http://jmscr.igmpublication.org/home/
ISSN (e)-2347-176x ISSN (p) 2455-0450
crossref DOI: https://dx.doi.org/10.18535/jmscr/v9i7.20

IGM Publication
Journal Of Medical Science And Clinical Research
An Official Publication Of IGM Publication

Pattern of Cognitive Dysfunction and Seizure in Systemic Lupus Erythematosus in a Tertiary Care Centre

Authors
Dr Suresh Raghavan[1*], Dr Krishna. S[2]
[1]Professor, Department of Medicine, Government Medical College, Kottayam
[2]Junior Resident in Medicine, Government Medical College, Tirunelveli
*Corresponding Author
Dr. Suresh Raghavan
Professor, Department of Medicine, Government Medical College, Kottayam,
Medical College Road, Gandhi Nagar, Kottayam, Kerala 686008, India

Introduction

CNS lupus (also referred to as neuropsychiatric lupus erythematous)[1] with diffuse manifestation appears to be primarily caused by autoantibodies directed to neuronal cells or their products. These autoantibodies are hypothesized to affect neuronal function in a generalized manner. Studies suggest that increased levels of inflammatory cytokines, induction of nitric oxide production, oxidative stress, and excitatory amino acid toxicity also may contribute to diffuse CNS dysfunction in SLE. Patients with acute encephalopathy frequently demonstrate elevated levels of antineuronal antibodies or other evidence of autoantibody production in the cerebrospinal fluid. As in multiple sclerosis, elevated levels of IgG and oligoclonal bands are markers of abnormal autoantibody production within the CNS and are frequently present in CNS lupus with diffuse manifestations. In patients with diffuse CNS lupus who present with primarily psychiatric disease, serum antiribosomal P antibodies appear to be a helpful diagnostic marker.

CNS lupus with focal manifestations is most likely to be related to intravascular occlusion. Magnetic resonance imaging (MRI), which is much sensitive than computed tomography (CT) scanning, almost always shows abnormalities characteristics of ischemic damage in these patients. Furthermore, these patients frequently demonstrate significantly elevated serum levels of antiphospholipid antibodies, which are associated with intravascular occlusion. Less commonly, evidence of vasculitis is apparent.

This study aims to study the cognitive dysfunction and seizure in SLE.

Aim & Objective

To identify the patterns of cognitive dysfunction and seizure in SLE patients attending tertiary referral teaching institute in South Kerala.

Materials and Method

Study Design

Hospital based cross sectional comparative study of 50 patients with SLE with age, sex and

education matched control patients for over a period of one year.

Cases

Patients admitted to the Department of Medicine with a diagnosis of SLE.

Inclusion Criteria

1. All patients aged over 18 years with a diagnosis of SLE attending tertiary referral teaching institute including both in-patients and out-patients.
2. Both new and previously diagnosed cases are included in the study.
3. The diagnosis of SLE is made on the basis of the 1982 revised America Rheumatic Association criteria updated 1997, modified in 2012[2] (SCLICC 2012), Four out of the following Criteria should be satisfied for diagnosing SLE.

Exclusion Criteria

1. Those who are not willing for or in whom proper cognitive assessment cannot be done for any reasons.
2. Those who are admitted with medical illnesses interfering with proper assessment.

Evaluation

All patients with a diagnosis of SLE attending outpatient clinic and as impatient in Govt. medical college will be evaluated.

A detailed history, clinical examination and investigations with particular reference to the nervous system examination including cognition is taken.

Cognition assessed by administering instruments which are available in local language to the patient.

Information on cognitive abnormality will be extracted fromclose relative by using behavioral inventory.

For assessing disease activity, the Systemic Lupus Erythematosus Disease Activity Index (SLEDAI). SLEDAI scoring system is the most commonly used index. There are 24 features to record. A weighted score is given so that the more serious manifestations such as vasculitis, renal manifestations and neurological features, score more highly than others. The maximum potential score is 105. Laboratory tests which are useful in the assessment of disease activity include the blood counts, erythrocyte sedimentation rate, urine analysis, anti dsDNA antibodies, C3 and C4 levels. The ACE (Addenbrooke Cognitive Examination) is a brief cognitive test that assesses five cognitive domains, namely attention/orientation, memory, verbal fluency, language and visuospatial abilities. Total score is 100, higher scores indicate better cognitive functioning. It contains 5 sub-scores, each one representing one cognitive domain: orientation (10 points), attention (8 points), memory (35 points), verbal fluency (42 points) and visuospatial (5 points).

