



A STUDY OF SLE PATIENTS WITH BIOPSY PROVEN LUPUS NEPHRITIS – THEIR CLINICAL PROFILE AND OUTCOME AFTER COVID 19 DISEASE

Author: Mathini S, Prasannakumar, Aishwarya P, Murali M, Alekya B.N, Maria Bethsaida Manuel, R.Ram, Sivakumar
 Department of Nephrology, Sri Venkateswara Institute of Medical Sciences, Tirupati



INTRODUCTION

Patients with autoimmune diseases such as Systemic lupus erythematosus (SLE) are not only vulnerable to infections because of the aberrant immune responses inherent to the disease, but also due to the fact that they often are treated with steroids, other immune-suppressants and immune-modulator drugs. These together lead to an immune-compromised state and an increased risk for infections. The aberrant cellular, humoral and cytokine immune responses like lymphopenia, greater proinflammatory cytokines like IL-6, and abnormal B and T cell responses may likely influence the severity and disease outcomes of COVID-19 in patients with immune-mediated and autoimmune diseases.

AIM

To study the clinical profile and outcome of SLE patients with biopsy proven lupus nephritis after COVID 19 disease in our institute

MATERIALS & METHODS

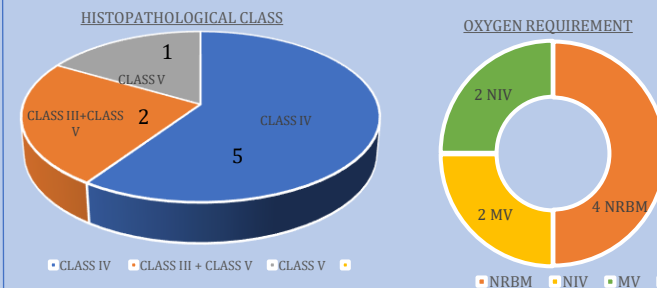
All patient who were admitted in our institute with COVID -19 disease from March 2020 and who were biopsy proven SLE with lupus nephritis were included in the study .

Their data were collected in contemporaneously from admission to the outcomes on a computerised proforma.

The demography, clinical features, laboratory data including complete haemogram, serum creatinine, blood urea, serum sodium and serum potassium, liver function tests ,anti dsDNA antibody level, complement factor 3 and factor 4, prothrombin time and partial thromboplastin time, serum procalcitonin, serum ferritin, C-reactive protein, serum IL-6 and serum D-dimer were sent on the first day of admission and their treatment schedules were documented.

BASELINE DEMOGRAPHIC CHARACTERISTICS AND CLINICAL PARAMETERS

Parameter	Result
Mean age	29.3
Sex Distribution	Male – 1 Female 7
Diagnosis of SLE before COVID -19 disease	15.3 months before
Duration of symptoms of COVID -19 (median)(days)	2
SPO ₂ at admission (%) (mean ± SD) (n=8)	90.8±6.9
CT severity score at admission (range)	7.3 ± 0.94 (6-8)
CT severity score during hospital stay (day 5 after admission) (range)	13.66± 1.24 (6-15)
CRP (range) (g/L)	112.14 ± 106.05 (5.6-328)
S. Ferritin (range) (ng/L)	555.6 ± 287.2 (265-960)
LDH (range) (mg/dL)	428±86.5 (340-725)
Serum IL-6 (range) (pg/mL)	60.75±52.08 (17-145)



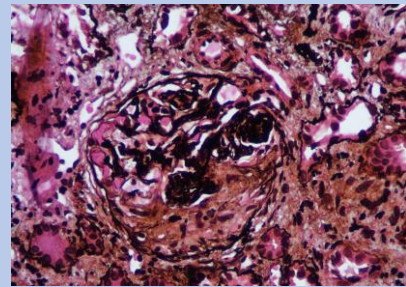
TREATMENT GIVEN
 - Injection remdesivir 200 mg was started on day 1, followed by 100 mg from day 2 to day 10, injection dexamethasone 8 mg per day iv and low molecular weight heparin and vitamins for 10 days .
 - We prescribed injection Tocilizumab when the serum IL-6 was elevated 10 times the reference range of our lab.
 - We prescribed injection tocilizumab at 8 mg/kg per dose; up to a maximum dose of 400 mg. Likewise total two doses were prescribed

RESULT

Parameter	Result before COVID-19 disease	Result during/after COVID-19 disease
Anti dsDNA titre (reference range: > 40 WHO IU/mL - positive)	163.8 ± 30.3	
Complement C3 (reference range : 91 – 156 mg/dL)	70.9 ± 8.9	
Complement C4 (reference Range : 20 – 50 mg/dL)	18.4 ± 2.1	
Serum creatinine (mg/dL) in patients without renal failure (n=4) (mean ± SD) (range)	1.17±0.20 (0.9-1.4)	1.32 ± 0.22 (1.05-1.24)
Serum creatinine (mg/dL) in patients with renal failure (n=4) (mean ± SD) (range)	7.82 ± 3.25 (3.5-12.1)	9.0±3.0 (6.1-11.9)
Renal biopsy in SLE patients admitted with COVID-19 (n=8)	Class IV: 5	Class VI: 1*
	Class III+V: 2	
	Class V: 1	
Blood pressure (mean ± SD) (n=8)	144 ± 12/96 ± 7	158 ± 14/103 ± 6
Treatment of SLE nephritis	Steroids, cyclophosphamide and ACE inhibition	

