCTION

Systemic lupus erythematosus (SLE) is an autoimmune disease with unknown etiology in which various immune reactants are produced against nucleus, cytoplasm components and cell wall. It causes tissue damages in all body organs. This disease gains one thousand different aspects and various clinical and laboratory features in a way one could not find two patients with lupus diagnosis alike. The first report published, 707 Iranian patients studied, however, the causes of mortality were not considered (1). Urowitz reported the causes of death in 665 patients with SLE as follow: Infection (32%), active lupus (16%), vascular accident (15%), sudden death (8%), malignancy (6.5%), unknown (10%) (2). Dubois and his colleagues come to this conclusion that the pattern of mortality has changed in patients who suffer from SLE. The kidney and CNS involvements as causes of death have decreased. Kelley reviewed the causes of mortality in some studies and concluded infection and severe nephritis as the most common causes of mortality in SLE patients.

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He considered the other manifestations of SLE, which were generally fatal as follows: carditis, pneumonitis, pulmonary hypertension, cerebritis, cardiovascular accident, myocardial infarction, intestinal perforation due to vasculitis and extracranial arterial thrombosis (4).

The present study is done to find out the causes of mortality in the SLE patients at Rheumatology Research Center, Shariati Hospital, Tehran, Iran.

MATERIALS AND METHODS

This study was retrospective according to medical records of patients who were admitted in Rheumatology Research Center, ICU, Gynecology and Nephrology wards of Shariati hospital during 10 years (1991-2001).

In Rheumatology Research Center for each patient in addition to establishing accurate usual medical file, a specific page, which defines 266 clinical and laboratory parameters is recorded and is specific for each patient. Patients regularly were visited just in appointment in SLE clinic. In each visit including positive points in the specific document, patients' complaints, clinical findings and laboratory results and opinion of professors in rheumatology research center about condition of disease, method of continuing treatment and required laboratory tests were recorded in the file.

On the basis of records, after elimination of some cases from 1991-2000, 2021 patients with SLE were investigated. The mortality rate was 7, 8 percent (165 patients), so study was performed in case series method where there is no requirement for accurate statistical calculations and defining the number of samples. In order to analyze data we used SPSS software, chi-square, t-test for analyzing and assigning maximum, minimum, SD and comparison of various mean data were used. In cases with less number of samples, Fisher's exact test was used. When assigning prevalence percent of various findings, SE was calculated (Standard error for percentage).

RESULTS

Of 2021-recorded patients in lupus unit of Rheumatology Research Center and the other associated wards in Shariati hospital, 165 (7.8%) deaths were recorded. Of 2021 patients, 1808 cases (89.5%) were female and 213 cases (10.5%) were male. Of 165 patients who passed away, 140 cases (84.8%) were female and 25 cases (15.2%) were male. The average age of patients at the time of death was 26 years. The most common cause of death was infection (Table 1-7).

Table 1. The cause of death in lupus patients

	Case of death	Case	Percent
I	Infection	66	40%
	Only infection	20	12.1%
	With other causes	46	27.9%
II	CNS	32	19.4%
	Only CNS	23	13.9%
	With other causes	9	5.5%
III	Respiratory	33	20%
	Only respiratory	14	8.5%
	With other causes	19	11.5%
IV	Kidney	16	8.4%
	Only Kidney	6	3.6%
	With other causes	8	4.8%
V	O.L.R*	7	4.2%
	Only O.L.R	5	3%
	With other causes	2	1.2%
VI	Unknown	6	3.6%
VII	O.N.L.R**	5	3%
	Only O.N.L.R	4	2.4%
	With other causes	1	0.6%
VIII	malignancy	2	1.2%

* Other lupus related
** Other non lupus related

Table 2. Death prevalence evaluation in lupus patients according to age

Gender	Cases	Percent	Real percent	Cumulative frequency
Male	25	15.2	15.2	15.2
Female	140	84.8	84.8	100
Total	165	100	100	

Table 3. Total number death prevalence evaluation in lupus patients according to age

Year age	Number	Percent	Real percent	Cumulative frequency
0-1	7	4.2	4.2	4.2
11-20	53	31.5	31.5	35.8
21-30	69	41.8	41.8	77.6
31-40	27	16.4	16.4	93.9
41-50	8	4.8	4.8	98.8
> 50	2	1.2	1.2	100
Total	165	100	100	

