STUDY OF PERIPHERAL NEUROPATHY WITH SPECIAL REFERENCE TO NERVE CONDUCTION TEST IN SLE

Usha Rani Pegu[1], Rajib Kumar Borah[2]

[1]Associate Professor, Department of Medicine, Jorhat Medical College, Jorhat, Assam.
[2]Assistant Professor, Department of Medicine, Jorhat Medical College, Jorhat, Assam.

ABSTRACT

BACKGROUND

SLE (systemic lupus erythematous) is an autoimmune disease, which can lead to damage to any organ in the body mediated by tissue binding autoantibodies. It is not that uncommon in North Eastern part of India. Mainly, the female sex in their reproductive age group are affected. Of all the complications, neuropsychiatric complication is also a common manifestation of SLE.

The aim of the study is to-

1. Find the incidence of peripheral neuropathy in SLE patients.
2. Its association with morbidity.

MATERIALS AND METHODS

Patients were enrolled from 1st September 2010 to 31st August 2011 who attend the Department of Medicine, Assam Medical College, Dibrugarh. A total of 73 patients were enrolled. All patients were above 12 years of age. SLE was diagnosed by 1997 updated ACR criteria. Peripheral neuropathy was diagnosed via nerve conduction velocity test.

RESULTS

Of the 73 patients, 39 patients had evidence of peripheral neuropathy. Of the 39 patients, 28 patients were asymptomatic. The remaining 11 symptomatic patients mainly complained of pins and needles in their feet and 2 additionally complained of tingling sensation in the lower limbs.

CONCLUSION

From the study, it is seen that the sural nerve is the most common nerve to be affected in SLE. So, doing Nerve Conduction Study (NCS) on the sural nerve singly could be taken as a screening test to diagnose peripheral neuropathy in SLE patients. But, as the number of patients in the study was less, a study with larger number of patients would be required to confirm that the sural nerve is the most common nerve to be affected in SLE.

KEYWORDS

SLE, Peripheral Neuropathy, Nerve Conduction Velocity test.

HOW TO CITE THIS ARTICLE: Pegu UR, Borah RK. Study of peripheral neuropathy with special reference to nerve conduction test in SLE. J. Evid. Based Med. Healthc. 2017; 4(64), 3846-3848. DOI: 10.18410/jebmh/2017/768

BACKGROUND

SLE commonly referred to as lupus is an autoimmune disease in which the body's own immune system wrongly attacks its own body parts such as the joints, skin and other body tissues. Common symptoms are joint pain, swelling of joints, chest pain or loss of hair. As SLE (systemic lupus erythematosus) is an autoimmune disease, it causes tissue damage via tissue binding autoantibodies and immune complexes.[1] The disease goes through many remission and exacerbation and although invariably affects the musculoskeletal system and skin. It frequently gives rise to manifestations in the nervous system, kidneys, heart and lungs.[2] SLE is defined as a rheumatic disease characterised by autoantibodies directed against self-antigens, immune complex formation and immune dysregulation resulting in damage to essentially any organ, e.g. kidney, heart, lungs and nervous system.[3] In 1948, due to the discovery of Lupus Erythematosus (LE) cells, diagnosis of SLE had become easier.

SLE covers not only the whole spectrum of clinical medicine, but has made inroads into the immunology - the Cinderella of Medicine, molecular biology, biochemistry - the frontiers of basic science. It was said previously that "if one knew syphilis, one knew medicine." Today, it can be said "One must know medicine to understand and treat SLE."[4]

Worldwide, the prevalence of SLE is 12-15/1,00,000 population with incidence of 1.8-7.6/1,00,000 population per year.[5] A prevalence study done in India found a point prevalence of 3.2/1,00,000 population. Thus, the prevalence of SLE might be low in India in comparison to the world average, but has considerable impact on the patient and their family. It is found to predominantly affect women in their reproductive age group.[1]

Financial or Other, Competing Interest: None.
Submission 25-07-2017, Peer Review 30-07-2017,
Acceptance 06-08-2017, Published 09-08-2017.
Corresponding Author:
Dr. Rajib Kumar Borah,
Assistant Professor, Department of Medicine,
Jorhat Medical College, Jorhat - 785001, Assam.
E-mail: rajibkumarborah@gmail.com
DOI: 10.18410/jebmh/2017/768

SLE patients generally complains of pain in the joints, skin rash, sunburn, but seldom complains of tingling sensation or burning sensation in the hands and legs. SLE patients having clinically symptomatic peripheral neuropathy ranges from 2% to 18%.[6,7] The SLE patients having neuropsychiatric manifestations generally are found to be having peripheral neuropathy. SLE patients having symptoms of peripheral neuropathy only without involvement of any other system is rare. As SLE patients having peripheral neuropathy is uncommon in comparison to the other complication that occurs in these patients. We proposed of doing a study to find the incidence of peripheral neuropathy in SLE patients in this part of India. We also found that study done on this aspect of SLE is not much in India.

Aims and Objectives

So, it was thought to be appropriate to conduct a study on SLE patients to see-

1. Their association with peripheral neuropathy.
2. The correlation of peripheral neuropathy with morbidity of the patients.

MATERIALS AND METHODS

The study was carried out for a duration of one year. A total of 73 patients having SLE were included in the study. All patients were above 12 years of age. SLE was diagnosed with the help of 1997 updated ACR criteria of ≥4 out of 11 for the diagnosis of SLE.

A detailed history of the patients was taken and a thorough clinical examination of the patients were done. The following points were taken as exclusion criteria for participation in the study.

1. Diabetes mellitus.
2. Connective tissue disorder other than SLE.
3. Thyroid disorder (hypothyroidism or hyperthyroidism).
4. Present or past history of tuberculosis.
5. History of exposure to pesticides.

Disease activity index was calculated from signs and symptoms recorded and routine.

Laboratory tests during the time of inclusion of the patient and then on every outpatient clinic visit. The Systemic Lupus Erythematous Disease Activity Index (SLEDIA)[8] was used for disease activity scoring. Patients were categorised according to their disease activity score into 3 groups- mild (less than 10), moderate (10-20) and severe (more than 20).[8,9]

Sl. No.	Criterion	Definition
1.	Malar rash	Fixed erythema, flat or raised over the malar eminences trending to spare the nasolabial fold
2.	Discoid rash	Erythematous circular raised patches with adherent keratotic scaling and follicular plugging; atrophic scaring may occur.
3.	Photosensitivity	Skin rashes as a result of unusual reaction to sunlight by patient history or physician observation.
4.	Oral ulcer	Oral or nasopharyngeal ulceration usually painless observed by a physician.
5.	Arthritis	Nonerosive arthritis involving 2 or more peripheral joints characterised by tenderness, swelling or effusion.
6.	Serositis	a. Pleuritis - Convincing history of pleuritic pain or rub heard by a physician or evidence of pleural effusion. b. Pericarditis - Documented by ECG or rub or evidence of pericardial effusion.
7.	Renal disorder	a. Persistent proteinuria greater than 0.5 g per day or ≥3+ or b. Cellular cast - red cell, haemoglobin, granular or mixed.
8.	Neurological disorder	a. Seizure - in the absence of offending drugs or known metabolic derangements, e.g. uraemia, ketoacidosis or electrolyte imbalance. b. Psychosis - in the absence of offending drugs or known metabolic derangements, e.g. uraemia, ketoacidosis or electrolyte imbalance.
9.	Haematologic disorder	a. Haemolytic anaemia with reticulocytosis or b. Leucopenia - less than 4000/cmm total on 2 or more occasions. or c. Lymphopenia - less than 1500/cmm on 2 or more occasions. or d. Thrombocytopenia - less than 10,000/cmm in the absence of offending drugs.
10.	Immunologic disorder	a. Anti-ds DNA antibody, and/or b. Anti-SM antibody, and/or c. Antiphospholipid antibody.
11.	Antinuclear antibodies	An abnormal titre of ANA by immunofluorescence or an equivalent assay at any point in time in the absence of drugs known to induce ANAs.

