CLINICAL LABORATORY AND PATHOLOGICAL FEATURES OF ADMITTED LUPUS NEPHRITIS PATIENTS

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Summary

Clinical features of Systemic Lupus Erythematosus (SLE) worsens when it involves kidneys. Even then in our socioeconomic context the patients who seek admission are usually at later stages. Moreover histological classes may not be previewed by clinical and laboratory features. The aim of the study is to show variation of clinical features and laboratory findings in relation to pathological classes of Lupus nephritis. It was a cross sectional descriptive study enrolling 30 female patients admitted in medicine and nephrology department of Chittagong Medical College. Majority of the patients are of age range 21-40 years (73%); belonging to middle class family (90%) and educated upto level of secondary school certificate (43%). Oedema (93%), normotension (73%) and anaemia (93%) are common clinical features. Though all patients had macroscopic proteinuria only 20 % patients had massive proteinuria (>3gm%). Serologically Nineteen patients are ANA positive (63%) and all patients had Anti-dsDNA positivity. Class III and Class IV comprises 70% of patients. Estimated Glomerular filtration rate (eGFR) is more in class V (mean 77.77) and class III (mean 76.86) than class II (mean 52.67) and class IV (mean 59.95) signifying eGFR cannot estimate severity. In conclusion without renal biopsy Lupus nephritis class cannot be ascertained and so class specific management cannot be given.

Key words

Serological markers; Lupus nephritis; eGFR

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Introduction

SLE involves Kidneys in 40-75% of patients within 5 years after the onset of the disease and lupus nephritis is predictor of worst prognosis [1]. Lupus Nephritis manifests as asymptomatic proteinuria, acute kidney injury(AKI) or chronic renal failure(CKD) ,acute nephritic syndrome, rapidly progressive glomerulonephritis(RPGN), nephrotic syndrome and thrombotic microangiopathies (such as thrombotic thrombocytopenic purpura/hemolytic uremic syndrome) [2]. Even non-renal clinical features may be predominant in lupus patient. A significant proportion had only asymptomatic proteinuria [3]. It was expected that severity of clinical features (like Hypertension) and progressively worsenening proteinuria and haematuria might be proportional to the severity of pathological classes. Higher classes might have more reduced eGFR [4]. Lupus nephritis is divided into six pathological classes [5]. Though from class I to Class IV the disease progresses but in class V the involvement is only nephrotic syndrome without significant haematuria and near normal or mild renal impairment. Besides the patient may have mixed classes (like class III/IV + class V). So if clinical features , urinalysis and eGFR may predict classes of Lupus nephritis, we can start class specific therapy without doing renal biopsy which is not always possible in resource limited country like Bangladesh. With this background and rationale our study is aimed at to evaluate clinical and laboratory features of admitted Lupus nephritis patients and to see whether they correspond to pathological classes in a tertiary hospital of Bangladesh.

Materials and methods

This study was a descriptive cross sectional study enrolling 30 patients admitted in medicine and nephrology department of Chittagong Medical College. The Lupus nephritis patients admitted through February 2011 to July 2011 with urinary total protein >500mg/day and presence of >5 RBC/HPF were included. SLE patients with end stage renal disease (ESRD), central nervous system (CNS) /cardiac involvement or uncontrolled HTN (Hypertension)/DM (Diabetes mellitus) were excluded. Patients with contraindication of renal biopsy were also excluded. Informed written consent was obtained from the patients. A structured case

record form containing socio-demographic variable (age, educational status, economic solvency), clinical variables (oedema, anaemia and HTN), urinalysis findings Urinary total protein (UTP), erythrocyturia) and eGFR calculated by Cock-croft Gault Formula was prepared [6]. Categorical variable like age, proteinuria, oedema, HTN and anaemia were expressed as percentages. Dependant variable eGFR was compared between different classes of Lupus nephritis by ANOVA test. Two biopsies gave inadequate specimens and one showed acute infectious glomerulonephritis. These three were excluded from final analysis during eGFR analysis. Data was analyzed by SPSS-15. P value < 0.05 was taken as significant. The work was approved by ethical committee of the department.

Results

Among 30 patients most patients belong to age range between 21-40 years. They belong to middle class family and educated up to primary or SSC standard (table I).

More than 90% of patients are anaemic and oedematous, but only one-fourth patient is hypertensive (Table II).

Only one fifth patient had nephrotic range proteinuria and half had erythrocyturia > 5 RBC/ HPF (high power field) (table III).

Two-third of the patients belong to the group class III and Class IV (Table IV).

eGFR of Class III is higher than that of class II. As a whole reduction of eGFR is not significantly associated with progression of classes (table V) .

