

**TRENDS IN HOSPITALISATION IN PATIENTS WITH SYSTEMIC LUPUS ERYTHEMATOSUS**Sowmya Gopalan<sup>1</sup>, Lakshmi M<sup>2</sup>, Srinivasan Ramadurai<sup>3</sup>, Swathy Moorthy<sup>4</sup>, Preetam Arthur<sup>5</sup><sup>1</sup>Associate Professor, Department of General Medicine, Sri Ramachandra Medical College and Research Institute, Chennai.<sup>2</sup>Senior Resident, Department of General Medicine, Sri Ramachandra Medical College and Research Institute, Chennai.<sup>3</sup>Associate Professor, Department of General Medicine, Sri Ramachandra Medical College and Research Institute, Chennai.<sup>4</sup>Associate Professor, Department of General Medicine, Sri Ramachandra Medical College and Research Institute, Chennai.<sup>5</sup>Professor, Department of General Medicine, Sri Ramachandra Medical College and Research Institute, Chennai.**ABSTRACT****BACKGROUND**

Systemic Lupus Erythematosus (SLE) is a connective tissue disease with high morbidity that results in multiple admissions. This study was undertaken to determine trends in hospitalisation and outcomes in patients with SLE.

**MATERIALS AND METHODS**

This was a retrospective study of all patients admitted with SLE between January 2012 and 2015 at a tertiary care hospital in Chennai. Records were analysed and causes for recurrent admission looked at.

**RESULTS**

A total of 101 patients were included. Mean age was 33.4 years, mean number of admissions 3.44. Systemic symptoms were common, renal involvement 70.3% and haematological involvement 35.6%. 66 patients got admitted more than once. Infections, need for drug administration (cyclophosphamide) and disease flare were the causes for repeated admissions.

**CONCLUSIONS**

SLE results in high utilisation of medical resources, recurrent admissions are the norm and infections and disease flare are common causes for admission.

**KEYWORDS**

Systemic Lupus Erythematosus, Hospitalisation.

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**BACKGROUND**

Systemic Lupus Erythematosus (SLE) is an uncommon disease with a reported prevalence ranging from 1-7/1,00,000 in India.<sup>1</sup> However, due to its propensity to involve multiple organs, it causes considerable morbidity and has a higher mortality as compared to normal population.<sup>2</sup> Due to the multiplicity of the clinical features, it may present to different specialities and result in recurrent hospitalisation. There have been several studies from India that have looked at clinical features, mortality rates, compared Indian data with Caucasian studies to look at differences in presentation and also looked at specific subgroups such as males and paediatric population.<sup>2,3,4</sup> However, there is not much data on trends in hospitalisation. This study was undertaken to look at reasons for recurrent hospitalisation and need for specialised intervention.

**METHODOLOGY**

This was a retrospective study conducted at Sri Ramachandra Medical College, a tertiary care hospital located at Chennai. All charts of patients who were admitted between January 2012 and 2015 with a discharge diagnosis of Systemic Lupus Erythematosus, Discoid Lupus Erythematosus, Lupus Nephritis, CNS Lupus and Cutaneous Lupus were scrutinised. Patients were diagnosed to have SLE if they fulfilled at least 4 American Rheumatology Association Criteria or they had a biopsy-proven lupus nephritis. Careful perusal of the records was done and the following variables were looked at: age, gender, clinical symptoms and signs during hospital stay, organ involvement as diagnosed by investigations, comorbid medical illnesses, infections during stay, speciality under whom patient was admitted, drugs that were administered, duration of stay in hospital and outcomes.

Statistical analysis was performed using SPSS software version 16. Variables were entered as mean+/-standard deviation and constants as number/percentage. Patients were divided into 2 groups- those admitted once and those admitted more than one time. Factors that were responsible for recurrent admissions were analysed.

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**RESULTS**

A total of 120 patients were admitted during the period. Analysis revealed that nearly 12 had incomplete records and 7 had only chronic kidney disease with no biopsy being done. They were excluded and 101 patients included for analysis. The baseline characteristics of the patients are given in table 1. The mean number of hospitalisations was 3.44 with a maximum of 20 hospital admissions in a single patient. 93 patients were female with a gender ratio of 9:1 (female:male). The mean age at presentation was 33.4 years. 35 patients had only one admission while 66 had more than one. In terms of symptomatology, which is given in table 2, systemic features such as fever were the commonest followed by vague chest discomfort, shortness of breath and then skin manifestations including malar rash, oral ulcers, photo sensitivity.

Table 2 mentions the departments under whom the patients were admitted. The maximum number of patients presented almost equally to general medicine (15) and nephrology (14).

However, in the group with multiple admissions, the number of admissions by each patient under nephrology was much higher. Only 11 out of 66 patients did not get admitted under nephrology even once.

Investigations revealed 70.3% of patients had evidence of renal involvement as shown by either urine albumin >3+, elevated urine protein-creatinine ratio >0.5, 24-hour urine protein >500 mg or biopsy-proven lupus nephritis and 35.6% of patients had haematological involvement of whom 15 had Direct Coomb's Test (DCT) positive haemolytic anaemia.

Immunological tests showed Antinuclear Antibody (ANA) was negative in 4 out of the 101 patients all of whom had biopsy proven lupus nephritis. 2 patients had Rufus (SLE with rheumatoid arthritis), 1 had secondary Sjogren's syndrome and 1 had antiphospholipid antibody syndrome.

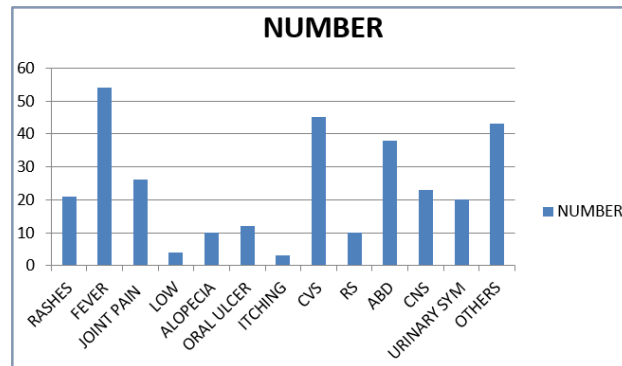
Causes for recurrent hospitalisation in 66 patients is listed in Table 4. Infections were the commonest, mostly bacterial affecting both respiratory and urinary tract. Of the vascular events, 4 were venous -2 each of deep vein thrombosis and cortical venous thrombosis and 2 had cerebrovascular arterial involvement. 3 patients were admitted for drug toxicity - avascular necrosis of femur in one and drug-induced bicytopenia in two.

Nearly, 14.8% of patients were pulsed with methylprednisolone and 15.8% of patients were on pulse cyclophosphamide. Hydroxychloroquine, oral steroids and other immunosuppressive agents were received apart from supportive therapy such as blood product transfusion. 5 patients succumbed to the illness - due to catastrophic APLA, sepsis and worsening renal function.

Variable	Mean±SD, Number (%)
Age	33.4 ± 4.2
Sex (F:M)	93:8 (9:1)
Comorbidities	
Hypothyroidism	17 (16.8%)

Hypertension	22 (21.8%)
Diabetes Mellitus	4 (3.9%)
Number of admissions	3.44 ± 1.06
Number of ARA criteria fulfilled	5.2 ± 1.1

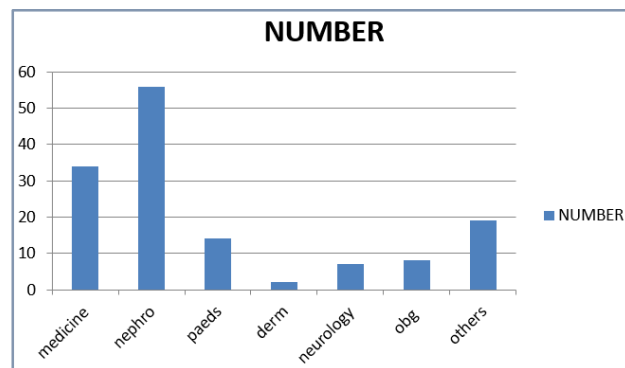
**Table 1. Background Characteristics of Study Patients**



