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Extractable Nuclear antigen and Anti-smith (sm) antibodies detection in *Systemic Lupus Erythematosus* in Chennai, Tamilnadu, India.

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Abstract:

***Plan*:** *This study elaborates on the demographic, clinical and laboratory characteristics in SLE cases from Tamilnadu State, India.*
Methodology: *Eighty-two patients with SLE ,fulfilling the clinical and laboratory criteria of the American Rheumatism Association (ARA) admitted to the Government General Hospital and Sri Ramachandra Medical college and Research Institute, Chennai, Tamilnadu ,India between 2008 and 2010 were analysed.There were 77 females and 5 males with an average age of 30 years at the onset of disease.*
Outcome: *The clinical characteristics of SLE patients observed in order of frequency were fever and arthritis (52%), Raynaud's phenomenon (45%), malar rash (26%), nausea (21%), pleuritis and photosensitivity (19%), thrombocytopenia (15%), oral ulcer (15%), alopecia (11%) and seizures (10%). Extractable nuclear antigen (ENA) and Sm antibodies were positive in 65.9% and 63.4% patients respectively. The clinical features of SLE in Chennai, Tamilnadu State, India were similar to other studies from developed countries.*
Key words: *Systemic Lupus Erythematosus (SLE), ENA, Sm antibodies, Autoimmunity.*

1. Introduction:

Systemic lupus erythematosus (SLE) is a devasting autoimmune disease of worldwide distribution with unknown etiology and cure. Despite the fact that there has been a statistically significant improvement in the survival of SLE patients over the past four decades, the incidence of SLE has tripled[15].

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Although the underlying mechanisms behind clinical findings and etiologic events and the proceedings causing disease onset remain largely not clear, there is substantial circumstantial evidence that the development of SLE is dependent on environmental[13] and genetic factors[14]. Systemic lupus erythematosus (SLE) is one of the most important vulnerable rheumatic diseases in Asia and the morbidity as a result of disease or treatment-related complications is still the major concern[12]. A Characteristic hallmark of SLE is the production of auto antibodies against nuclear components. During apoptosis many lupus auto antigens congregate inside the cells and are susceptible to modifications. The fate of not cleared apoptotic cells is to spill out these modified auto antigens constituting endogenous danger signals that are subsequently presented to antigen-presenting cells,thus,over-riding peripheral tolerance mechanisms and triggering autoimmunity[6].
While the exact mechanisms of Auto-immunity in SLE is not known, the information on the predominant immunological factors, specific markers for the local community and risk factors analysis are also scanty in Indian literature.

Therefore this study has been carried out to elucidate the most probable marker, certain demographic details, clinical symptoms and immunological profile in South Indian population and to obtain a comprehensive view of the enigmatic and fascinating disorder 'SLE' in South Indian population.

2. Materials and methods:

A total of 82 patients (77 female,5 male) clinically diagnosed for SLE at Government General Hospital and Sri Ramachandra Medical college and Research Institute, Chennai,Tamilnadu during 2008-2010 were included in this study. The diagnosis of SLE was based on the revised criteria of American college of Rheumatology. The case notes of patients were reviewed retrospectively for the demographic information including age,sex etc.The other data collected were Fever and Arthritis ,Raynaud's Phenomenon ,Malar rash ,Nausea ,Pleuritis and Photosensitivity ,Thrombocytopenia ,Oral ulcer ,Alopecia and Seizures .Immunological investigations like Extractable Nuclear Antigens (ENA) and Sm Antibody by ELISA were also carried out using Binding Site,UK.

3. Results:

The case notes of 82 SLE patients who visited Government General Hospital and Sri Ramachandra Medical College and Research Institute, Chennai, Tamilnadu as inpatient or out patient during 2008-2010 were thoroughly reviewed.

Age group analysis revealed the maximum distribution of SLE cases (40.2%) among the age group 21-30 years followed by 11-20 years (29.3%). In the sex wise distribution study of Systemic lupus erythematosus, there was a preponderance of females 77 (94%) when compared with males 5 (6%).

The female: Male ratio was 15.4:1. In the clinical and demographic features of SLE patients a wide range of manifestation was observed including fever ,arthritis (52%), raynaud's Phenomenon (45%), malar rash (26%), nausea (21%), pleuritis and photosensitivity (19%), thrombocytopenia (15%), oral ulcer (15%), alopecia (11%) and seizures (10%). Sm antibodies was positive in 52 patients (63.4%) and Extractable nuclear antigen was positive in 82 Patients (65.9%) (Table 1).

4. Discussion:

Demographically, SLE is mainly a disease of young women with a peak in the second and third decade of life. In the present study, the female to male ratio was 15.4:1.Malaviya *et al*.,[9] had also reported a female to male ratio of 8:1.According to kumar[8] from New Delhi, SLE affects predominantly women in their reproductive years and the median age of onset in Indian SLE is 24.5 years and sex ratio (Female: Male) is 11:1.This is the same with our findings also wherein,the mean age group was 30 years and sex ratio is 15.4:1.

Major presenting symptoms among SLE patients from Chennai were mostly comparable to those other regions of the world.Feng *et al*[5] reported the incidence of arthritis as an initial manifestation in 53% and 44 % cases respectively. Similarly our findings has also review arthritis is 52%of cases as initial manifestation.

Another significant observation, Fever was seen in 52% of SLE patients. The Indian study conducted by Bell Eapen *et al*.,[2] had also reported fever in 83% of SLE Patients. In our study, malar rash noted in 26% of case. However Vaidya *et al*.,[16] from Western India reported malar rash in 49% and 53% cases respectively. In the Present study photosensitivity was seen in 19% of SLE patients. Another study conducted by Binoy *et al*.,[4] had reported photosensitivity in 32% of SLE patients. Raynaud's phenomenon was observed in 45% of the cases, whereas Malaviya *et al*., [11] from North India and Vaidya *et al* (1997) from western India have reported Raynaud's phenomenon in 32% and 15% of the cases respectively. In the present study Alopecia was seen in 11% of SLE patients.

On the other hand Malaviya *et al.,*[10] had reported 21% Alopecia SLE cases from North India. These variations may be attributable to the climatic conditions or other environmental factors of that particular region. Regarding the immunological studies Al-maini *et al*.,[10] from Muscat had demonstrated ENA antibodies in 64% of SLE.

However there seems to be a geographical and ethnical difference in the ENA antibody prevalence around the world. Many of the previous studies around the world almost correlate with our study in Tamilnadu SLE population with 69% positivity for ENA.Another significant observation was, 63% of SLE patients were positive for Sm antibodies in Chennai. Previous study in India in New Delhi by Malaviya *et al* .,[11] showed 17% positivity.In European population only 4-7% positivity was reported by Bernstein *et al*[3] and Gorden *et al*[7].

However in Indian SLE patients higher incidence of anti Sm antibodies is observed which may probably indicate the severity of the SLE disorder in this part of the country. Very high prevalence of antibody to ENA and Sm antibodies and highest incidence in women in SLE patients in Tamilnadu are the important finding and needs further extensive study to understand the pathophysiology of SLE in South India.

Table 1 Clinical features of SLE patients

S.No	*Features*		*Positive (%)*
I	Sex	Female	94%
		Male	6%
II	Clinical	Fever and arthritis	52%
		Raynaud's Phenomenon	45%
		Malar rash	26%
		Nausea	21%
		Pleuritis and Photosensitivity	19%
		Thrombocytopenia	15%
		Oral ulcer	15%
		Seizures	10%
III	Immunological	Sm antibodies	63.4%
		Extractasble nuclear antigen	65.9%

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