Table I : Socio-demographic variable (n=30)

Parameter	Frequency	Percentage(%)
Age(years)		
<2o	6	20
21-40	22	73.3
>40	02	6.7
*Economic solvency**		
Poor	03	10
Middle class	27	90
*Education level***		
Illiterate	2	6.7
Primary	13	43.3
SSC	13	43.3
HSC/above	2	6.7

*Poor : <5000BDT/month, Middleclass: 5000-10,000BDT/month
**Illiterate: not attended school

Table II : Clinical Variable (n=30)

Parameter	Frequency	Percentage (%)
Anaemia		
Mild	19	63.3
Moderate	9	30
Absent	2	6.7
Oedema		
Present	28	93.3
Absent	02	6.7
Blood pressure		
Normal	22	73.2
High	08	26.8

Table III : Urinalysis (n=30)

Parameter	Frequency	Percentage (%)
UTP		
500 mg – 1 gm / Day	7	23.3
1 – 2 gm / Day	10	33.4
2 – 3 gm / Day	7	23.3
> 3 gm / Day	6	20.0
*Haematuria **		
Significant	16	53.3
Not significant	7	23.3
Nil	7	23.3

*Significant >5 RBC/HPF

Table IV : Distribution of renal biopsy finding (n=30)

Renal Biopsy Finding	Frequency	Percentage (%)
Class II	2	6.7
Class III	9	30.0
Class IV	12	40.0
Class V	4	13.3
Acute Post Infection GN	1	3.3
Inadequate Specimen	2	6.7

Table V : Distribution of biopsy findings with eGFR analysed by ANOVA

Histological type	N	Mean	Std. Deviation	F	Significance
Class II	2	52.6750	28.58833		
Class III	9	76.8833	17.79408		
Class IV	12	59.9567	15.82456	1.664	.188
Class V	4	77.7700	8.77755		
Acute Post Infection GN	1	64.3400	.		
Inadequate Specimen	2	57.0650	32.09558		
Total	30	66.8777	18.49419		

Discussion

This cross sectional study described clinical, laboratory and clinical features of lupus particularly correlation of eGFR with histological findings in 30 female lupus patients at CMCH. Cameron et al has reported a male to female ratio of 1:8 to 1: 14 in a series of adult patients [7]. In the present study, the female preponderance might be due to small sample size (n=30) or lack of registry of male patients during the 6 months study period.

The mean age of the patients in our study was 28.42 years. SLE is a disease of child bearing age [8]. The median age of onset of SLE is 24 years in a series reported by Malaviya AN [9]. Most of the patients came from average socioeconomic status, none from higher class and literacy rate is low among the study population. This scenario represents the sociodemographic status of Bangladesh though it might not the actual one, as sample size was small. Most common hematological abnormality was anaemia (93.3%). Various studies have shown a similar findings [10]. In a series of studies reviewed by BudMan, anaemia occurred in 57-78% of patients with SLE [11]. In different studies conducted in Pakistan anaemia was found in 79.37% and 93.3% of SLE patients [12,13] . Higher frequency of anaemia in this subcontinent is probably due to associated nutritional deficiency. There is frequent association between hypertension and renal disease in SLE. According to Budman and Steinberg presence of significant renal disease was not a necessary condition for the development of hypertension and they Reported the prevalence of hypertension in patients with SLE vary from 14% to 58.1% in different ethnic populations [14]. Our study also could not establish any statistical significant association between renal involvement and hypertension. Haematuria was found among half of patients. Though macroscopic proteinuria was present in all patients but >3gm/day protein loss was also found in 6(20%) patients. These findings are consistent with the previous study [11].

No patient was found in Class 1 group. Probably class I has rarely renal features and usually present with non-renal feature. If we could include all SLE patients and sample size were bigger we could have class I patients. Most of the patients were in class III (30%) and class IV (40%) because of more clinical and laboratory abnormality they had for which they sought nephrological consultation. The frequency is lower than that in Pakistan (81%) but is comparable to those in Indians, Orientals, Blacks, Africans, Arabs, Americans and Europeans [15].

Regarding analysis of eGFR, all of the lupus nephritis patients had eGFR less than the normal value [16]. Analysis by variance (ANOVA) test found no significant relation of eGFR with histological class ($p = 0.182$). It was shown in different studies that eGFR correlates with histological classes i.e it is significantly lower in proliferative (class III and Class IV) lupus nephritis than non-proliferative (class II and class V) Lupus nephritis but in our study the result is not significant due to small sample size and probably calculation of eGFR needs a correction factor in our population [17]. The major limitation of the study is that it is a cross sectional single centre study with a limited study period.

In conclusion, In our Lupus nephritis patients frequency of anaemia was high and HTN was low though most of the patients in higher pathological class . Renal failure calculated by eGFR could not predict histological class. So without renal biopsy targeted therapy could not be possible.

Disclosure

All the authors declared no competing interestes.

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