The data analysis was done with SPSS software version 17.0

Observation and Result

In this study group of cases and controls, all were females. 90% of patients at diagnosis are women of child bearing age. The main duration of diagnosis of SLE was 52 months with a standard deviation of 42.

Table No. 1: Age distribution of cases and control

Group	AGE GROUP	Frequency	Percent
Cases	Less than 20	2	5.0
	20 to 29	13	32.5
	30 to 39	14	35.0
	40 to 49	9	22.5
	Above 50	2	5.0
	TOTAL	**40**	**100.0**
Controls	Less than 20	2	5.0
	20 to 29	13	32.5
	30 to 39	14	35.0
	40 to 49	9	22.5
	Above 50	2	5.0
	TOTAL	**40**	**100.0**

Figure 1

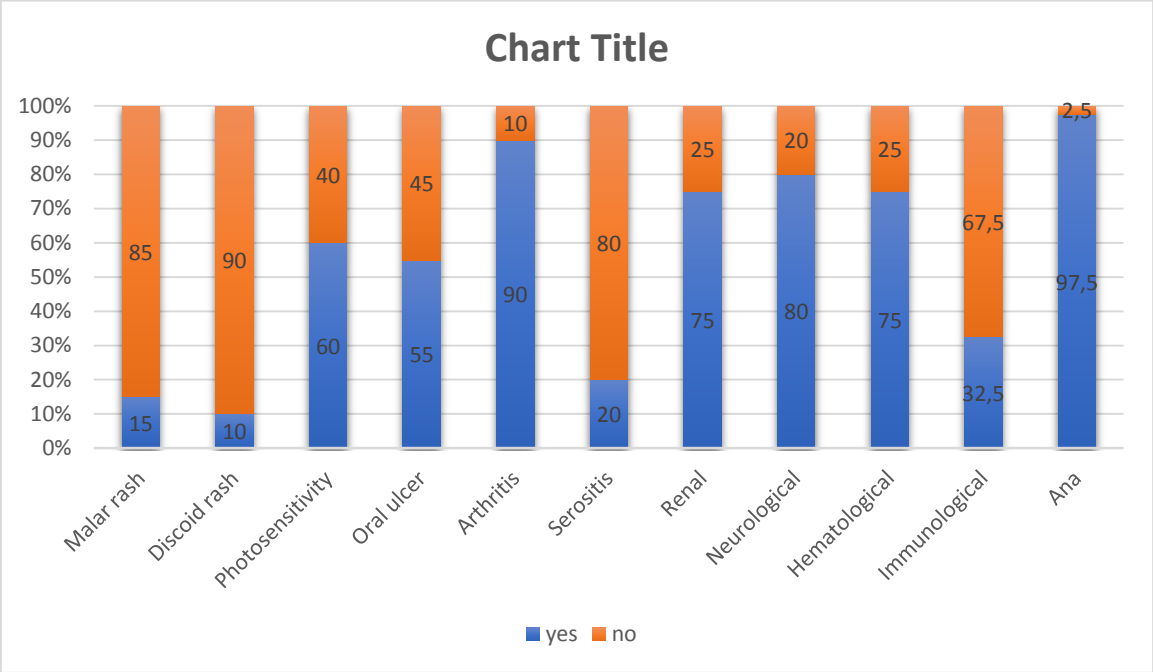

Figure 1 shows the most common in the study being ANA positivity followed by arthritis then neurological, renal and haematological involvement. Based on reversed ACR classification criteria for SLE (1997 update), modified in 2012.

