# Risk Factors for Systemic Lupus Erythematosus in Qena University Hospital

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**Abstract**

**Background**: Systemic lupus erythematosus (SLE) is one of the most widely studied diseases in medicine

**Objectives**: To study the relation between risk factors and clinical manifestations of systemic lupus erythematosus (SLE) at Qena governorate.

**Patients and methods**: Assessment of 61 lupus patients was done through clinical and laboratory evaluation of musculoskeletal system (MSK), mucocutaneous involvement and renal involvement in addition to evaluation of smoking status, combined oral contraception (COC) and family history in each patient.

**Results**: MSK manifestations were detected in all smoker lupus patients, all COC user lupus patients and half of those of familial lupus. Mucocutaneous manifestations were detected in 83 % of COC user lupus patients, 75 % of familial lupus patients and 50 % of smoker lupus patients. Lupus nephritis was detected in all COC user patients and half of either smoker lupus patients or familial lupus patients.

**Conclusion**: Smoking, COC using and family history affect upon renal, MSK and mucocutaneous manifestations of SLE patients at Qena governorate.

**Keywords**: SLE; Lupus nephritis; Risk factors; Cytopenia.

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## Introduction

Systemic lupus erythematosus (SLE) is the prototypic systemic autoimmune disease that is characterized by highly variable clinical features. Systemic autoimmunity in SLE results from complex interaction between abnormal innate and adaptive immune response complicated with tissue inflammation and injury manifested with several pathologic manifestations (**Manderson et al., 2004).**

Risk factors engaged in SLE development are genetic factor, hormonal element, current not past smoking, Low vitamin D, low anti-oxidant and several environmental factors **(Tedeschi et al., 2013**). No organ is immune in SLE so lupus experts usually say "Lupus can do anything, but not everything is lupus" (**Heinlen et al., 2007**). Constitutional manifestations can be essential finding in lupus patients or complication. Constitutional manifestations include fever, fatigue and weight loss **(Mahieu et al, 2016**). Cutaneous lupus can be separate entity or part of SLE. Cutaneous lupus manifestations may specific or nonspecific. The former is classified into acute cutaneous LE, subacute cutaneous LE and chronic cutaneous LE **(Sontheimer et al, 1997**). Musculoskeletal (MSK) involvement in SLE is one of most common and earliest presentations among the broad spectrum of targeted systems in SLE. It is manifested as arthritis, arthralgia, tenosynovitis, myopathy, fibromyalgia, osteonecrosis, osteopenia and osteoporosis **(Grossman et al, 2009).** Lupus nephritis represents one of dangerous manifestations in SLE. Survival rate improved significantly however no change has been seen in the incidence of progression to renal failure **(Palmer et al, 2017**). Cytopenias, including anemia, leukopenia or lymphopenia, and thrombocytopenia, are frequent manifestations of active SLE, although the mechanisms are not always clear, and these features may or may not be immune mediated (**Karpouzas et al., 2019**). Relation of these 5 risk factors among lupus patients are well established however current study aims at clearing these risk factors among lupus patients in certain locality exactly at Qena governorate.

## Patients and methods

The current study is a descriptive cross-sectional study which was conducted in the department of rheumatology and rehabilitation Qena University Hospital.

### Study group

61 SLE patients were diagnosed according to the 2017 ACR/EULAR criteria **(Suda et al,2017**). All of the patients were naïve for biologic therapies.

### Inclusion criteria

1- **Patients diagnosed as SLE according to SLICC criteria (2012) or ACR/EULAR criteria (2017).**
2- **No age limitations.**
3- **SLE patients are resident at Qena governorate.**

### Exclusion criteria

**1- Systemic autoimmune diseases other than SLE.**

**2. Overlap syndromesMethods for patients**

The steps of this work progressed through clinical assessment and laboratory evaluation.

### Clinical assessment:

1. Demographic data and personal history including smoking status, detailed history of general health condition, therapeutic history of hormonal treatment and family history of SLE).
2. History of present illness to evaluate mainly 3 systems among lupus patients; musculoskeletal system, renal system and mucocutaneous manifestations
3. General examination including vital signs.
4. Systematic examinations

### Statistical analysis

Data were analyzed and expressed in tables as mean values ± standard deviations (SD).

