



CLINICAL SCORING SYSTEMS AND NERVE CONDUCTION STUDY IN DETECTION OF DIABETIC NEUROPATHY

Dr Dinesh Kumar*

Post Graduate student, ESI-PGIMSR, Basaidarapur, New Delhi. *Corresponding Author

Dr Rajesh Chetwal

Head of Medicine Department, ESI-PGIMSR Basaidarapur, New Delhi.

ABSTRACT

Peripheral neuropathy is one of the long-term complications of diabetes. Comparison of the efficacy of clinical scoring and nerve conduction studies in detection of peripheral neuropathy was done in diabetic patients. A total of 130 patients with diabetes mellitus were included with detailed history followed by clinical examination for detection of neuropathy using 1) NSS (modified Neuropathy Symptom Score), 2) NDS (modified Neuropathy Disability Score), 3) MNSI (Michigan Neuropathy Screening Instrument), 4) Semmes Weinstein monofilament, and Nerve conduction studies including F wave latency, Amplitude, Conduction Velocity and Calculation of Sural Radial Amplitude Ratio (SRAR). 51 out of 130 patients (39.23%) had symptomatic neuropathy and 79 (60.67%) were asymptomatic. Though NCS is considered the gold standard for diagnosis of diabetic peripheral neuropathy, it is cumbersome, time consuming, needs expertise and is painful to the patient. NDS and NSS clinical scoring systems instead of NCS can be used for screening, at places with limited resources and facilities for early detection of neuropathy in asymptomatic diabetic patients.

KEYWORDS : Diabetes Mellitus, Peripheral neuropathy, Nerve conduction studies, modified Neuropathy Symptom Score, modified Neuropathy Disability Score, Michigan Neuropathy Screening Instrument, Semmes Weinstein monofilament, sural-radial amplitude ratio.

INTRODUCTION:

Diabetic neuropathy is defined as peripheral, somatic or autonomic nerve damage attributed solely to diabetes mellitus. There is a long pre-symptomatic phase before appearance of neuropathy, therefore it is frequently non-diagnosed until complications have already occurred. This accounts for a high number of hospitalization among those with diabetes and is the most common cause of foot ulcers and non-traumatic amputations. The absence of symptoms should not be equated with the absence of neuropathy; up to 50% of patients with Diabetic neuropathy may be asymptomatic but are still at risk of foot ulcers. Therefore, monitoring for neuropathy should be a regular part of the clinical care of patients with diabetes.

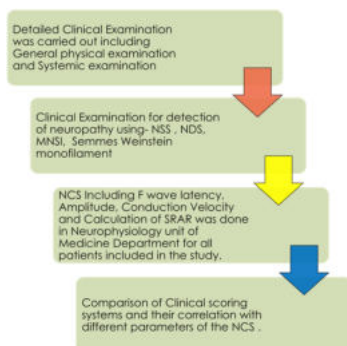
Several clinical scores have been developed to assess Diabetic neuropathy, including the modified Diabetic Neuropathy Symptom (DNS) score, modified Neuropathy Symptom Score (NSS), Diabetic Neuropathy Examination (DNE), and modified Neuropathy Disability Score (NDS).³ The two clinical scoring systems NSS and NDS which are common, easy to perform along with MNSI (Michigan Neuropathy Screening Instrument), and Semmes Weinstein monofilament (SWMF), compare and correlate them with NCS including F-wave latency, Amplitude, Conduction Velocity and Calculation of Sural Radial Amplitude Ratio (SRAR).

MATERIALS & METHODS:

It was an observational study, including 130 patients of Diabetes attending medicine department of ESI Hospital with inclusion criteria as diagnosed diabetic patients, age 18 years or above, with valid informed consent.

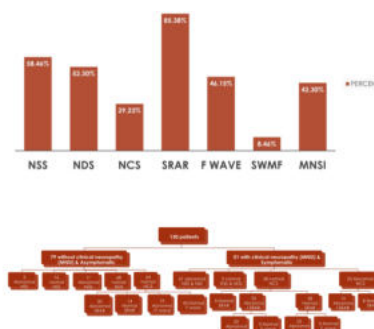
EXCLUSION CRITERIA:

Any other clinical condition that causes neuropathy.



RESULT & DISCUSSION :

Diagnosis of Diabetic Peripheral Neuropathy according to various screening tools -



If NCS is taken as gold standard, then MNSI has a sensitivity of 64.3%, specificity of 67.6%, positive predictive value of 45% and negative predictive value of 82.1%. The sensitivity and specificity of NSS is 96.2% and 94.44% and of NDS is 100% and 82.26% respectively when NCS is taken as the gold standard. It was also observed that every patient with an abnormal NCS, also had an abnormal SRAR. Among those with a normal NCS also, 79.34% of the patients had an abnormal SRAR. Hence the sensitivity was 100% and the specificity was 91.2%. There was a significant difference in the sensitivity and specificity of NSS and NDS with MNSI. NSS compared to clinical diagnosis of MNSI was 96.2% sensitive and 94.22% specific, positive predictive value was 96.2% and negative predictive value was 94.44% statistically. NDS compared to clinical diagnosis of MNSI was 100% sensitive and 82.26% specific, positive predictive value was 86.08% and negative predictive value was 100%.

The sensitivity and specificity of MNSI was 64.3% and 67.6% respectively.

SRAR had the highest sensitivity of 100%, but a low specificity of 20% based on NCS.

CONCLUSION:

Though NCS is considered the gold standard for diagnosis of diabetic peripheral neuropathy, it is cumbersome, time consuming, needs expertise and is painful to the patient. NDS and NSS clinical scoring systems instead of NCS can be used for screening, at places with limited resources and facilities for early detection of neuropathy in asymptomatic diabetic patients.

REFERENCES:

1. J.H. Bowker. Levin and O'Neal's: The Diabetic Foot; 2008.
2. BarbanoR, Hart-GouleauS, Pennella-VaughanJ, DworkinRH. Pharmacotherapy of painful diabetic neuropathy. Current Science Inc 2003; 7(3):169-77.
3. Dyck PJ. Detection, characterization, and staging of polyneuropathy: