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CASE STUDY OF GUILLAIN-BARRE SYNDROME IN MYANMAR: SINGLE CENTER EXPERIENCE

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Abstract

Background: *Guillain–Barré syndrome (GBS) is an acquired, immune-mediated disorder of the peripheral nerves and nerve roots. The major subtypes include acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), and acute motor sensory axonal neuropathy (AMSAN).*

Aim and Objectives: *To study the clinical presentations and electrophysiological subtypes of GBS in No. 2 Military Hospital (500-bedded), Yangon, Myanmar.*

Methods: *This hospital-based, cross-sectional descriptive study included patients diagnosed with GBS based on clinical features and neurophysiological findings at the Neurology Department of No. 2 Military Hospital, Yangon, between May 2017 and October 2019.*

Results: *A total of 22 patients with GBS were studied. The mean age was 33.36 ± 14.41 years; 15 patients were male and 7 were female. All patients presented with acute-onset ascending flaccid weakness with hyporeflexia or areflexia. Sensory symptoms were present in 10 patients (45.5%), and pain was reported by 11 patients (50%). Autonomic symptoms occurred in 10 patients (45.5%). Facial weakness, bulbar symptoms, and respiratory distress were observed in 8, 4, and 2 patients, respectively. A preceding illness was noted in 13 patients, with diarrhea in 10 patients and respiratory tract infection in 3 patients. Electrophysiological studies showed that AMAN was the most common subtype (12 patients, 54.5%), followed by AIDP (8 patients, 36.4%) and AMSAN (2 patients). Severe GBS (GBS disability score ≥3) was observed in 11 patients with AMAN/AMSAN and 5 patients with AIDP.*

Keywords: *AMAN was the most common subtype of GBS in this study population, and diarrhea was the most frequent preceding illness.*

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1. INTRODUCTION

Guillain–Barré syndrome (GBS) is the most common and severe form of acute polyneuropathy, with approximately 100,000 people developing the disorder worldwide each year. The global incidence of GBS ranges from 0.6 to 4.0 per 100,000 population (1). Guillain–Barré syndrome comprises several recognizable variants with distinct clinical and pathological features (2).

Clinically, weakness typically develops in a symmetrical "ascending" pattern over a few days. Most patients initially present with lower limb weakness, followed by involvement of the upper limbs, while some exhibit selective proximal or distal leg weakness that spreads to the arms. A smaller proportion of patients may have onset of weakness in the arms (3). The severity of weakness varies from mild paresis to severe flaccid quadriplegia, and up to 30% of patients may develop respiratory failure within a few days of symptom onset. Dysautonomia affects many patients and commonly manifests as sinus tachycardia; however, bradycardia, labile blood pressure with episodes of hypertension or hypotension, orthostatic hypotension, cardiac arrhythmias, neurogenic pulmonary edema, and abnormalities of sweating may also occur (4).

Although GBS is presumed to be an autoimmune disorder, the precise molecular pathogenesis and mechanisms underlying its variants remain uncertain. Evidence suggests involvement of both cellular and humoral components of the immune system (5).

The major subtypes of GBS include acute inflammatory demyelinating polyradiculoneuropathy (AIDP), Miller Fisher syndrome (MFS), acute motor axonal neuropathy (AMAN), and acute motor sensory axonal neuropathy (AMSAN). In addition to the classic presentation, clinical variants are categorized based on the types of nerve fibers involved (motor, sensory, motor-sensory, cranial, or autonomic), the predominant mode of nerve injury (demyelinating versus axonal), and the presence or absence of altered consciousness (6). An axonal motor variant, termed AMAN, was first reported from northern China and is therefore also referred to as the "Chinese paralytic illness" (7). Patients with AMAN often experience more rapid progression to peak weakness compared with those with AIDP, frequently resulting in prolonged paralysis and early respiratory failure (8).

The diagnosis of GBS is primarily clinical and relies on serial neurological examinations demonstrating progressive, symmetrical motor weakness with reduced or absent deep tendon reflexes. Supportive investigations include characteristic cerebrospinal fluid (CSF) findings and nerve conduction studies, which strongly aid in confirming the diagnosis (9).