SPSS version 21.0 program was used for data processing.

Unpaired t-test was used in comparison of numerical parametric data between rheumatoid patients and control groups.

Pearson correlation test was applied to analyze correlations between different quantitative variables within each group.

Values were considered significant when P values were equal or less than 0.05.

## Results

### *Demographic data in studied group*

This work included 50 SLE patients. Two of patients are males and fifty nine are females. Age of patients ranges between 19 and 65 years with average of 28.34 ± 10.12 years.

### *Relation between Musculoskeletal Involvement and Risk Factors among Studied Group*

Current study shows that 72.9% of non-smokers have musculoskeletal manifestations and all smokers who are two also have musculoskeletal manifestations. Current study shows that 75.4% of patients with sporadic lupus have musculoskeletal manifestations. As regard familial lupus, half of cases show musculoskeletal manifestations. Current study shows that whole lupus patients using COCs have musculoskeletal manifestations. 69.8% of lupus patients who are COC non users have musculoskeletal manifestations (**Table.1**).

### *Relation between Mucocutaneous Involvement and Risk Factors among Studied Group*

Current study shows that 67.8% of non-smokers have mucocutaneous manifestations. As regard smokers who are only two cases; one has mucocutaneous manifestations. Current study shows that 83.3% of lupus patients using COCs have mucocutaneous manifestations. 66% of lupus patients who are COC non users have mucocutaneous manifestations.Current study shows that 75 % of patients with familial lupus have mucocutaneous manifestations. As regard sporadic lupus, 70.2% of patients with sporadic lupus have mucocutaneous manifestations (**Table.2**) **.**

**Table.1. Risk Factors in Relation to Musculoskeletal Involvement**

| Variables | Presence of Musculoskeletal Findings | | P value |
|---|---|---|---|
| | No | Yes | |
| **Smoking** | | | |
| **No** | 16 (27.1 %) | 43 (72.9 %) | 0.5 |
| **yes** | 0 (0 %) | 2 (100 %) | |
| **COCs** | | | |
| **No** | 16 (30.2) | 37 (69.8 %) | 0.1 |
| **yes** | 0 (0%) | 6 (100 %) | |
| **Family history** | 14 | 43 | |
| **No** | (24.6%) | (75.4 %) | |
| **yes** | 2 (50%) | 2 (50 %) | 0.2 |

**Table.2. Risk Factors in Relation to Musculoskeletal Involvement**

| Variable | Presence of Mucocutaneous Findings | | P value |
|---|---|---|---|
| | No | Yes | |
| **Smoking** | | | |
| **No** | 19 (32.2 3%) | 40 (67.8 %) | 0.5 |
| **yes** | 1 (50 %) | 1 (50 %) | |
| **COCs** | | | |
| **No** | 18(34 %) | 35(66 %) | 0.3 |
| **yes** | 1(16.7 %) | 5(83.3 %) | |
| **Family history** | | | |
| **No** | 17(29.8 %) | 40(70.2 %) | 0.09* |
| **yes** | 1 (25 %) | 3 (75 %) | |

***Relation between Lupus Nephritis and Risk Factors***

Current study shows that 52.5%of non smokers have lupus nephritis manifestations. As regard smokers who are only two cases; one has lupus nephritis manifestations. Current study shows that whole lupus patients using COCs have lupus nephritis manifestations. 69.8% of lupus patients who are COC non users have lupus nephritis manifestations. Current study shows that 52.6% of patients with sporadic lupus have lupus nephritis manifestations. As regard familial lupus, half of cases show lupus nephritis manifestations (**Table.3**).

