Original Research Paper

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Study of Role Of Plasmapheresis in Patients With Guillain Barre Syndrome

Medical Science

KEYWORDS :

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ABSTRACT

BACKGROUND : *Guillain-Barre Syndrome (GBS) is an acute, frequently severe and fulminant polyradiculoneuropathy that is autoimmune in nature. We conducted study of 50 patients of GBS admitted during period of Sep-2013 to Nov-2015.*

METHODS : *we have enrolled patients who had been diagnosed as Guillain–Barre Syndrome ,fulfil the diagnostic criteria from the National Institute of Neurological Disorders and Stroke (NINDS) 1990 (Asbury and Cornblath, 1990). all 50 patients received plasmapheresis. Plasmapheresis was done in IHBT department, CHA with Baxter plasmapheresis machine (continuous flow). Plasmapheresis cycles were done as per severity of disease and clinical condition of the patient. Most patients received 4-5 cycle of 50ml/Kg exchange was done over 8-13 days through femoral or central venous catheter. For all patients, clinical assessment was done initially at a time of admission, then at 2 weeks, 4 weeks and 8 weeks after treatment with plasmapheresis.*

RESULTS : *Percentage of patients recover walking with aid and without aided at the end of 4 weeks after treatment with plasmapheresis were 50% and 24% respectively . At the end of 4 weeks after treatment with plasmapheresis percentage of patients being improved by one or more disability grade was 82% and the mean grade improvement was 1.14.*

CONCLUSION : *Though this is a study of a small number of patients, overall clinical outcome improves with plasmapheresis and it is a cheaper alternative of costly immunoglobulin therapy for poor patients.*

INTRODUCTION

Guillain-Barré syndrome (GBS) is an acute, frequently severe and fulminant polyradiculoneuropathy that is autoimmune in nature, most commonly characterized by a rapidly progressive, essentially symmetric, ascending flaccid paresis, weakness and areflexia. Multifocal segmental demyelination is the main underlying pathology of the disease. Molecular mimicry and a cross-reactive immune response play a crucial part in its pathogenesis, at least in those cases with a preceding Campylobacter jejuni infection and with antibodies to gangliosides. The most frequent subtype in North America and Europe is acute inflammatory demyelinating polyradiculoneuropathy (AIDP), which accounts for 90% of all GBS cases in these regions. In Asia, South America, and Central America, however, the axonal variants of GBS [Acute motor axonopathy (AMAN) and Acute motor sensory axonopathy (AMSAN)] account for 30% to 47% of cases. Intravenous immunoglobulin (IVIg) and plasma exchange are Effective treatments in GBS. Despite medical treatment, GBS often remains a severe disease; 3–10% of patients die and 20% are still unable to walk after 6 months. In addition, many patients have pain and fatigue that can persist for months or years. Present study was done to evaluate the clinical benefits of plasmapheresis. Our hospital is a tertiary care centre serving free of cost to poor patient of Western India.

MATERIAL AND METHODS

The present study includes 50 cases of GBS admitted in Civil Hospital, Ahmedabad during the period of Sep-2013 to Nov-2015. This was prospective observational study.

Inclusive Criteria:

All patient who fulfil the diagnostic criteria from the National Institute of Neurological Disorders and Stroke (NINDS)1990 (Asbury and Cornblath, 1990).

All patients who above 12 year of age.

Exclusive Criteria:

Patients below 12 year of age.

Patients with duration of illness more than 4 weeks.

Patients who did not gave consent.

CRITERIA FOR DIAGNOSIS :

In Classic Cases Diagnosis Is Easy. But In Few Cases It Becomes Difficult. The Following Criteria, Laid By NINCDS in 1978 Help in the Diagnosis, Which Include Clinical Laboratory and Electrophysiological Diagnostic Features.

Required features

- Progressive weakness in both arms and legs
- Areflexia (or hyporeflexia).

Features supportive of diagnosis

- Progression of symptoms over days to 4 weeks
- Relative symmetry
- Mild sensory signs or symptoms
- Cranial nerve involvement, especially bilateral facial weakness
- Recovery beginning 2 to 4 weeks after progression ceases
- Autonomic dysfunction
- Absence of fever at onset
- Typical CSF (albuminocytologic dissociation)
- EMG/nerve conduction studies (characteristic signs of a demyelinating process in the peripheral nerves)

Features casting doubt on the diagnosis

- Asymmetrical weakness
- Persistent bladder and bowel dysfunction
- Bladder or bowel dysfunction at onset
- >50 mononuclear leukocytes/mm3 or presence of polymorphonuclear leukocytes in CSF
- Distinct sensory level.

Features that rule out the diagnosis

- Hexacarbon abuse
- Abnormal porphyrin metabolism
- Recent diphtheria infection
- Lead intoxication
- Other similar conditions: poliomyelitis, botulism, hysterical paralysis, toxic neuropathy.

Detailed clinical history recording and examinations were carried out in each patient. We used Hughes grade scale and Medical Research Council (MRC) sum score for assessing functional motor deficits. For all patients, clinical assessment was done initially at a time of admission, then at 2 weeks, 4 weeks and 8 weeks after treatment with plasmapheresis. Investigations were done in the form of hemogram, peripheral smear examination, renal function test including Serum electrolytes in all patients. CSF examination was done for albumino - cytological dissociation and the diagnosis was confirmed by nerve conduction velocity studies (NCV) in all patients. We did portable NCV studies to patients who admitted in ICU ward on mechanical ventilator.