2. MATERIALS AND METHODS

This was a hospital-based, cross-sectional, descriptive study conducted at the Neurology Department of No. 2 Military Hospital (500-bedded), Yangon, between May 2017 and October 2019. The study aimed to evaluate the clinical presentations and electrophysiological subtypes of Guillain–Barré syndrome using nerve conduction studies and needle electromyography (NCS/EMG).

The diagnosis of GBS was established based on clinical features, electrophysiological findings, and other supportive investigations. Patients presenting with conditions mimicking GBS, such as other causes of acute quadriparesis, were excluded from the study. Informed consent was obtained from all participants prior to enrollment.

A total of 22 patients with Guillain–Barré syndrome, confirmed by a consultant neurologist, were included in the study. A detailed history and comprehensive neurological examination were performed on the day of the NCS/EMG study. All patients underwent nerve conduction studies and electromyography using the EMG/NCV/EP Sierra Summit system (Cadwell, USA). Recordings were performed following standard protocols, including appropriate temperature control, accurate distance measurements, and acquisition of well-defined, artifact-free responses.

Data analysis was carried out using descriptive statistics. Standard statistical methods were applied to calculate means and standard deviations.

3. RESULTS

Table (1) Sociodemographic data of patients with Guillain-Barré syndrome (N=22)

Sociodemographic data		Value
Age (Mean ± SD)		33.36 +/- 14.41
Sex	Male N (%)	15 (68.1%)
	Female N (%)	7 (31.9%)

Among the total 22 patients mean age was 33.36 +/- 14.41 and male patients were more common than female patients 15 (68.1%) versus 7 (31.9%).

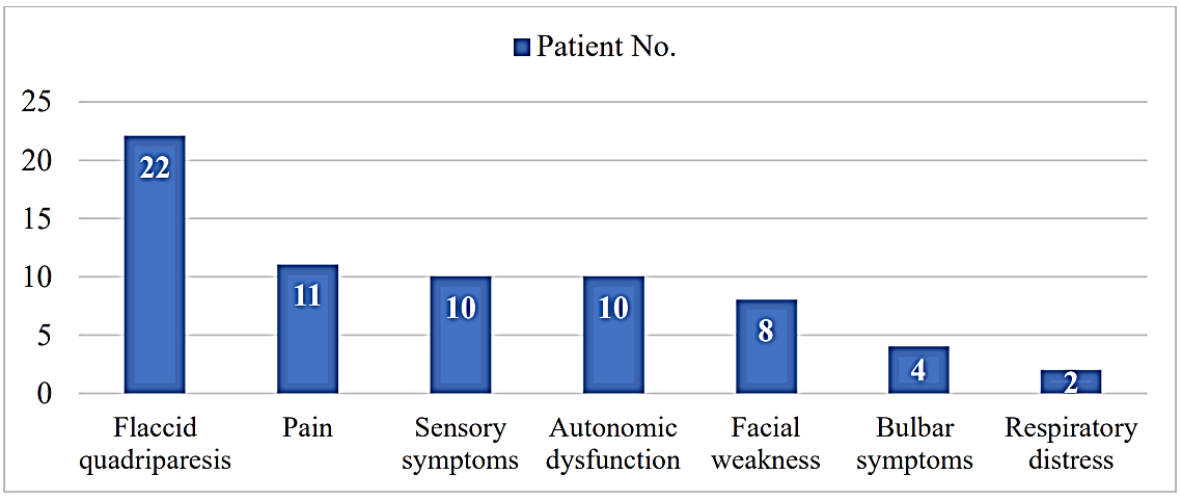

Figure (1) Distribution of different clinical presentations in patients with Guillain-Barré syndrome (N=22)

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The above figure showed distribution of different clinical presentations in patients with Guillain-Barré syndrome. All patients had acute flaccid quadriparesis and pain, sensory symptoms and autonomic symptoms were occurred nearly half of the patients. The respiratory muscle involvement was included in only two patients in this study