Figure 2

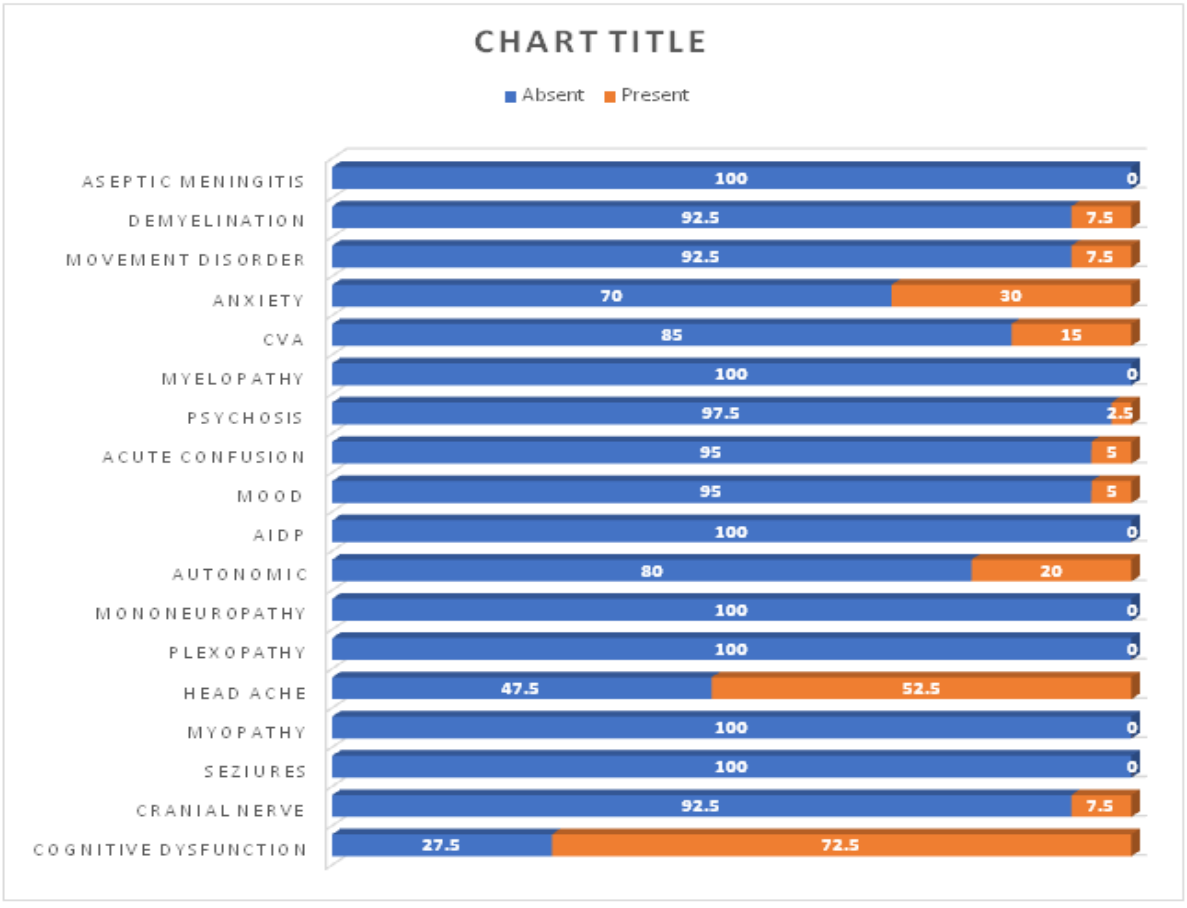

Figure 2 shows cognitive dysfunction is the most common presentation, followed by head ache and anxiety. No patient is found having seizure attack.

The table below shows the mean, standard deviation and the third percentile score. The cognitive impairment in a domine was taken when the score was less than the third percentile of controls:

GROUP		Orientation	Attention	Memory	Verbal Fluency	Visuospatial Ability
CASES	Mean	9.02	7.28	22.28	36.25	4.22
	Standard Deviation	1.000	1.219	3.863	2.363	1.025
	Third Percentile	7.00	3.46	14.23	31.46	1.23
CONTROL	Mean	9.60	7.90	27.62	41.52	4.98
	Standard Deviation	0.709	0.304	0.897	0.847	0.158
	Third Percentile	8.00	7.00	24.23	39.00	4.23

