Pattern of Renal involvement in Systemic Lupus Erythematosus patients in Sohag University Hospitals

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ABSTRACT

Background: Systemic Lupus Erythematosus is asystemic disease characterized by multiple system affection,each system affected has apathognomonic features for lupus affection,renal involvement have variable patterns in SLE and tretment vary accordingly.

Objective: The objective of this study is to study pattern of renal involvement in Systemic Lupus Erythematosus patients in Sohag University Hospitals .

Materials &Methods:This study was performed on 100 patients with SLE who fulfiled the clinical and laboratory criteria of (Modified american colleague of rheumatology for SLE diagnosis-1997) admitted to Sohag University Hospital and those of outpatients clinic were studied by means of a retrospective review of their records, Patients were analyzed according to their clinical symptoms and laboratory profile which included complete blood counts, serum creatinine and electrolytes, ESR, total proteins, 24 hour urinary proteins, creatinine clearance, anti nuclear factor and anti-DNA. Results of renal biopsy which were performed by light microscopy study were revised.

Results: The study revealed that class(2) were 46 patients (46%) all of them were females.Class (3) were 36 patients (36%), 33 of them were females, 3 patients were males.Class (4) were 14 patients (14%) all of them were females .Class (5) were 4 patients (4%) all of them were females .

According to proteinuria between classes of renal biopsy , 24 h urinary protein was > .5 g in all patients of class 5 (100%) .Class (3) and class (4) the same range (about 92%), class 2 about (84%).

Conclusion: Our study in Sohag University Hospitals was in 100 patients revealed that roughly number of rural patients equal to urban patients , also revealed that the most common renal biopsy class is the class (2) in our locality and that the most common symptoms associated with renal involvement is arthritis followed by oral ulceration. Anaemia affect most of our patients in Sohag and thrombocytopenia very common between them , our study show that proteinuria increased markedly by increasing grades of renal biopsy with low response to treatment, this may explained by non compliance of our patients to treatment .

Keywords :SLE,Renal involvement

Introduction :

Systemic Lupus Erythematosus is no longer an exotic disease in many communities. It is becoming a frequently diagnosed condition possibly due to increased awareness of its manifestations and the availability of serological markers. Renal involvement is a serious feature of systemic lupus erythematosus (SLE), occurring in 40-75% of these patients.Despite great improvement in the management of lupus nephritis, it remains the most frequent cause of systemic lupus erythematosus related mortality.Generally renal involvement is more common in Blacks, Indians and Chinese,with lesser prevalence in Caucasians and Arabs.The natural history of SLE is characterized by episodes of relapses or flares, interchanging with remissions, and the outcome is highly variable ranging from permanent remission to death. However, both morbidity and mortality have improved over the years due to a number of reasons, including the more conservative use of corticosteroids and of modified immunosuppressive

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regimens. Additionally, there is much more information on factors such as organ involvement and accelerated atherosclerosis that may predict morbidity and mortality.

MATERIALS &METHODS :

Patients with SLE who fulfiled the clinical and laboratory criteria of (Modified american colleague of rheumatology for SLE diagnosis-1997) admitted to Sohag University Hospital and those of outpatients clinic were studied by means of a retrospective review of their records, Patients were analyzed according to their clinical symptoms and laboratory profile which included complete blood counts, serum creatinine and electrolytes, ESR, total proteins, 24 hour urinary proteins, creatinine clearance, anti nuclear factor and anti-DNA. Results of renal biopsy which were performed by light microscopy study were revised.

Classification of lupus nephritis.

Class I Minimal mesangial lupus nephritis,Class II Mesangial proliferative lupus nephritis Class III Focal lupus nephritis,Class IV Diffuse lupus nephritis Class V Membranous lupus nephritis,Class VI Advanced sclerosis lupus nephritis

Inclusion criteria:

Patients with systemic lupus erythematosus, Patientsn >15 years

Patients who were not on dialysis

Exclusion Criteria.

Patients <15years, Patients with CRF on haemodialysis

Assessment of response to therapy by following parameters :

Improvement in renal function (decreased in serum creatinine)

Decrease in degree of proteinuria

Ethical consideration

The study was assessed by Scientific and Ethical committees of Sohag Faculty of Medicine .