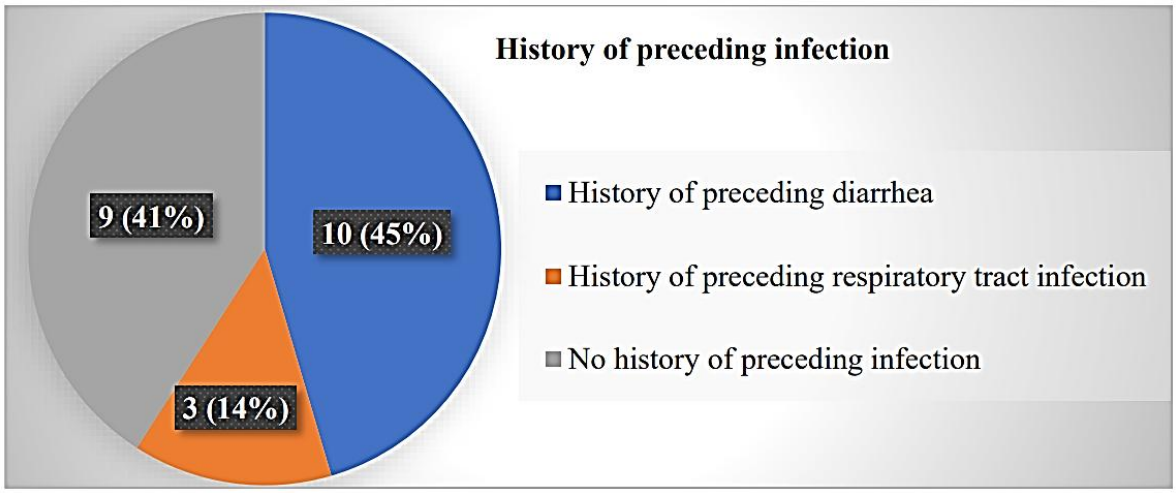

Figure (2) Distribution of history of preceding infection in patients with Guillain-Barré syndrome (N=22)

In figure (2) showed distribution of history of preceding infection in patients with Guillain-Barré syndrome. Nearly 60 percent of patients had history of preceding infection and diarrhea was the most common preceding illness. About 40 percent had no history of preceding illness.

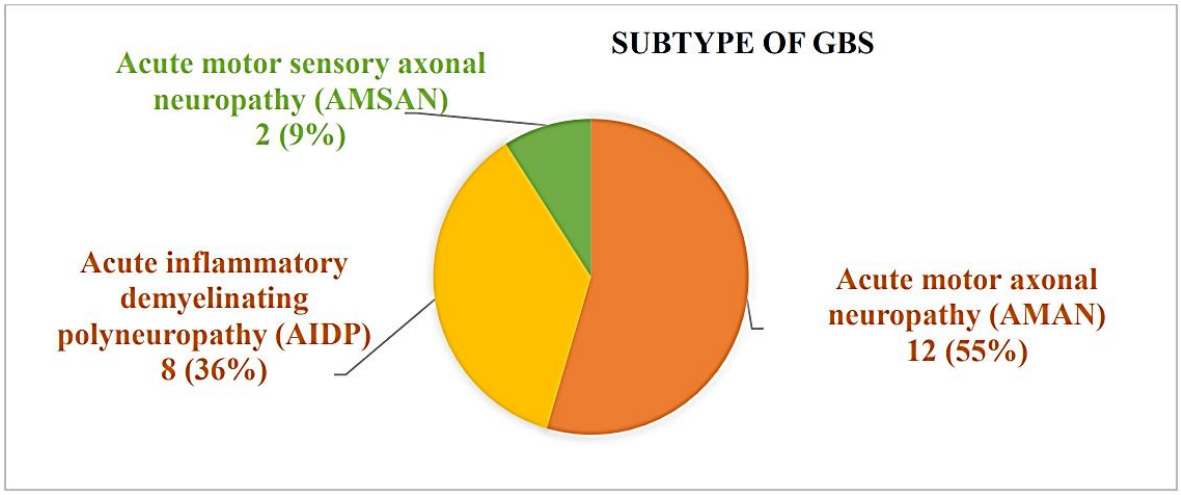

Figure (3) Distribution of different subtypes of Guillain-Barré syndrome (N=22)

The percentage distribution of different subtypes of Guillain-Barré syndrome were shown in figure (3). Acute motor axonal neuropathy (55%) was the commonest subtype in this study.

