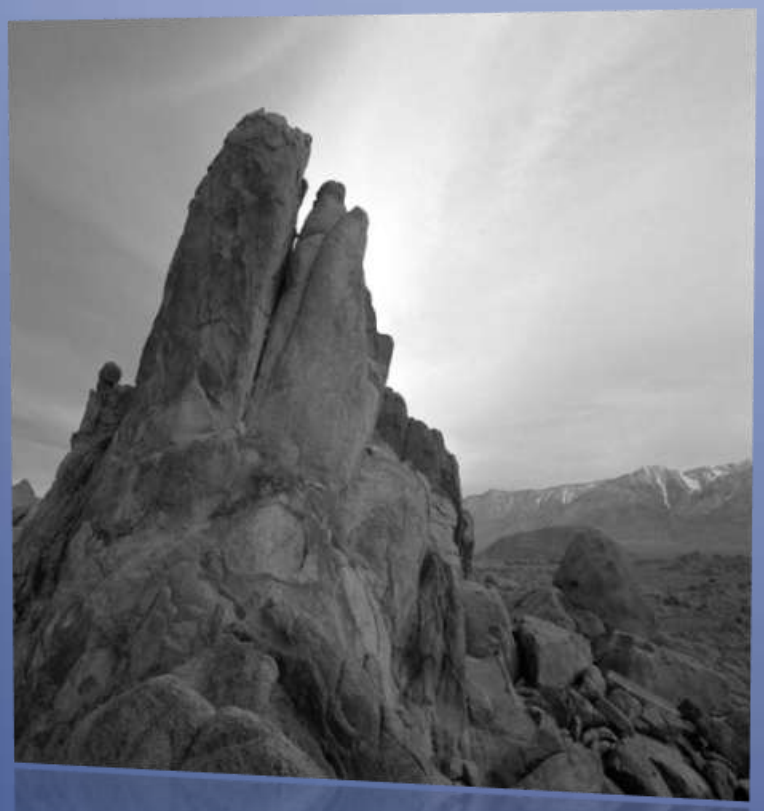

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Role of an Advanced Diagnostic Technique Electromyography (EMG) and Nerve Conduction (NC) in *Vatavyadhi- Saravangaghat* w.s.r. to Guillain Barre Syndrom (GBS)

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ABSTRACT

Nerve and muscle problems cause muscles to react in abnormal ways. During leg pain or numbness tests are carried out to know how much nerves are affected, how well nerves in arms and legs are working. Nerve conduction (NC) study is done to find the above damage to peripheral nervous system. An electromyogram measures electrical activity of muscle at rest and during contraction Impulses make the muscles react in specific ways. NC studies measure how well and how fast the nerves can send electrical signals. Nerves control muscles in the body with electrical signals called impulses. These tests are often used to find nerve problems such as Guillain-Barre Syndrome (GBS). GBS is a rare but serious autoimmune disorder in which the immune system attacks healthy nerve cells in peripheral nervous system. In *Ayurved Lakshanas* of *Vata vyadhi – Sarvangaghat* such as weakness, numbness, tingling sensation can be correlate with GBS.

KEYWORDS

Management

Greentree Group

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INTRODUCTION

Electrodiagnostic testing includes a range of specialized tests which include conduction studies (NCS) and electromyography (EMG) that are used to evaluate the conduction of electrical impulses down peripheral nerves. These tests are useful for the diagnosis of neuromuscular dysfunction without further testing. However, in some cases, the subtlety of sensory or motor deficits necessitates further workup for a conclusive diagnosis[1].These tests are often used to find nerve problems such as Guillain-Barre Syndrome (GBS).

Guillain – Barre Syndrome (GBS) is the foremost cause of acute, generalized peripheral neuropathic weakness. GBS is a rare but serious autoimmune disorder in which the immune system attacks healthy nerve cells in peripheral nervous system[2]. GBS is rapidly progressive limb weakness with or without distal limb paresthesis and reduced deep tendon reflexes. GBS is manifested as rapidly evolving areflexic motor paralysis with or without sensory disturbance. The usual pattern is ascending paralysis, initial weakness in feet migrating towards trunk is the most typical symptom[3].

In *Ayurved Lakshanas* of *Vatavyadhi* – *Sarvangaghat* such as weakness, numbness, tingling, decrease in sensation can be correlated with GBS. As per *Ayurvedic* classics this condition can be correlated with *Sarvagaghat*[4]. *Sarvangaghat* is one of the *Nanatmaja Vatavyadhi*[5].*Acharya Charak* opines that it is mainly due to *Vata Dosh Prakop* which further causes *Rukshata-Parushta-Kharata* in *Strotasa*. According to us it is caused due to *Dhatukshay*.

Electromyography (EMG) is an effective diagnostic tool because it records muscle activity and can show loss of individual nerve impulses due to the slowness in nerve responses. Nerve conduction (NC) is performed with EMG, it records the speed at which signals travel along the nerve. There are electro diagnostic abnormalities in GBS due to slow conduction in signals. To determine if there are early pattern suggestive of GBS and to identify the percentage of patient whose condition can be diagnosed with reasonable certainty in the first week. GBS most often affects the nerve covering myelin sheath such damage is called demyelination[6].

Electro diagnostic studies often show evidence of patchy demyelination manifested as conduction block and slow motor conduction velocity. EMG and NC find the cause of weakness, twitching, paralysis of muscle, problems in the muscle, the nerve supplying muscle can cause these

symptoms. NC study evaluates the nerves that control muscle movement, while needle EMG assesses nerve activity within the muscle. NCV is related to diameter of the nerve. Abnormal results usually indicate nerve or muscle damage or destruction including axonopathy, conduction block, demyelination. Standard NC studies typically include motor nerve conduction, sensory nerve conduction, F-wave, H-reflexes. Sensory and motor nerve conduction studies involve analysis of specific parameters, including latency, conduction velocity and amplitude. Onset latency is the time it takes for the stimulus to initiate an evoked potential and reflects the conduction along the fastest fibers. Peak latency is the latency along the majority of axons and is measured at the peak amplitude[7].

Amplitude is the sum of the electric potential differences within a muscle relating to all of the active motor units in the vicinity of the electrodes on the skin. Amplitude measures the extent of muscle contraction. Latency is the time period between the stimulus and the muscle movement.

AIM

To highlight role of an advanced diagnostic technique electromyography (EMG) and nerve conduction (NC) in *vatavyadhi- saravangaghat* w.s.r.to Guillain Barre Syndrom (GBS).

OBJECTIVES

1. To study role of an advanced diagnostic technique electromyography (EMG) and nerve conduction (NC).
2. To study *vatavyadhi- saravangaghat* w.s.r.to Guillain Barre Syndrom (GBS).

MATERIALS AND METHODS

All the related literature was taken from various *Ayurvedic Samhitas* as well as some modern text books concerned for literature.

RESULTS

Abnormal EMG results usually indicate nerve or muscle damage. We are not able to diagnose different *Sampraptijanya Sarvangaghat* by *Ayurvedic* methodology. A doctor will usually request an EMG or other modern diagnostic techniques when someone is showing symptoms of muscle or nerve disorder.

DISCUSSION

EMG and NC are typically indicated when there is pain in the limbs, weakness from spinal nerve compression or concern about

some other neurological injury or disorder. The information gathered from needle EMG is combined with that provided by NC studies to determine the overall interpretation. The results of the analysis are collective studies often permits delineation of the types of underlying pathologic process such as polyneuropathy, mononeuropathy. According to *Ayurved* in *Vatavyadhi - Sarvangaghata* there is *Shaithilya* in both upper and lower limbs. *Sarvangaghata in Ayurveda* diagnosed on the basis of *Lakshanas*, *Nidana*, and *Samprapti*.We are not able to diagnosed deformity in exact muscle or nerve. EMG is a procedure that assesses the health of muscles and nerves. NC study evaluates the nerves that control muscle movement and needle EMG assesses nerve activity within the muscles.

CONCLUSION:

EMG results can help a practitioner to diagnose muscle or nerve disorder and disorders affecting the connection between nerves and muscles which includes GBS, Motor Neuron Disease (MND), Myasthenia Gravis, Pseudohypertrophy muscular dystrophy, Cervical myelopathy. Once diagnosis is confirmed it is very easy to give proper treatment and observe assessment of the disease. In this manner role of modern technology is useful in *Ayurvedic* practices.

ASSESSMENT CRITERIA:

EMG AND NC REPORT:

Normal EMG and NC report shown in below tables[8]: Normal EMG and NC report shown in below tables[8] (1-4):

Table 1 Motor Nerve Conduction

Nerve and site	Onset Latency	Amplitude	Segment	Latency Difference	Distance	Conduction Velocity
***MedianR. Wrist**	<4.4ms	>20mv	DigitII(index finger)-Wrist	>20mv	7cm	>45m/sec
***Ulnar R Wrist**	<3.5ms	>20mv	DigitV(little finger)-Wrist	>20mv	7cm	>45m/sec
***Median L Wrist**	<4.4ms	>20mv	DigitII(index finger)-Wrist	>20mv	7cm	>45m/sec
***Ulnar L. Wrist**	<3.5ms	>20mv	DigitV(little finger)Wrist	>20mv	7cm	>45m/sec
***Sural R. Lowar Leg**	---	>15mv	Ankle-Lower leg	>15mv	--	--
***Sural L Lower Leg**	--	>15mv	Ankle-Lower leg	>15mv	--	--

Table 2 Sensory Nerve Conduction

Nerve and site	Peak Latency	Amplitude	Segment	Latency Difference	Distance	Conduction Velocity
***MedianR Wrist**	<3.7ms	>20mv	DigitII(index finger)-Wrist	>20mv	14cm	>53m/sec
***Ulnar R Wrist**	<3.5ms	>20mv	DigitV(little finger)-Wrist	>20mv	14cm	>53m/sec
***MedianL Wrist**	<3.7ms	>20mv	DigitII(index finger)-Wrist	>20mv	14cm	>53m/sec
***Ulnar L.Wrist**	<3.5ms	>20mv	DigitV(little finger)Wrist	>20mv	14cm	>53m/sec
***Sural R. Lowar Leg**	<4.2ms	>15mv	Ankle-Lower leg	>15mv	14cm	>41m/sec
***Sural L Lower Leg**	<4.2ms	>15mv	Ankle-Lower leg	>15mv	14cm	>41m/sec

Table 3 F-Wave Studies

Nerve	F-Latency
Median R	<30ms
Ulnar R	<30ms
Median L	<30ms
Ulnar L	<30ms
Peroneal R	<60ms
Tibial R	<60ms
Peroneal L	<60ms
Tibial R	<60ms

Table 4 Niddle EMG Examination

	Insertion	Spontaneous activity			Volitional MUAPs					MaxVol. Activity		
Muscle	Insertion	Fibs	+Wave	Fasc	D*	A*	P*	C*	R*	A*	P*	E*
1st dorsal introsseous R.	N	None	None	None	N*	N	None	N	N	N	Full	Max.
Biceps brachii R	N	None	None	None	N	N	None	N	N	N	Full	Max.
Biceps brachii L	N	None	None	None	N	N	None	N	N	N	Full	Max
1st dorsal interosseous L	N	None	None	None	N	N	None	N	N	N	Full	Max

** D-Duration, A-Amplitude, P-Poly, C-Config, R-Recruitment, P-Pattern, E-Effort, N- Normal*

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