Statistical analysis

All data was collected and analyzed using Statistical Package for Social Science (SPSS) to detect Pattern of Renal involvement in Systemic Lupus Erythematosus at Sohag University Hospitals.

Results :

The study included 100 patients with SLE fulfilling the clinical and laboratory criteria of the American Rheumatism Association.Of these 97% were females and 3% were males, age of those patients (25 – 49)year.

The distribution of studied group according renal biopsy revealed that class (2) the most common between patients as it was 46% of the patients , class (3) was 36% , class (4) was 14% and class (5) was the less common 4% in our locality.

The commonest presenting symptoms were arthritis , oral ulceration and malar rash as arthritis was present in 84% .oral ulceration was present in 77% and malar rash was present in 54%. The less common symptoms were photosensitivity 28% ,polyserositis 26% and neurological affection was 6% . Of those patients 77% were anaemic ,39% were thrombocytopenic , 17% were leucopenic and 11% were pancytopenia.Hypoalbuminemia affect 14% of those patients ,high 24h urinary protein >.5 g was in 90% of the patients , high serum creatinine >1.3 mg in 14% of the studied group.82 % of the patients were ANA positive , 93 % of the patients were ANTI DNA positive.

Treatment for those patients included steroids , immunosuppressant, or both of them 2 % of the patients not on treatment , 40% were on steroids , 5% were on immunosuppressant and 53% of the patients were on combination of them , steroids and immunosuppressant .

According to renal biopsy of the studied group were four classes

Class(2) were 46 patients (46%) all of them were females.Class (3) were 36 patients (36%), 33 of them were females, 3 patients were males.Class (4) were 14 patients

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(14%) all of them were females .Class (5) were 4 patients (4%) all of them were females .

According to presenting symptoms among different classes of renal biopsy , the most common was arthritis , less common was neurological affection. After arthritis, oral ulceration more common than malar rash , photosensitivity, polyserositis respectively.

Affected serum creatinine between patients class (2) was 1 patient ,about (2%) , between class (3) 3 patients were affected about (8.33%) .between class (4) 8 patients about (57%) were affected , between class (5) 50% were affected by elevated serum creatinine.

According to proteinuria between classes of renal biopsy , 24 h urinary protein was > .5 g in all patients of class 5 (100%) . Class (3)and class (4) the same range (about 92%), class 2 about (84%).

Class (2) 17.39% were on steroids and immunosuppressant , 78.86% were on steroids only , no patient on immunosuppressant only , between those patients of class (2) 4.35% were not on steroids or immunosuppressant.

Distribution of studied group according to renal biopsy ,Table 2

Renal biopsy	Number (%)
Class 2	46 (46.00%)
Class 3	36 (36.00%)
Class 4	14 (14.00%)
Class 5	4 (4.00%)

Albumin and kidney function of studied group,Table 5

Investigation	Summary statistics
Serum albumin Mean ± SD Median (range)	 3.71±0.50 3.8 (1.3-4.3)
Hypoalbuminemia (< 3.7 g)	18 (18.00%)
Serum creatinine Mean ± SD Median (range)	 1.5±0.55 0.9 (0.4-3.8)
High S. creatinine (>1.3 mg/dl)	14 (14.00%)
24 hours' Urinary protein (mg/24h) Mean ± SD Median (range)	 2606±3782.6 1135 (45-20880)
High 24 hours' urinary protein (>500mg)	90 (90.00%)
Renal involvement (S. creatinine (>1.3 mg/dl) or 24 hours' urinary protein (>500mg)	91 (91.00%)

Comparison among different classes of renal biopsy according to presenting symptoms,Table 9

