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# A Study of Cranial Nerve Invovement in Patients With Guillain-Barre' Syndrome

KEYWORDS: Guillain-Barre syndrome; Nerve Conduction Study; IVIG, Plasmapheresis; Methyl prednisolone

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**ABSTRACT** ***Objectives****: To study the incidence and presentation of cranial nerves involvement in patients with Guillain-Barre' Syndrome(GBS) from a tertiary care centre at Hyderabad.*

***Methodology:*** *This is a retrospective study of patients with GBS attending Osmania General Hospital between Jan 2012 to August2016.75 patients of GBS were studied in detail including history, clinical examination especially for cranial nerves and investigations. Patients were treated with intravenous(IV) methyl prednisolone, IV Immunoglobulins(IVIG) and plasmapharesis depending on the patient's condition and outcome was observed. Pattern of Nerve Conduction Studies (NCS) in all patients at admission and outcome was studied.*

***Results****: A total 75 patients were included in the study. The age of patients ranged between 16-70 yrs with a male to female ratio of 2:1. Quadriparesis was the commonest presentation (74. 6 %) followed by paraparesis (25. 3 %), unilateral facial nerve palsy (9.3 %), bilateral facial palsy(6.6%), bulbar palsy (8%) and oculomotor palsy(1.3%). NCS showed acute motor and sensory axonal neuropathy (AMSAN) in 55(73.3%) patients, acute motor axonal neuropathy(AMAN) in 7(9.3 %) patients, acute inflammatory demyelinating polyradiculoneuropathy (AIDP) in 9(12 %) and secondary axonal in 4(5.3%) patients.*

***Conclusion****: GBS is more common in 21-40 yrs age group, 19(25.3%) patients had cranial nerve palsies, out of 19 patients with cranial nerve palsies 12 (63.1 %) patients had facial palsy, 6 (31.5 %) patients had bulbar palsy, and 1 (5.2 %) patient had oculomotor palsy. Only 3 patients developed respiratory paralysis and needed ventilatory support and 1 patient expired and 68 patients recovered.*

## INTRODUCTION:

Polio has been eradicated in most parts of the world and presently Guillain-Barré syndrome (GBS) is the most common cause of acute flaccid paralysis, severe generalized paralysis[1,2,3,4]. Guillain-Barre syndrome (GBS) is an acute, frequently severe, and fulminant polyradiculoneuropathy that is autoimmune in nature. It occurs yearround at a rate of between 1 and 4 cases per 100,000 annually.Males are at slightly higher risk for GBS than females, and in adults are more frequently affected than children. The legs are usually more affected than the arms, and facial diparesis is present in 50% of affected individuals. The lower cranial nerves are also frequently involved, causing bulbar weakness with difficulty handling secretions and maintaining an airway.[5] In severe cases, the ocular motor nerves are paralyzed and even the pupils may be nonreactive. Facial diplegia occurs in more than half, sometimes bilaterally at the same time or sequentially over days. Other cranial nerve palsies, if they occur, usually come later, after the arms and face are affected. [6]

## AIMS AND OBJECTIVES:

To study the incidence and presentation of cranial nerves involvement in patients with Guillain-Barre' Syndrome from a tertiary care centre at Hyderabad from 2012 to 2016.

## MATERIALS AND METHODS:

The present study included 75 cases of GBS during the period of Jan-2012 to Aug -2016. Patients were examined clinically and investigations in the form of complete blood picture, Renal Function Test including serum electrolytes were done in all patients. NCS were done in all patients. All the patients were monitored for respiratory insufficiency and those who developed respiratory paralysis were treated with mechanical ventilation. Few patients were treated with IV IG and Plasmapheresis.

**Inclusion criteria:**

1. Sudden onset of weakness of 2 or more limbs with cranial nerves involvement.
2. Disease course less than 4 weeks
3. Areflexia.
4. Age more than 14 years.

**Exclusion Criteria:**

1. Gradual onset weakness.
2. History of exposure to toxins like organophosphates, lead.etc
3. Botulism, Diphtheria, porphyria.

## RESULTS:

A total 75 patients with GBS were included in the study. As shown in the Table 1 the age group of patients ranged

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between 16 to 70 years with the maximum number of patients being in the 21-40 years of age group

| Table 1: Age and sex distribution | | | |
|---|---|---|---|
| Age | Male | Female | Total |
| 15-20 | 8 | 3 | 11 |
| 21-30 | 14 | 8 | 22 |
| 31-40 | 15 | 5 | 20 |
| 41-50 | 9 | 5 | 14 |
| 51-60 | 1 | 2 | 3 |
| More than 60 | 3 | 2 | 5 |
| Total | 50 | 25 | 75 |

The male to female ratio was 2:1.

Among the clinical findings at the time of onset quadriparesis was the commonest presentation (74. 6 %) followed by paraparesis (25. 3 %) and cranial nerve involvement(25%).