Table 4. Comparison of regular and irregular visiting in lupus patients who were died

Visiting type	Cases	Percent	Cumulative frequency
Irregular	106	64.2	64.2
Regular	59	35.8	100
Total	165	100	

Table 5. Prevalence evaluation of various causes of mortality in lupus patients who were died

Cause of death	Cases	Percent
Infection	20	12.1
Respiratory	14	8.5
CNS	23	13.9
Kidney	6	3.6
Other causes associated with lupus	5	3
Other causes not associated with lupus	4	2.4
Unknown	6	3.6
Malignancy	2	1.2
Infection+other causes	46	27.9
Respiratory+other causes	19	11.5
CNS+other causes	9	5.5
Kidney+other causes	8	4.8
Other related causes+other causes	2	1.2
Other related causes+other causes	1	0.6
Total	165	100

Table 6. Comparison of regular and irregular visiting of patients under investigation according to divided causes of death

Cause of death	Irregular visiting	Regular visiting	Total
Infection+other causes	41 62.1 43.6	25 37.9 49	66 45.5
Respiratory+other causes	21 63.6 22.3	12 36.4 23.5	33 22.8
CNS+other causes	21 65.6 22.3	11 34.4 21.6	32 22.1
Renal+other causes	11 78.6 11.7	3 21.4 5.9	14 9.7
Total	94 64.8	51 35.2	145 100

Table 7. Comparison duration of disease with regular and irregular visiting in patients under investigation

Visiting type	Cases	MD	SD	SE
Irregular	106	4.3679	3.432	0.333
Regular	59	0.9746	1.329	0.173

* SE= Standard error of mean, SD= Standard deviation, MD= Mean deviation

The comparison of two groups who were visited regular and irregular and the duration of their disease showed us significant relationship ($p< 0.05$)

DISCUSSION

From 2021 patients who were investigated in our center from 1991 till 2000, a total of 165 deaths were recorded.

During the period of 11 years, Klom and his colleagues studied the causes of death in 229 SLE patients with 29% mortality (5). Estes and Christian studied 150 patients during eight years with 36% mortality (6) , Dubois studied 491 patients in a period of 13 years with 51% mortality (7) and finally Rosner and colleagues reported 21% (8) mortality in 1103 patients. Thus by comparison of available data, the death expectation is highly more among Iranian patients. This result may be due to unknown consequences of many expired patients. In our center it was impossible to identify exact expired patients, so we did not identify the causes of death (6) to (7).

The 10 years survival of patients were 60% to 95% in different reports. Because of unknown consequences of many expired patients, it was impossible in identifying survival of Iranian patients. The average age of patients at the time of death was 26 years that in comparison with (2,3) other countries revealed that death in Iranian patients occured in lower ages. In recent study the average disease period, from onset to death was 36±12 months.

The mean duration of follow up, from entering the study till time of death was 25.9±16.8 months. This time in Rosner's study, totally for all patients from time of entering to study till last visit or death, was calculated 43.5±35.2 months.

The gender distribution of expired patients in our study was 84.8% female and 15.2% male. In comparison with 89.5% female and 10.5% male in total SLE patients, there was no significant difference in gender distribution in expired patients. From the viewpoint of death causes, infection was the most common cause of death (infection 12.1%, infection with other causes 27.9%) in our lupus patients. This is compatible with multicenteric study of Rosner and his colleagues that was 33% (8).

Although in some other studies the rate of infections, as a cause of death, was less than this report (12-19% by Dubois).

The most important point in recent studies is introduction of infections as the most common cause of death in patients, and believe that although high rate of fatal infections in lupus patients during 3rd and 4th decades could be relevant to absence of antibiotics, these remarkable rate of infections during recent years may mostly be related to immunosuppressive therapies and high does of corticosteroids.

Thus we could conclude that increasing dose of corticosteroides could lead to an increasing in prevalence rate of infections and consequently death of patients and this aspect was proven in other studies. Therefore, the necessity of cautiously using combination therapy with steroids is more evident than before.

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