Presenting symptoms	Class 2	Class 3	Class 4	Class 5	P for trend
Arthritis	39 (84.78%)	29 (80.56%)	13 (92.86%)	3 (75.00%)	0.91
Oral ulceration	39 (84.78%)	29 (80.56%)	7 (50.00%)	2 (50.00%)	0.06
Malar rash	25 (54.35%)	18 (50.00%)	9 (64.29%)	2 (50.00%)	0.91
Photosensitivity	13 (28.26%)	8 (22.22%)	6 (42.86%)	1 (25.00%)	0.75
Polyserositis	11 (23.91%)	9 (25.00%)	5 (35.71%)	1 (25.00%)	0.64
Neurological affection	2 (4.35%)	3 (8.33%)	1 (7.14%)	0	0.59

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Comparison among different classes of renal biopsy according to albumin and kidney function,Table 11

Variable	Class 2	Class 3	Class 4	Class 5	P for trend
Albumin Mean ± SD Median (range)	 3.86±0.43 3.9 (1.5-4.3)	 3.67±0.37 3.7 (2.6-4.3)	 3.37±0.78 3.55 (1.3-4.3)	 3.58±0.56 3.6 (3-4.1)	0.001
Hypoalbuminemia	4 (7.70%)	6 (16.67%)	6 (42.86%)	2 (5.00%)	0.002
Serum creatinine Mean ± SD Median (range)	 0.89±0.24 0.85 (0.4-1.8)	 0.92±0.25 0.9 (0.5-1.6)	 1.62±0.85 1.7 (0.5-3.2)	 2.1±1.29 1.75 (1.1-3.8)	<0.0001
High S. creatinine (>1.3 mg/dl)	1 (2.17%)	3 (8.33%)	8 (57.14%)	2 (50.00%)	<0.0001
24 hours' Urinary protein Mean ± SD Median (range)	 1220±1099 1037 (45-6586)	 1796±1946 6665 (264-16500)	 11217±8105 11475 (1040-20880)	 11217±8105 11475 (1040-20880)	<0.0001
High 24 hours' urinary protein (>500mg)	39 (84.78%)	34 (94.44%)	13 (92.86%)	4 (100%)	0.22

Comparison among different classes of renal biopsy according to therapy (immunomodulatory agents) Table 13

Variable	Class 2	Class 3	Class 4	Class 5	P vale
No therapy	2 (4.35%)	0	0	0	
Steroid	36 (78.26%)	4 (11.11%)	0	0	<0.0001
Immunosuppressant	0	4 (11.11%)	1 (7.14%)	0	
Both	8 (17.39%)	28 (77.78%)	13 (92.86%)	4 (100%)	

Discussion:

Systemic lupus erythematosus (SLE) is a multisystem autoimmune disorder with a broad spectrum of clinical presentations. There is a peak age of onset among young women between the late teens and early 40's and a female to male ratio of 9:1.No single cause for SLE has been identified though factors such as sunlight and drugs may precipitate the condition and there is a complex genetic basis.**(1)**

Renal involvement is a serious feature of systemic lupus erythematosus (SLE), occurring in 40-75% of these patients.**(2)**

The incidence and severity of lupus nephritis may be related to the patients' racial background and studies have suggested the presence of nephropathy susceptibility genes predisposing to lupus nephritis. SLE patients with renal involvement are at a higher risk of dying of this disease.**(3)**

The study included 100 patients with SLE fulfilling the clinical and laboratory criteria of the American Rheumatism Association**.(4)** Of these 97% were females and 3% were males .

The distribution of our studied group according renal biopsy revealed that class (2) the most common between patients as it was 46% of the patients , class (3) was 36% , class (4) was 14% and class (5) was the less common 4% in our locality ,being class (2) the most common in patients in our study,this was near to the results of **(6)** class (2) was 43% ,class (3) was 38% of patients.

While **(7)** revealed that class (3) was the commonest among the patients under their study (58%),this may be explained by different number of patients or different locality.

The **(5)** study revealed that the main histological types were WHO class 3 (17%), class 4 (64%) and class 5 (14%). That study revealed that Pakistan had the highest prevalence of WHO histological class (4), this difference may be explained by different locality and different number of patients in that study and our study.

77% of the patients in our study were anaemic ,39% were thrombocytopenic , 17% were leucopenic and 11% were pancytopenic, this near to the results of

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(9) who reported that, anaemic patients were (75%), thrombocytopenic patients were (42%), leucopenic patients were (16%).