**Graph 1. Symptoms at Presentation**

\*LOW-Loss of weight

Others- Oedema, photosensitivity

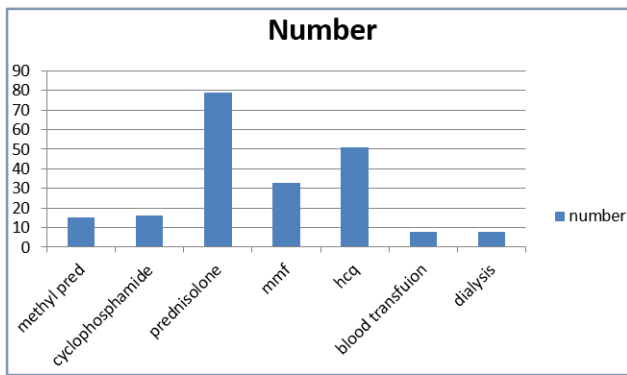


**Graph 2. Departments to which Patient Presented**

Others- Pulmonology, Cardiology

Cause for Admission	Number (%)
<b>Infections</b>	29 (43.9%)
Pneumonia/Lower respiratory infections	9
Urinary tract infections	9
Tuberculosis	5
Viral fever	4
Miscellaneous	3
Administration of drugs	16 (24.24%)
Disease flare	12 (18.18%)
Vascular event	6 (9.09%)
Drug toxicity	3 (4.5%)

**Table 2. Reason for Recurrent Admissions**



**Graph 3. Drugs Received by the Patients**

Mmf- Mycophenolate mofetil

## DISCUSSION

The first case of SLE in India was reported in 1955 and subsequently there have been several reports. Community studies have shown a prevalence of 3.2/1,00,000, which is much less than average prevalence of 30-50/1,00,000 across most other Asian countries.<sup>5</sup>

Despite the low numbers, the disease causes considerable morbidity with utilisation of healthcare resources. SLE shows a strong female preponderance frequently in a ratio of 9:1 and late teens to early 40s is the primary age affected and this was seen in our study population too. Utilisation of healthcare services depends on the individual disease severity and activity. Patients presented to a wide spectrum of departments including general medicine, nephrology, dermatology, obstetrics-gynaecology, cardiology, neurology during the first admission, but recurrent hospitalisations were much more frequent under general medicine and nephrology. 35 patients had one admission and of the 66 patients who had repeated admissions, the mean number was 4.83.

Symptom analysis showed that clinical features were similar to other data from India with fever, skin rash, oral ulcers, arthralgias and breathlessness being common. 27.03% of patients had renal involvement and 11.7% had seizures suggestive of neurological involvement, again a distinct feature of Indian patients with SLE who have much higher renal and neurological involvement.<sup>2</sup>

While skin and systemic manifestations were a common reason for the first admissions, subsequent admissions were often for 3 reasons- administration of immunosuppressants, disease flare and infections. In the first case, the commonest drug that required repeated admissions was cyclophosphamide that was administered as a monthly pulse in 16 patients. In the group admitted with disease flare, nearly 15 needed methylprednisolone pulse therapy. While bacterial infections were the commonest infections causing hospitalisation, tuberculosis was diagnosed in 5 and some had coexistent superficial fungal infections. Western data has shown that the top reasons for admission to a healthcare centre are disease flare, bacterial infections and adverse drug reactions with acute coronary event and venous thromboembolic episodes contributing to a small proportion.<sup>6</sup>

Infections are known to cause a lot of morbidity in SLE patients and tuberculosis is a well-documented offender especially in India.<sup>7</sup>

Most patients were on immunosuppressive therapy, usually steroid with a significant number, also on a second drug such as hydroxychloroquine, mycophenolate mofetil and cyclophosphamide.

Asians have been shown to have higher systemic disease with higher requirement for immunosuppressive therapy as compared to Caucasians.<sup>8</sup> A small number were also admitted for initiation of dialysis or for transfusions.

During the period of follow-up, 5 patients succumbed to the disease and all needed ICU care.

Sepsis, catastrophic APLA and acute kidney injury caused death. 5 and 10-year mortality rates in India have showed a lower survival rate than western population that maybe due to late diagnosis, inadequate utilisation of healthcare services, higher prevalence of systemic disease (renal), requirement for more immunosuppression and higher infection rate.<sup>2</sup> Active disease and infections have been shown to be the most common causes of mortality in India.<sup>9</sup>

## CONCLUSIONS

SLE admissions were primarily in the middle-aged women. Disease flare with systemic and renal involvement, administration of immunosuppressants and infections formed the most common indications for admissions. Recurrent admissions were the norm with higher numbers in nephrology. This was due to monthly pulse cyclophosphamide administration in class 3 or 4 lupus nephritis in most cases. Most people were on at least 2 disease modifying agents and mortality was 5%.

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