**Table 3. Risk Factors in Relation to Lupus Nephritis Findings**

| Variables | Presence of Lupus Nephritis Findings | | P value |
|---|---|---|---|
| | **No** | **Yes** | |
| Smoking<br>No<br>yes | **28 (47.5 %)**<br>**1 (50 %)** | **31 (52.5 %)**<br>**1 (50 %)** | **0.5** |
| COCs<br>No<br>yes | **16(30.2 %)**<br>**0(0 %)** | **37(69.8 %)**<br>**6(100 %)** | **0.3** |
| Family history<br><br>No<br>yes | **27(47.4 %)**<br>**2 (50%)** | **31(52.6 %)**<br>**2 (50 %)** | **0.09*** |

**Discussion**

Current study was designed to evaluate 3 risk factors; smoking, COC and family history in relation to 3 involved systems among lupus patients. As regard to MSK involvement, Romy Kallas et al study evaluated relation between smoking and lupus MSK involvement also and concluded that Caucasian SLE patients who ever smoked were more likely to have muscle atrophy (**Kallas et al., 2020**). Xiaomei Leng et al study done in China

was concerned with relation between family history and lupus MSK and concluded that Family history of lupus did not significantly affect musculoskeletal manifestations **(Leng et al., 2017**).

Gensous N et al evaluated relation between contraception and SLE and found that no worsening of disease activity with the use of combined oral contraceptive in women with stable or inactive SLE **(Gensous et al., 2017**). As regard to mucocutaneous involvement, Ekblom-Kullberg S et al study evaluated this point in relation to smoking. Ekblom-Kullberg S et al study compared different statuses of smoking; heavy smokers, simple currently smokers, past smokers, ex-smokers and never smokers among lupus patients and controls and concluded that development of SLE is strongly associated with smoking **(Ekblom et al., 2013**). Romy Kallas et al study that was concerned also with evaluation of relation between smoking and lupus patients found that African-American patients who ever smoked were more likely to have skin damage compared to African-American non-smokers **(Kallas et al, 2020)**.

According to European League against Rheumatism (EULAR) recommendations of lupus women health, COCs are well known as activity inducer drug of skin disease (**Andreoli et al., 2017**). L Y Chen et al studied 330 searches and his analysis revealed that photosensitivity was negatively associated with familial SLE what means that Photosensitivity could be more common in sporadic SLE (**Chen et al., 2018**). As regard to lupus nephritis, Ricardo A Montes et al study was concerned with effect of smoking on organ damage in lupus patients.

Cumulative chronic damage was measured by the Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index (SDI). Study found that smoking exposure was associated with cumulative chronic damage that may have huge burden on patient morbidity **(Montes et al., 2016**). Julkunen HA et al study evaluated relation between COC using and lupus nephritis and found that Initial manifestations or exacerbations of SLE were noted in 13% of lupus patients during the first six months after starting COCs and three of these four patients had major renal involvement so Julkunen HA et al study recommended not to use COCs in SLE patients with active nephritis **(Julkunen et al., 1991**). L Y Chen et al study that was concerned with evaluation relation between family history and SLE found that nephritis was negatively associated with familial SLE what means that renal involvement could be more common in sporadic SLE **(Chen et al., 2018**).

**Conclusion**

Current study showed that all smoker patients who participated in the current study are manifested with MSK manifestations while half of them are manifested with lupus nephritis and mucocutaneous manifestations

All COC user patients who participated in the current study are manifested with MSK manifestations and lupus nephritis manifestations while 83 % of them are manifested with mucocutaneous manifestations.

Half of patients with familial lupus who participated in the current study are manifested with lupus nephritis and MSK manifestations while 75 % of them are manifested with mucocutaneous manifestations.

***Limitation***

The main limitations of the present study are low sample number and very low male to female ratio. Also the current study evaluated involved systems as a whole in lupus patients while it was better to analyse each system in more detail.

**References**


- **Andreoli,., Bertsias G. K., Agmon-Levin, N., Brown, S., Cervera, R., Costedoat-Chalumeau N, Khamashta, M. (2017).** EULAR

recommendations for women's health and the management of family planning, assisted reproduction, pregnancy and menopause in patients with systemic lupus erythematosus and/or antiphospholipid syndrome. Annals of the rheumatic diseases, 76(3), 476-485.