24h urinary protein >.5 g was in (high percentage) 90 % of the patients , our study is different than **(10)** study**,** As 24h urinary protein > .5 g was in 70% this may be explained by non compliance of our patients to treatment or different number of studied patients.

According to grades of renal biopsy ,in our study ,the distribution of anaemia increase by increasing the grades of renal biopsy but thrombocytopenia was 75% in class (5), 35% in class (4), 50% in class (3) and about 13% in class (2).

These results near to the results of **(5)** which revealed that thrombocytopenia was 80 % in class (5), 32% in class (4), 47 % in class (3) and 12 % in class (2).

The study revealed that there was high serum creatinine > 1.3 mg in more than 50% of class (4) and class (5) patients , Although the study of **(11)** revealed that low percentage of the patients of these classes were affected by high serum creatinine as 34% of class (4) and 41% of class (5) were affected , this may be explained by non compliance of our patients for treatment and by different locality.24 h urinary protein > .5 g affect most of the patients of the studied group , our study as the study **(7)** as 24 h urinary protein > .5 g affected about 90 % of the patients.

100 % of class (5) patients received both of steroids and other immunosuppressant as that study**(15).** Most of class (2) received only steroids as study of **(12)**.

Conclusion: Our study in Sohag University Hospitals was in 100 patients revealed that roughly number of rural patients equal to urban patients , also revealed that the most common renal biopsy class is the class (2) in our locality and that the most common symptoms associated with renal involvement is arthritis followed by oral ulceration.Anaemia affect most of our patients in Sohag and thrombocytopenia very common between them , our study show that proteinuria increased markedly by increasing grades of renal biopsy with low response to treatment, this may explained by non compliance of our patients to treatment .

References:

1. Ju, J. H. *et al.* Prevalence of systemic lupus erythematosus in South Korea: an administrative database study. *J. Epidemiol.* 24, 1295–1303 (2014).

2. Shim, J. S., Sung, Y. K., Joo, Y. B., Lee, H. S. & Bae, S. C. Prevalence and incidence of systemic lupus erythematosus in South Korea. *Rheumatol. Int.* 34, 909–917 (2014).

3. Markowitz GS, D'Agati VD. The ISN/RPS 2003 classification of lupus nephritis: an assessment at 3 years. Kidney Int 2016; 71:491–5.

4. Hiramatsu N, Kuroiwa T, Ikeuchi H, Maeshima A, Kaneko Y, Hiromura K, et al. Revised classification of lupus nephritis is valuable in predicting renal outcome with an indication of the proportion of glomeruli affected by chronic lesions. Rheumatology (Oxford) 2017;47:702–7.

5. Ali SS, Rabbani MA, SSM Moinuddin S Virani, Farooque F, Salam A, Ahmad, Pakistan**,**2015.

6.Anay J M et al17, in across-sectional multicenter study in Colombia**,**2016

7.Wallace DJ, Podell TE, Weiner JM, Cox MB, Klinenberg JR, Forouzesh S, et al.Lupus nephritis**,**2016

8.Malaviya AN, Chandrasekaran AN, Kuamr A, Sharma PN. Systemic

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lupus erythematosus in India. Lupus 2009.

9. Julian T, Uramoto, W. Michael O' Fallon. A Comparative Study of the Clinical Manifestations of Systemic Lupus Erythematosus in Caucasians in Rochester, Minnesota, and Chinese in Singapore, From 1980 to 1992. Arthritis Care & Research 2012.

10. Uthman IW, Muffarij AA, Mudawar WA, Nasr FW, A-FM Masri Lupus nephritis in Lebanon, Lupus 2011.

11. Hochberg MC Boyd RE, Ahearn JM, Arnett FC, Bias WB, Provost TT,Stevens MB. Systemic lupus erythematosus: a review of clinico-laboratory features and immunogenetic markers in 150 patients with emphasis on demographic subsets. Medicine (Baltimore) 2012.

12. Suliaman K, Sohail KS, Raza F, Siddiqur A. Clinacal spectrum of SLE at Aga Khan University Hospital. J Pak Med Assoc. 2014;50:3647.

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