Updated ACR Criteria for Diagnosis of SLE[5]

Peripheral neuropathy was detected with the help of Nerve Conduction Study (NCS). It is a test used for evaluation of electrical conduction of motor and sensory nerves of the human body. Those patients in our study were diagnosed to be having peripheral neuropathy who had any abnormal values in motor and sensory distal latency, sensory action potential, motor action potential or conduction velocity affecting 2 or more nerves. The right median, ulnar, peroneal, tibial and sural sensory and motor nerve of each participant were selected for the test.

RESULTS

A total of 73 patients were included in the study. Of them, 39 patients were found to be having peripheral polyneuropathy through diagnostic test. Of the 39 patients, 28 patients were completely asymptomatic when enquired. The remaining 11 symptomatic patients mainly complained of pins and needle sensation in the feet. Only 2 patients complained of tingling sensation in lower limbs.

No. of Patients	Patients Having PN	%
73	39	53.4%

Table 1. Number of Patients Having PN

No. of Patients Having PN	Symptomatic	Asymptomatic	% of Symptomatic Patients
39	11	28	39.28%

Table 2. Number of Symptomatic Patients

No. of Patients Having PN	No. of Patients Having Sural Nerve Involvement	% of Patients Having Sural Nerve Involvement
39	36	92.3%

Table 3. Number of Patients Having Sural Nerve Involvement

DISCUSSION

All patients having peripheral neuropathy were having active disease. Most of the patients did not have complaints of symptoms regarding peripheral neuropathy (60.72% of the patients diagnosed to be having neuropathy were asymptomatic). Of the 39.28% symptomatic patients, i.e. 11 patients, only 3 patients had symptoms, which needed medications. The other 8 patient's symptoms were dealt with reassurance only without any medication. Of the three patients, two patients complained of tingling sensation in the lower limbs. Symptoms in the upper limbs were mostly absent. All the patient had Systemic Lupus Erythematosus Disease Activity Index (SLEDAI) in the mild group range.

The most sensitive nerve to give abnormal results in the patients in our study was the sural nerve. The sensory nerves were more susceptible to neuropathy than the corresponding motor nerves. The amplitude of the action potential was found to decrease more in comparison to distal latency in both sensory and motor nerves.

CONCLUSION

From the study, it is seen that the sural nerve is the most common nerve to be affected in SLE. So, doing Nerve Conduction Study (NCS) on the sural nerve singly could be taken as a screening test to diagnose peripheral neuropathy in SLE patients. But, as the number of patients in the study was less, a study with larger number of patients would be required to confirm that the sural nerve is the most common nerve to be affected in SLE.

REFERENCES

[1] Hahn BH. Systemic Lupus Erythematosus. Harrison's principle of internal medicine. 17th edn. Vol 2. New York: McGraw-Hill 2008:2075-2083.

[2] Rahman A, Isenberg DA. Systemic lupus erythematosus. N Engl J Med 2008;358(9):929-939.

[3] Klein-Gitelman MS. Associate professor of Pediatrics, North Western University, Feinberg school of medicine: head division of Rheumatology, children's memorial hospital. Systemic lupus erythematosus. 2010.

[4] Das S, Sainani. Clinically pertinent and cost effective use of laboratory investigation. 1999:190-196.

[5] Malaviya AN, Singh RR, Singh YN, et al. Prevalance of systemic lupus erythematosus in India. Lupus 1993;2(2):115-118.

[6] Huynh C, Ho SL, Fong KY, et al. Peripheral neuropathy in SLE. Journal of Clinical Neurophysiology 1999;16(2):164-168.

[7] Hochberg MC. Updating the American College of Rheumatology revised criteria for classification of SLE. Arthritis Rheum 1997;40(9):1725.

[8] Institute for algorithmic medicine. Algorithm for Systemic Lupus Erythematosus (SLE) disease activity index. The institute for algorithm medicine, 2007.

[9] Griffiths B, Mosca M, Gordon C. Assessment of patients with systemic lupus erythematosus and the use of lupus disease activity indices. Best Pract Res Clinical Rheumatol 2005;19(5):685-708.