Figure 3

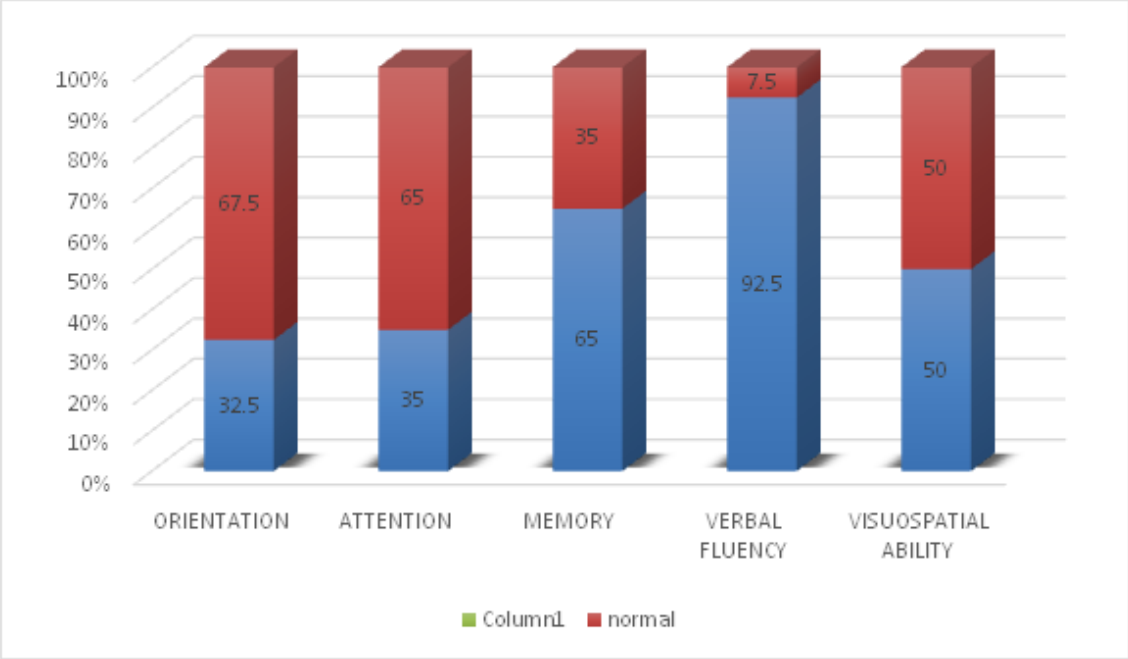

Figure 3 shows the percentage wise impairment in each cognitive domain

Cognitive Domains

Group Statistics

	GROUP	N	MEAN	STANDARD DEVIATION
ORIENTATION SCORE	1	40	9.02	1.000
	2	40	9.60	0.709
ATTENTION SCORE	1	40	7.28	1.219
	2	40	7.90	0.304
MEMORY SCORE	1	40	22.28	3.863
	2	40	27.62	0.897
VERBAL SCORE	1	40	36.25	2.367
	2	40	41.52	0.847
VISUAL SCORE	1	40	4.22	1.025
	2	40	4.98	0.158

Group 1 – Cases, Group 2- Controls

ACE SCORE contains 5 sub scores, each one representing one cognitive domain. This table shows the maximum score of the mean and standard deviation.

Discussion

The most common neuropsychiatric manifestation in this study is cognitive dysfunction seen in 72.5%, followed by head ache 52.5%, anxiety 30%, autonomic-manifestation 20%, cerebrovascular accident 15%, movement disorder 7.5%. These finding are similar to the study by H.Ainiala et al[3]. Movement disorder mainly bilateral distal fine tremor is also noted in this study, these findings are similar to the other studies[4,5,6]

All five cognitive domains are affected in 12.5% patients, four domains are affected in 22.5% patients, three domains are affected in 22.5% with verbal fluency, memory and visuospatial ability, one domain affected in 17.5% with all being verbal fluency, and none of them are affected in 5%.

Memory and verbal fluency was affected in 25 SLE patients (62.5), are the two main domains affected in this study. The least affected domain was orientation and the most affected is the verbal fluency.