Table (2) Severity of patients depend on subtypes of Guillain-Barré syndrome (N=22)

GBS subtype	Severe form of GBS (GBS disability score ≥3) N(%)	Mild form of GBS (GBS disability score <3) N(%)	Total N(%)
AMAN/AMSAN	11 (78.5%)	3 (21.5%)	14 (100%)
AIDP	5 (62.5%)	3 (37.5%)	8 (100%)

The above table showed severity of patients depend on subtypes of Guillain-Barré syndrome. Among them, 11 (78.5%) patients of AMAN/AMSAN subtypes and 5 (62.5%) of AIDP subtype were severe form of Guillain-Barré syndrome according to the GBS disability score.

4. DISCUSSION

In this study, a total of 22 patients with Guillain–Barré syndrome were recruited and diagnosed based on clinical features, electrophysiological findings, and other supportive investigations. The mean age of the patients was 33.36 ± 14.41 years, and males were more commonly affected than females (15 patients, 68.1% vs. 7 patients, 31.9%). Similar findings were reported by Arami et al. in 2006, who observed a mean age of onset of 34 years (10). However,

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most international studies have reported a higher mean age of onset, around 40 years (1,11). This variation may be attributed to differences in the distribution of GBS subtypes across study populations.

Clinically, all patients presented with acute flaccid quadriparesis. Nearly half of the patients experienced pain, sensory symptoms, and autonomic dysfunction. Respiratory muscle involvement was observed in only two patients, which is lower than that reported in other studies (1,12). This lower incidence may be due to the exclusion or underrepresentation of patients with severe respiratory distress, particularly those requiring intensive care, as nerve conduction studies and electromyography are often difficult to perform in critically ill patients.

Approximately 60% of patients reported a history of preceding infection, with diarrhea being the most common antecedent illness. Previous studies have reported that nearly two-thirds of adult patients experience respiratory or gastrointestinal tract infections within four weeks prior to the onset of weakness. *Campylobacter jejuni* is the most frequently implicated pathogen, identified in 25–50% of adult GBS patients, with a higher prevalence in Asian countries (13). These findings highlight the importance of evaluating *C. jejuni* infection in patients with GBS. However, it is also notable that approximately 40% of GBS cases occur without a clear history of preceding infection. Therefore, the absence of an antecedent illness should not exclude the diagnosis of GBS.

In the present study, acute motor axonal neuropathy (AMAN) was the most common subtype, accounting for 55% of cases. In contrast, international studies, particularly from Western countries, report acute inflammatory demyelinating polyneuropathy (AIDP) as the predominant subtype. In the United States, approximately 80–90% of GBS cases are classified as AIDP, with AMAN being relatively uncommon (14). Geographical variations have been well documented, with AMAN being more frequently observed in younger patients from China and Japan and showing a strong association with *Campylobacter jejuni* infection (14,15). Studies from northern China have reported that AMAN accounts for approximately 65% of GBS cases (7). Consistent with these findings, the present study demonstrated a higher prevalence of the AMAN subtype, suggesting a significant geographical influence on the distribution of GBS subtypes. Emerging evidence from immunological and clinical studies indicates that AMAN often develops following *C. jejuni* enteritis (16). Therefore, geographical variations in the prevalence of *C. jejuni* infection may contribute to the observed differences in subtype distribution. Further immunological studies focusing on *C. jejuni* in Myanmar are warranted.

Regarding disease severity, 11 patients (78.5%) with AMAN/AMSAN subtypes and 5 patients (62.5%) with the AIDP subtype had severe GBS, defined as a GBS disability score ≥3. Previous studies have reported that approximately 40% of patients develop severe GBS (17,18). The higher proportion of severe cases observed in this study may be attributed to the predominance of axonal subtypes and the limited availability of disease-specific treatments, such as intravenous immunoglobulin (IVIg) and plasmapheresis.

5. CONCLUSION

Acute motor axonal neuropathy (AMAN) was the most common subtype of Guillain–Barré syndrome in this study, suggesting a significant geographical influence on the distribution of GBS subtypes. A preceding history of diarrhea appeared to be associated with this subtype in the study population. However, these findings reflect the experience of a single center and may not represent the national situation. Therefore, multicenter studies are required to better understand the epidemiology and subtype distribution of GBS in Myanmar. Further immunological studies focusing on *Campylobacter jejuni* infection are also recommended.

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