- **Chen, L. Y., Shi, Z. R., Tan, G. Z., Han, Y. F., Tang, Z. Q., & Wang, L. (2018).** Systemic lupus erythematosus with and without a family history: a meta-analysis. Lupus, 27(5), 716-721.
- **Ekblom-Kullberg, S., Kautiainen, H., Alha, P., Leirisalo-Repo, M., & Julkunen, H. (2013).** Smoking and the risk of systemic lupus erythematosus. Clinical rheumatology, 32(8), 1219-22
- Gallo, P. M., Rapsinski, G. J., Wilson, R. P., Oppong, G. O., Sriram, U., Goulian, M and Tükel, Ç. (2015). Amyloid-DNA composites of bacterial biofilms stimulate autoimmunity. Immunity, 42(6), 1171-1184.
- **Gensous, N., Doassans-Comby, L., Lazaro, E., & Duffau, P. (2017).** Systemic lupus erythematosus and contraception: systematic review of the literature. The Journal of Internal Medicine , 38 (6), 358-367.
- **Grossman JM. (2007)** Lupus arthritis. Best Pract Res Clin Rheumatol. 23:495-506.
- **Heinlen, L. D., McClain, M. T., Merrill, J., Akbarali, Y. W., Edgerton, C. C., Harley, J. B., & James, J. A. (2007).** Clinical criteria for systemic lupus erythematosus precede diagnosis, and associated autoantibodies are present before clinical symptoms. Arthritis & Rheumatism: Official Journal of the American College of Rheumatology, 56(7), 2344-2351.
- **Julkunen, H. A. (1991).** Oral contraceptives in systemic lupus erythematosus: side-effects and influence on the activity of SLE. Scandinavian journal of rheumatology, 20(6), 427-433.
- **Kallas, R., Li, J., & Petri, M. (2020).** Association of African-American ethnicity and smoking status with total and individual damage index in systemic lupus erythematosus. Clinical rheumatology, 39(2), 365-373.
- **Karpouzas, G. A. (2019). Hematologic and lymphoid abnormalities in SLE. In Dubois' Lupus Erythematosus and Related Syndromes (pp. 473-485).**
- **Leng, X., Li, M., Li, X., Zhang, X., Liu, S., Wu, L., ... & Huang, C. (2017).** Chinese lupus treatment and research group (CSTAR) registry: X. family history in relation to lupus clinical and immunological manifestations. Clinical and experimental rheumatology, 36(1), 81-87.
- **Mahieu, M. A., Ahn, G. E., Chmiel, J. S., Dunlop, D. D., Helenowski, I. B., Semanik, P., ... & Ramsey-Goldman, R. (2016).** Fatigue, patient reported outcomes, and objective measurement of physical activity in systemic lupus erythematosus. Lupus, 25(11), 1190-1199.
- **Manderson, A. P., Botto, M., & Walport, M. J. (2004).** The role of complement in the development of systemic lupus erythematosus. Annu. Rev. Immunol., 22, 431-456.
- **Montes, R. A., Mocarzel, L. O., Lanzieri, P. G., Lopes, L. M., Carvalho, A., & Almeida, J. R. (2016).** Smoking and its association with morbidity in systemic lupus erythematosus evaluated by the Systemic Lupus International Collaborating Clinics/American College of Rheumatology Damage Index: preliminary data and systematic review. Arthritis & Rheumatology, 68(2), 441-448.
- **Palmer, S. C., Tunnicliffe, D. J., Singh-Grewal, D., Mavridis, D.,**

**Tonelli, M., Johnson, D. W & Strippoli, G. F. (2017).** Induction and maintenance immunosuppression treatment of proliferative lupus nephritis: a network meta-analysis of randomized trials. American Journal of Kidney Diseases, 70(3), 324-336.

- **Sontheimer, R. D. (1997).** The lexicon of cutaneous lupus erythematosus-A review and personal perspective on the nomenclature and classification of the cutaneous manifestations of lupus erythematosus. Lupus, 6(2), 84-95.
- **Suda, M., Yanaoka, H., Rokutanda, R., Tsuda, T., Kishimoto, M., Yamaguchi, K., & Okada, M. (2018).** SAT0447 Validation of the 2017 acr/eular classification criteria of systemic lupus erythematosus.
- **Tedeschi S, Bermas B and Costenbader K. (2013).** Sexual disparities in the incidence and course of SLE and RA Clinical immunology, 149 (2), 211-8.