CRESCENTIC GN AFTER COVID 19 DISEASE IN LUPUS NEPHRITIS PATIENT

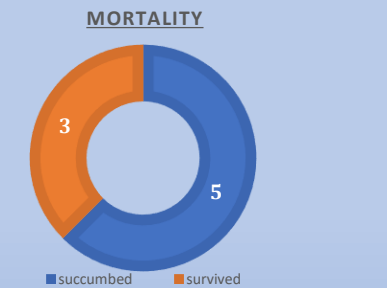
- 17-year-girl, SLE nephritis Class IV diagnosed before COVID-19, had presented with haematuria after the diagnosis of COVID-19.
 - A repeat renal biopsy done during COVID-19 disease revealed crescents.
 - We treated the patient with injection methyl prednisolone and required dialysis.
 - After two weeks, we shifted her to non-isolation wards for continuation of treatment with cyclophosphamide.
 - After three months also follow up, she was still on dialysis.



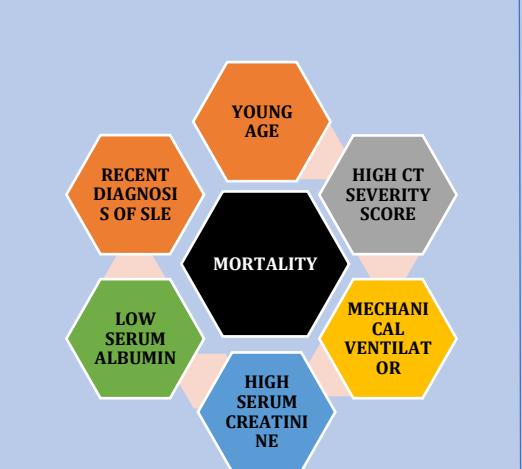
OUTCOME

Parameter	Mortality	No mortality	p
Number of patients	5	3	-
Age (years/mean)	20.8	34.6	0.049 *
Hypertension (%)	5 (%)	2 (%)	0.375
High serum creatinine (%)	5 (%)	3	0.017*
Obesity (%)	01 (%)	1 (%)	1
CT severity score during hospital stay (day 5 after admission) (range)	10.66± 2.84 (6-15)	6.05 ± 1.41	0.037*
Haemoglobin (g/dL)	8.8± 2.3	8.6 ± 1.08	0.086
Total leucocyte count (per cu mm)	11347.3 ± 5185.4	10227.7 ± 3902.8	0.473
Platelet count (per cu mm)	2.1 ± 0.94	2.3 ± 1.04	0.702
Serum creatinine (mg/dL) in patients with renal failure (n=4) (mean ± SD) (range)	5.81 ± 1.78 (3.5-12.1)	1.32±0.21 (0.9-1.4)	0.0014*
S. Albumin (g/dL)	2.5 ± 0.2	3.5 ± 0.2	0.0057*
CRP (g/L)	112.14 ± 106.05	95.61 ± 79.02	0.603
S. Ferritin (ng/L)	555.6 ± 287.2	453.9 ± 288.3	0.31
Serum IL-6 (pg/mL)	60.75±52.08	52.10±32.07	0.428
Anti dsDNA titre (reference range: > 40 WHO IU/mL - positive)	163.8 ± 30.3	187.2 ± 18.5	0.251
Complement C3 (reference range : 91 – 156 mg/dL)	70.9 ± 8.9	69.1 ± 11.3	0.335
Complement C4 (reference Range : 20 – 50 mg/dL)	18.4 ± 2.1	20.7 ± 1.1	0.891

- Out of eight patients, four patients, a male aged 23 years and three female patients aged 15, 16 and 31 years required mechanical ventilator owing to worsened hypoxia and high respiratory rate.
 - 1 other patient developed disseminated TB after discharge and succumbed to illness
 - CT severity scores of these four patients were 12/25, 14/25, 15/25, and 20/25 respectively
 - All four patients required dialysis and eventually succumbed.



PREDICTORS OF MORTALITY



CONCLUSION

We identified the patients who succumbed were of younger age, had higher serum creatinine at presentation, higher CT severity score and lower serum albumin as factors which had significant effect on mortality.

Our results suggested that with the 50% mortality the COVID -19 had a calamitous effect on SLE nephritis patients

The higher mortality in our patients could be explained by the analysis that these patients had been diagnosed SLE in the recent past and were on higher doses of immunosuppression.