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Research Article

**IMPACT OF DIABETES MELLITUS ON THE RISK OF END-STAGE RENAL DISEASE IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS**<sup>1</sup>Dr. Rabbiya Ghafoor, <sup>2</sup>Dr. Mehran Khan, <sup>3</sup>Dr. Abhar Zaman<sup>1</sup>House Officer, Mayo Hospital, Lahore.<sup>2</sup>MO, BHU Hammed, Hazro, Attock.<sup>3</sup>WMO, THQ Hospital Sabzazaar, Lahore.**Abstract:**

**Objective:** Patients suffering from systemic lupus erythematosus are at the high risk of development of insulin resistance in the body that leads to the chances of diabetes mellitus. Systemic lupus erythematosus along with diabetes mellitus have many chances of development of end-stage renal failure. End-stage renal failure is the last stage often the renal failure. It is also called uremia. It is still unknown that why diabetes mellitus increases the chances of the end-stage renal failure [1].

**Patient and method:** This research is based on the connection between diabetes mellitus on systemic lupus erythematosus for development of end-stage failure. Study and research are made after analyzing a lot of aspects. For this study is conducted with the help of the national health insurance department of the state. For the research, those patients having SLE and have newly developed DM is taken into consideration. The comparison is done between the two groups. Both groups have SLE. But one group has DM while other does not have it.

**Results:** The research was conducted by considering gender, age, and age at which DM was diagnosed [2]. Thorough and a deep research were made. After this research, it was concluded that there is a strong connection in development of ESRF in patients of SLE suffering from DM.

**Key words:** End stage renal failure, systemic lupus erythematosus, and Diabetes mellitus, autoimmune.

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**INTRODUCTION:**

Systemic lupus erythematosus (SLE) is an autoimmune disease that involves more than more organs. Through different research, it has been concluded that the concluded that ratio of ESRF is higher in the patients with SLE as compare to non-SLE patients. The patients with SLE have any level of diabetes mellitus. It may vary in the degree of extent. More than half patients of SLE face the renal problem to any extent. Through the different researches, it has been found out that up to 30% of SLE patients develop the severe form of the ESRF. The severe renal problem arises within the 15 years of the diagnosis of SLE. The renal issues start after 6 years of diagnosis of SLE. As SLE is an autoimmune disease, it also leads to the development of type 1 diabetes that is itself an autoimmune disease. It is been found out by different research, that there is also impact o gender for development of DM. the calculated ratio is 1 ratio 5 for the male to females respectively. The patients suffering from SLE develop insulin resistance. This disease is also associated with hyperinsulinemia that is further linked with the anti-insulin antibiotics. All diseases linked with the high level of DM in patients of SLE. In some cases, the level of the glucose in the blood also increases due to a disturbance in the production and release of corticosteroid.

So it is obvious that SLE is followed the development of diabetes mellitus and diabetes is further linked to diabetic nephropathy [3]. Diabetes nephropathy is one of the leading causes of end-stage renal failure. Both SLE and DM lead to end-stage renal failure in the different ways and have the independent path of their actions. But both of these are very important factors for the development of end-stage renal failure, so it is obvious from the fact that in case of SLE, there are high chances of development of ENRF. It is still unclear that whether there is a mutual relation of action of DM and SLE for development of ESRF. It has been found out that patients suffering from both diabetes and renal failure have a long period of worse survival as compare to the non-diabetic patients [4]. In the research, it has been investigated by using the population database that how DM poses an additive impact on the SLE sufferer that leads to ESRF. Using the population data It has been concluded that patients suffered in the symptoms with and without the diabetes mellitus. It only this survival period of lupus ESRF with and without DM. it has been concluded that ESRF patients with DM and SLE have the worst period of the long-term survival.