In present study, all 50 patients received plasmapheresis. Plasmapheresis was done in IHBT department, CHA with Baxter plasmapheresis machine (continuous flow). Plasmapheresis Cycles were done as per severity of disease and clinical condition of the patient. Most patients received 4-5 cycle of 50ml/Kg exchange was done over 8-13 days through femoral or central venous catheter. Replacement fluid was either "albumin & normal saline" or "fresh frozen plasma". We did bedside plasmapheresis in patients who admitted in ICU ward. All patients were monitored for complications of plasmapheresis. All the patients were monitored for respiratory insufficiency and those who developed Respiratory paralysis were treated with mechanical ventilation.

other supportive treatment was given in form of prophylaxis against deep vein thrombosis, treatment of autonomic dysfunction and rehabilitation therapy. Patient who recovered and discharged were followed up on out patients (OPD) basis.

Hughes scale was used for assessment. Guillain-Barre syndrome disability scale (Hughes et al., 1978)

0. Healthy
1. Minor symptoms or signs of neuropathy but capable of manual work/capable of running

2. Able to walk without support of a stick (5 m across an open space) but incapable of

manual work/running.
3. Able to walk with a stick, appliance or support

4. Confined to bed or chair bound

5. Requiring assisted ventilation (for any part of the day or night)

6. Death

DISCUSSION

The present study includes 50 patients of GBS admitted during period of Sep-2013 to Nov-2015. The detailed analysis of various observations of the study is as follows.

Table-1. Outcome at 4 week end points

Outcome	Present Study(n=50)	Cochrane Meta-nalysis	Z score	P value
Walking with aid	25(50%)	42.44%	0.9474	0.34212
Walking without aid	12(24%)	20.35%	0.5563	0.57548
Improvement ≥1 grade	41(82%)	57.14%	3.3367	0.00084
Mean improvement in disability grade	1.14	0.89	1.96	0.8287
On ventilator	4(8%)	14.28%	-1.2099	0.22628

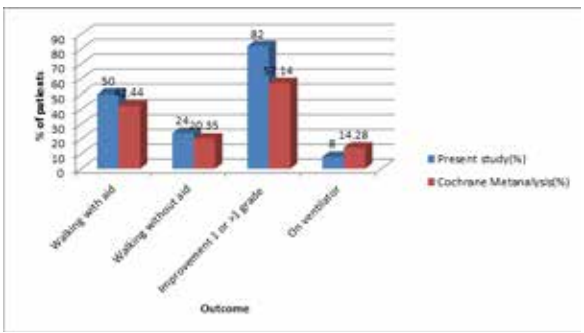
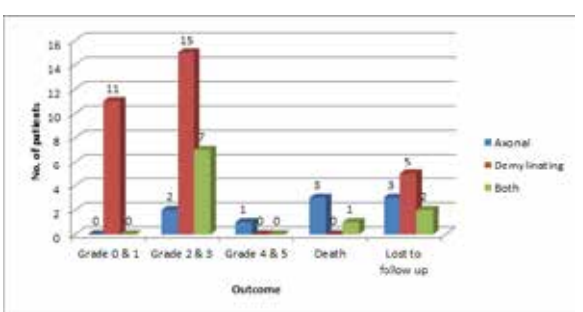


Table-2 Comparison of Outcome at 8 weeks end points with result of NCV Studies

Outcome	Axonal	Demylinating	Both	Total(n=50)
Grade 0 & 1	0	11	0	11(22%)
Grade 2 & 3	2	15	7	24(48%)
Grade 4 & 5	1	0	0	1(2%)
Death	3	0	1	4(8%)
Lost to follow up	3	5	2	10(20%)



At the end of 4 weeks out of 50 patients, 37 patients were walking with or without aid, 9 patients were bedridden and 4 patients were on mechanical ventilator. On applying statistical tests significant difference was not found in walking with or without aid, mean improvement in disability grade and no. of patients on ventilator at 4 weeks after plasmapheresis. On applying statistical tests significant difference was found in no. of patients with improvement ≥1 grade at 4 weeks after plasmapheresis.

At 8 weeks, out of 9 patients who were bedridden at 4 weeks, only 1(2%) patients were remained bedridden. At 8 weeks, percentage of patients who can run were 22%, percentage of patients who can walk with or without aid was 48%. 20% of patients were lost follow up at 8 weeks of end of treatment. Percentage of patients who died because of complications were 8%. Most of patients with demylinat-

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ing type of neuropathy (26 out of 31) were walking with or without aid at end of 8 weeks.

CONCLUSION

The present study includes 50 cases of GBS admitted in Civil Hospital, Ahmedabad during the period of Sep-2013 to Nov-2015. Percentage of patients recover walking with aid and without aided at 4 weeks after treatment with plasmapheresis were 50% and 24% respectively . After 4 weeks of treatment with plasmapheresis percentage of patients being improved by one or more disability grade was 82% and the mean grade improvement was 1.14. No. of patients on ventilator were 15 (30%) initially. At 4 weeks after plasmapheresis, no. of patients on ventilator were 4 (8%). Plasmapheresis improved the outcome at 4 weeks after treatment regardless of severity of illness.

At 8 weeks after treatment with plasmapheresis, percentage of patients who can run was 22%, percentage of patients who can walk with or without aid was 48% and 2% percentage patients were bedridden.

Though this is a small group study but overall clinical outcome improves with plasmapheresis.

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