Various studies of cognitive dysfunction by Maneeton et al[7], Kozora et al[8] and H.Ainiala[3] in SLE shows a variable result.

In most of the studies it is clear that cognitive dysfunction in SLE is not a single syndrome. Cognitive dysfunction in SLE is often spread over a 2-5year period [9,10], a feature not accounted for a short-term-studies. The domains impaired in recent studies[3,11,12,13,14] shows a mixed pattern involving visuospatial, verbal fluency, attention, memory. In this study no patients with seizure activity were noticed, whereas most of the studies show around 8-10%[15,16,17].This is probably due to the short duration of the study,younger age patients with lack of comorbidities and small number of cases.

Reference

1. ACR Ad Hoc Committee on Neuropsychiatric Lupus Nomenclature: The American College of Rheumatology nomenclature and case definitions for neuropsychiatric lupus syndromes, Arthritis Rheum 42:599,1999.
2. Adapted from Arthritis and Rheumatism 2012; 64; 2677-86.
3. Ainiala H, Loukkola J, et al. the prevalence of neuropsychiatric syndrome in systemic lupus erythemato-sus. Neurology 2001; 57: 496-500.
4. Feinglass EJ, Arnett FC, Dorsch CA, et al. Neuropsychiatric manifestations of Systemic Lupus Eruthematosus: diagnosis, clinical spectrum, and relationship to other features of the disease. Medicine 1976; 55: 323-339.
5. JOHN G. HANLY, GRACE McCURDY, LISA FOUGERE. Neuropsychiatric Events in Systemic Lupus Erythematosus: Attribution and Clinical Significance. The Journal of Rheumatology 2004; 31:21 56-62.
6. Melanie J. Harrison, and Lisa D. Ravdin. Cognitive dysfunction in neuropsychiatric systemic lupus erythematosus. Current Opinion in Rheumatology 2002, 14:501-514.
7. BenchalakManeeton, NarongManeeton; Cognitive Deficit in Patients with Systemic Lupus Erythematosus. ASIAN PACIFIC JOURNAL OF ALLERGY AND IMMUNOLOGY (2010) 28: 77-83.
8. Elizabeth Kozora, 1 John G. Hanly, Cognitive Dysfunction in Systemic Lupus Erythematosus. Past, Present and Future; ARTHRITIS &RHEUMATISM Vol. 58, No. 11, November 2008, pp3286-3298.
9. Hanly JG, Cassell K, Fisk JD. Cognitive function in Systemic Lupus Erythema-tosus: results of a five-year prospective study. Arthritis rheum 1997;40:1542-43.
10. Hay EM, Huddy A, Black D, Mbaya P, Tomenson B, Bernstein RM, et al. prospective study of psychiatric disorder and cognitive function in Systemic Lupus Erythematosus. Ann Rheum Dis 1994; 53: 298-303.

11. Brey R, Holiday SL, Saklad AR. Neuropsychiatric Syndrome in Lupus: prevalence using standardized definitions. Neurology. 2002;58(8): 1214-1220.
12. Afeltra A, Garzia P, MitterhoferAP, Vadacca M, Galluzzo S Del Porto F, et al. Neuropsychiatric lupus syndrome. Neurology 2003; 61: 108-10.
13. Herranz MT, Rivier G, Khamashta MA, Blaser KU, Hughes GR. Association between antiphospholipid antibodies and epilepsy in patients with systemic lupus erythematosus. Arthritis Rheum 1994;37: 568-71.
14. Liou HH, Wang CR, Chen RC, Chuang CY, Chiang IP, et al. Elevated levels of anticardiolipin antibodies and epilepsy in lupus patients. Lupus 1996; 5:307-12.
15. Denburg SD, Carbotte RM, Ginsberg JS, Denburg JA. The relationship of antiphospholipid antibodies to cognitive function in patients with systematic lupus erythematosus. J IntNeuropsycholSoc 1997; 3:377-86.
16. SD Denburg and JA Denburg; Cognitie dysfunction and antiphospholipid antibodies in Systemic Lupus Erythematosus; Lupus 2003; 12; 883.
17. West SG. Neuropsychiatric lupus. Rhem Dis Clin North Am 1994; 20; 129-158.