ABSTRACT

Introduction: Guillain Barre Syndrome is a life threatening disorder with about a quarter of patients requiring admission to intensive care unit for mechanical ventilation. The diagnosis of GBS is usually made on clinical grounds, supported by features of polyneuropathy on electrophysiology and examination of the cerebrospinal fluid. The prognosis of patients depends on early diagnosis and prompt treatment because the early diagnosis aid good outcome after treatment.8 Electrophysiological tests are very much helpful in early diagnosis of such patients. Although literature is available regarding the prevalence of clinical GBS and diagnostic utility of electrophysiological tests in GBS, it is insufficient in Indian context. Therefore, the present study is designed to find out the motor nerve conduction profile of GBS patients among GBS patients attending a rural hospital in Central India.

MATERIAL AND METHODS

Study Design: The study included all age group subjects residing in rural area of Wardha (Central India). The study was approved by the Institutional Ethics Committee and written informed consent was obtained from each study participant.

Study population and sample size: The study was conducted on 7 clinically diagnosed patients of Guillain Barre Syndrome referred to us from the department of Medicine and Paediatrics. All the subjects were asked detailed history and thorough clinical examination was documented.

Inclusion criteria: Clinically diagnosed GBS patients of all age groups and of both genders were included in the study.

Exclusion criteria:
- Those patients with cardiac pacemakers or cardiac pathology
- Myelopathy, Myopathy and Neuromuscular junction disorders like myasthenia gravis

Procedure and instruments: The present study was performed on RMS EMG EP Mark-II machine in the Clinical Neurophysiology Unit, Department of Physiology, and MGIMS Sevagram. All tests were performed by the same investigator and under constant room temperature (30°C) to shortlist the errors. History and clinical examination were recorded in structured format.

Electrophysiological Evaluation of Guillain Barre Syndrome

a) Motor Nerve Conduction Studies

Motor nerve conduction studies (MNCS) involve stimulation

INTRODUCTION

Guillain Barre Syndrome (GBS) is a condition in which there is a rapid-onset weakness of the limbs as a result of an acute polyneuropathy. The disease is usually triggered by an infection, which incites immune-mediated nerve dysfunction. During the acute phase, the disorder can be fatal requiring admission to intensive care unit for mechanical ventilation. Some patients are affected by variations in the function of the autonomic nervous system, which can lead to dangerous abnormalities in heart rate and pressure. The diagnosis of GBS is usually made on clinical grounds, supported by features of polyneuropathy on electrophysiology and examination of the cerebrospinal fluid.1–3 The recorded incidence rates for GBS are 1–2 per 100,000 population and the lifetime possibility of any individual acquiring GBS is 1:1000.4–6 Incidence and prevalence subtype of Guillain-Barre syndrome (GBS) differs geographically.7 The prognosis of patients depends on early diagnosis and prompt treatment because the early diagnosis aid good outcome after treatment.8
of motor nerve at two different sites with maximum stimulus and calculation of conduction velocity. Nerves tested were median, ulnar, tibial and peroneal nerves. Setting was kept at sweep speed 5 m/s, intensity 2 mV, frequency 2 Hz, filter between 2 Hz to 5 Hz and stimulus strength duration was 100 μs.

RESULTS

We recruited 7 clinically diagnosed patients of GBS in our study. Out of this 4 (57.14%) were male and 3 (42.85%) were female. The youngest patient was 6 years of age whereas the eldest patient was 71 years of age.

Distal motor latency: Increased distal motor latency (DML) was seen in all (100%) of the patients for both ulnar and median nerves. In lower limbs, increased distal motor latency was seen in bilateral tibial and peroneal nerves in all the patients.

Conduction velocity and amplitude: Amplitude was decreased in all patients in B/L ulnar, tibial and peroneal nerve whereas amplitude was reduced bilaterally in (85.71%) in median nerve. Conduction velocity was reduced in median (42.85%), Ulnar (57.14%), Tibial (57.14%) and Peroneal (42.85%) of patients.

DISCUSSION

The Guillain-Barre syndrome (GBS) is an acute inflammatory demyelinating essentially motor polyradiculo-neuropathy. GBS is a selflimiting disorder, nonetheless, up to 30% of the patients may require temporary artificial ventilation; about 15% become disabled and mortality is likely to be up to 5%. Hence, GBS must be considered as a serious disease. Plasma exchange (PE) and recently high dose immunoglobulin’s have been found to be successful in curtailing the duration of the disease, the duration of artificial ventilation and to improve outcome at 6 months. The prognosis of the patients is dependent on the early diagnosis and prompt treatment. Electrophysiologic studies are very useful in diagnosis and differentiation of demyelinating variety of GBS which responds better to treatment and has a good prognosis. Electrophysiological findings of early demyelination include increased distal motor latencies, prolonged or absent F wave latencies mainly in the lower limbs, decreased motor conduction velocities or conduction block with absent F wave, and abnormal upper extremity sensory nerve action potential as compared to the sural nerve. Our study results are in accordance with that of Ropper et al. They studied 41 patients of GBS who had undergone electro-diagnostic studies within a week of onset of symptoms, 16 patients had abnormalities of compound muscle action potentials including dispersion, delayed latency, low amplitude, conduction velocity slowing, conduction block or abnormal F-waves. Similar results have been reported by Clouston et al.

CONCLUSION

The global incidence of Guillain Barre Syndrome has been estimated to be 1 to 2 per 100,000 populations. It is a life threatening disease if prompt diagnosis and treatment is not done. Electro-diagnostic techniques plays an important role in the early detection and characterization of inflammatory demyelinating polyneuropathy in the first week of symptoms and assume importance in treatment of this syndrome because timely intervention reduces morbidity and disability.

REFERENCES


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<th>Gender</th>
<th>No of patients</th>
<th>Percentage (%)</th>
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<tr>
<td>Male</td>
<td>4</td>
<td>57.14</td>
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<tr>
<td>Female</td>
<td>3</td>
<td>42.85</td>
</tr>
<tr>
<td>Total</td>
<td>7</td>
<td>100</td>
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Table-1: Gender wise distribution of patients

<table>
<thead>
<tr>
<th>NCS parameters</th>
<th>Median Nerve</th>
<th>Ulnar Nerve</th>
<th>Tibial Nerve</th>
<th>Peroneal Nerve</th>
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<tbody>
<tr>
<td></td>
<td>Right</td>
<td>Left</td>
<td>Right</td>
<td>Left</td>
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<tr>
<td>Distal motor latency (DML)</td>
<td>8.76± 5.26</td>
<td>6.29 ± 1.71</td>
<td>7.89 ± 5.66</td>
<td>6.14 ± 1.59</td>
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<td>Compound motor action potential (CMAP)</td>
<td>2.57 ± 2.26</td>
<td>3.36 ± 2.30</td>
<td>1.7 ± 0.97</td>
<td>1.54 ± 1.00</td>
</tr>
<tr>
<td>Conduction Velocity (CV)</td>
<td>49.36 ± 17.43</td>
<td>61.46 ± 11.32</td>
<td>51.89 ± 18.71</td>
<td>61.04 ± 7.47</td>
</tr>
</tbody>
</table>

Table-2: Distribution of Motor nerve conduction Parameters in study subjects

Source of Support: Nil; Conflict of Interest: None
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