NCS showed acute motor and sensory axonal neuropathy (AMSAN) in 55(73.3%) patients, acute motor axonal neuropathy(AMAN) in 7(9.3 %) patients, acute inflammatory demyelinating polyradiculoneuropathy (AIDP) in 9(12 %) and secondary axonal in 4(5.3%) patients.

19(25%) out of 75 patients with GBS had cranial nerve involvement. Involvement of the facial nerve on one side was the commonest followed by bilateral facial nerve paresis, bulabar weaknes and oculomotor paresis which is depicted in Table 2 and Fig 1.

| Table 2: Cranial nerve involvement | | | |
|---|---|---|---|
| Cranial Nerve | Male | Female | Total |
| Oculomotor | 1 | 0 | 1 |
| Facial-Unilateral | 7 | 0 | 7 |
| Facial-Bilateral | 4 | 1 | 5 |
| Bulbar | 4 | 2 | 6 |
| Spinal Accessory | 0 | 0 | 0 |
| Hypoglossal | 0 | 0 | 0 |
| Total | 16 | 3 | 19 |

16 out of 50 male(32%) patients and 3out of 25 female(12%) patients with GBS had cranial nerve involvement(Table 2). The cranial nerve involvement was more common in males compared to females in patients with GBS.

Out of 75 patients 8 (10.6%) patients were treated with IVIG, 5(6.6%) patients with plasmapheresis. IV steroids and supportive treatment given in 62(82.6%) patients. 3(4 %) patients required mechanical ventilation, one patient died and 73(97.3 %) were recovered, one patient with respiratory failure discharged against medical advice.

**DISCUSSION:**

Cranial nerve involvement occurs in 45% to 75% of cases in different series. Facial paresis, usually bilateral, is found in at least in half of patients. Involvement of extraocular muscles and lower cranial nerves is seen less often. Occasional patients may develop facial myokymia. Pseudotumor cerebri with papilledema occurs as a rare complication and is almost always due to chronically elevated intracranial pressure[7].

GBS is prevalent among the all age groups[1]. Increasing incidence were observed in most studies in people aged 50 years or more. In our study maximum patients were in the age group of 21 to 40 years of age. The youngest patient in our study was 16 yrs and the oldest was 70 years. In our study 50 (66.66 %) patients were male and 25 (33.33%) were females, with a significant male preponderance (male: female ratio of 2:1). According to Nobuhiro-Yuki study [8], male to female ratio was 1.78. In our study all patients presented with motor weakness, sensory symptoms were present in 33.3 % of patients.

Cranial nerve abnormalities were present in 19 (25.33%) patients. Facial nerve involvement is more commonly observed in our study present in 12 patients ( 63.1%)out of 19 patients with cranial involvement. Unilateral facial palsy observed in 7(36.8%) patients, bilateral facial palsy observed in 5(26.3%) patents, Bulbar palsy was present in 6 patients, oculomotor palsy in 1 patient. In a study by Rao Suhail Y. Khanet al[9] cranial nerve weakness was present in 25 out of 40 patients. Facial and bulbar muscles were equally affected in 30%of patients. In a study by J Clin Diagn[10] Cranial nerve palsy was observed in 4 (20%) children. Of which 2 had bulbar palsy and 1 child had facial palsy and Miller Fischer variant in one child.

In studies by Shubhangi Vithal Dhadkeet al[11] and Rao Suhail Y. Khan et al[9] there was a correlation between cranial palsy and mechanical ventilation whereas there was no such correlation noted in our study.

In our study 56 patients had quadriparesis , 29 patients had paraparesis and all pts showed areflexia . In a study by Christiaan Fokke, Bianca van den Berg,et al[12] reflexes and strength were described in detail in 395 (80%) patients for the arms and in 410 (83%) patients for the legs. At study entry, normal reflexes in paretic limbs were observed in 36 (9%) patients. Whereas our study had a slightly higher incidence of sensory symptoms(37.3 % ) .

In our study out of 75 patients, 55(73.3 %) patients had AMSAN subtype, while7(9.3 %) patients had AIDP, 9(12 %) had AMAN, others 4(5.3%). Miller fisher variant not observed. In our study 3 patients were treated with IVIG, 5 with plasmapharesis and remaining patients were treated with methyl prednisolone and supportive care. In our study out of 70 patients, 3 patients had respiratory failure, 1 patient recovered, 1 expired, 1 patient discharged against medical advice (mortality of 1.3 %) .

**CONCLUSION:**

In conclusion, GBS is seen in all age groups but more common patients in the age group of 21 to 40 years of age. About 25 % of GBS patients cranial nerve abnormalities during their illness. Facial palsy is more common followed by Bulbar palsy. No correlation was observed between cranial nerve palsies and Mechanical ventilation.

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