**MATERIAL AND METHODS:**

A survey was conducted on the national level with the lupus patients. It was made sure that patients were selected for the survey and research did not diabetes mellitus prior to SLE. The sample was kept large so that the valid and authentic results could be obtained. The patients under the research, all insurances claims were cleared. The data present for the patients in the hospitals were identified and encrypted thoroughly to avoid any kind of mistake or misinformation [5]. The whole procedure of the research was approved by the concerning authorities. Every step and procedure of the research was carried out under the supervision of proper guidance and a defined set of rules and regulations.

Study design and study population: A large sample size was selected for the research so that valid results could be obtained. During the selection of patients for the survey, it was kept in the mind that those patients have to be selected that did not have diabetes mellitus before SLE. After that, all those patients who have been diagnosed with DM after SLE, the index date was noted for those patients. Index date refers to that date when patients of DM were diagnosed with DM. the sample size of DM patients was n= 1320. To get more valid and crystallized results, the ratio of the sample group and control group was kept equal is 1:1. It means that strength of non-DM patients was also n= 1320.

Two categories were created with the groups of the equal age and genders were created. Detection of DM was clarified on basis of two terminologies [6]

- Diagnosis of DM for one spot for the prescription of the anti-diabetic medication in the inpatient claim data of the patients
- Diagnosis of DM for one spot for the prescription of the anti-diabetic medication in the ambulatory claim data.

The diagnosis of ESRF was confirmed after receiving the catastrophic illness certificate. It would be an issue after three months of continuous dialysis. Along with this the survival period of the patients of the end-stage renal failure was also determined with the patients with and without Diabetic mellitus.

Statistical analysis: Two compare the different variables were conducted. These two tests were t-test and X2 tests. These tests were conducted on the patients of SLE with and without DM. by using the techniques of the incident rate ratio, the chances of getting end-stage renal failure was determined by comparing patients with and without DM. Another analysis was done to determine the risk of

development of end-stage renal failure in the follow-up period. That analysis was named as Cox proportional hazard analysis. To find out the survival duration of the patients suffering from ESRF ad were dependent on dialysis.  $P < 5$  were considered to be important.

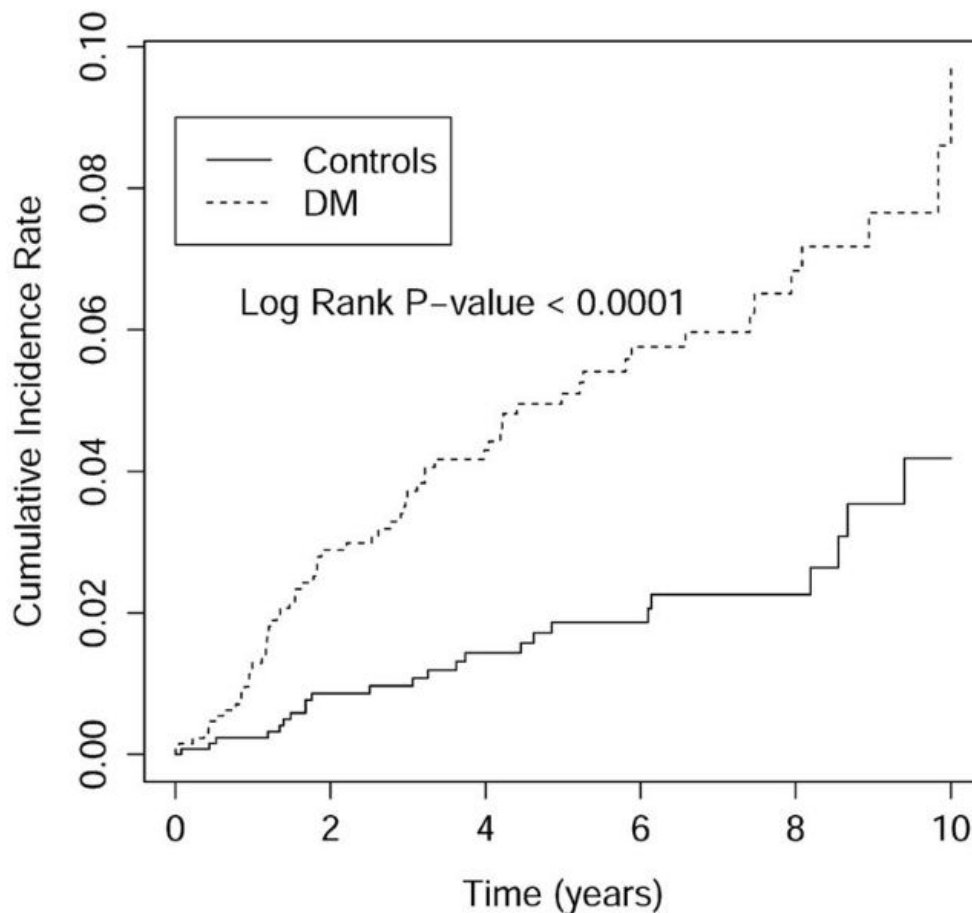
### RESULTS:

The average age for the diagnosis of SLE was found to be 45 years and the average age for the DM **Graph 1**

diagnosis found to be 49 years. Other research has shown that the average duration between the diagnosis of SLE and DM was about 4 years on the whole. The main portion of the subject of the study was females as compared to the non.-DM counterparts. Female was about 90% of the patients of SLE suffering DM have more concentration of the co-morbidities. This is shown in the following graph [7].

Variable	Crude Hazard Ratio (95% CI)	Adjusted Hazard Ratio (95% CI)
DM (yes vs. no)	2.71 (1.70-4.33)*	1.64 (0.97-2.76)
Age at index date		
<45	1.00	1.00
45-65	0.92 (0.58-1.45)	0.71 (0.44-1.14)
≥65	1.13 (0.63-2.02)	0.74 (0.40-1.37)
Female (vs. male)	0.72 (0.38-1.35)	0.74 (0.40-1.40)
Comorbidity		
Hypertension (yes vs. no)	4.30 (2.84-6.53)*	3.29 (1.98-5.47)*
CAD (yes vs. no)	0.85 (0.27-2.68)	0.35 (0.11-1.16)
Hyperlipidemia (yes vs. no)	3.73 (2.14-6.51)*	1.77 (0.96-3.27)
Gout (yes vs. no)	6.90 (3.46-13.77)*	3.06 (1.46-6.42)*
HBV (yes vs. no)	N/A	N/A
HCV (yes vs. no)	0.64 (0.22-11.28)	1.22 (0.17-8.96)
Cirrhosis (yes vs. no)	0.00 (0.00 - Inf)	0.82 (0.11-6.01)

The mean value for follow up period was about the 5.1. it was concluded that the rate of ESRF was higher In the patients suffering from DM s compared to the non-DM patients. The value of the cumulative incident ratio of the end-stage renal failure is more in DM patients groups as compared to the non-DM patient group. It is twice than the non-DM group. This is applied to all age groups and is more prominent in the age groups of people above 65 years.



### DISCUSSION:

The main research of this study is that SLE patients with DM have a high risk of development of ESRF. Both males and females have the high value of the cumulative incidence of ESRF. However, the long-term mortality rate of the patients with and without DM with the continuous dialysis provision is still unknown [8]. But it was also discovered that DM is not only the independent factor for ESRF. The comorbidities in SLE lead to a reduction in the function of the kidney. Proper management and handling amount of glucose in blood and provision of regular immune suppressants can reduce the symptoms of this disease.

### CONCLUSION:

SLE is a disease that is at the high risk of development of DM. The DM has an adverse on the functioning of kidney and cause the reduction in the proper functioning of the kidney. So it is must for the physician to keep the proper balance in the medication of Diabetes mellitus and end stage renal failure. Along with the primary disease many

secondary diseases also develop. These diseases also be noticed and treated properly [9].

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