Scholars Journal of Applied Medical Sciences (SJAMS)
Abbreviated Key Title: Sch. J. App. Med. Sci.
ISSN 2320-6691 (Online)
ISSN 2347-954X (Print)
©Scholars Academic and Scientific Publisher
A Unit of Scholars Academic and Scientific Society, India
www.saspublishers.com

Neurophysiology

AMAN Variant of Guillain–Barre Syndrome is the Most Prevalent Neurophysiologically Diagnosed Variant in Gwalior Chambal Region

Dr. Gaurav Jain, Dr. Virendra Verma*
Associate Professor, G. R. Medical College, Gwalior, MP, India

Original Research Article

***Corresponding author**
Dr. Virendra Verma

Article History
Received: 11.06.2018
Accepted: 25.06.2018
Published: 30.06.2018

DOI:
10.36347/sjams.2018.v06i06.017

Abstract: GBS occurrence, seasonal variation & gender preponderance have not been adequately studied in Gwalior Chambal region. We aimed to analyze retrospectively last 4 yr GBS patients reported at Gajara Raja Medical College, Gwalior (M.P.). 49 neurophysiologically diagnosed GBS patients, aged 2 - 72 years, reported between April 2014 and March 2018 were analyzed. Subjects were grouped in 4 age groups of <20 yr, 20-40 yr, 40-60 yr and > 60 yr. GBS was higher in males where 71.42% were males while 28.57 % were females with male: female ratio of 2.5:1. Maximum patients were in the age group < 20 years (46.15%). Of the Total GBS patients AMAN cases were 27 (55.10%) higher compared to AIDP cases 20 (40.82 %). The cases of GBS were more in the February to July months (67.34 %). Higher AMAN occurrence is observed in some geographical regions including Gwalior-Chambal Region. The peak seasonal clustering observed by us in the summer months was similar to other Indian studies. The age and sex distribution of GBS showed children (<20 yr) and male preponderance respectively.

Keywords: Guillain-Barre Syndrome (GBS); Acute Motor Axonal Neuropathy (AMAN), Acute inflammatory Demyelinating Polyneuropathy (AIDP), Neurophysiology.

INTRODUCTION

Guillain–Barre syndrome (GBS), is an immune-mediated disorder of nervous system of acute or subacute onset commonly characterized by generalized progressive weakness of arms and legs, limb paraesthesias and relative or complete areflexia. The usual pattern follows the flaccid paralysis typically ascending in nature evolving over a few days to a few weeks [1].

GBS was originally considered to be only demyelinating in pathology is now recognized to have both axonal and demyelinating subtypes. Numerous triggering or antecedent events including infections are recognized and GBS is considered an immunological response to these. GBS is now considered to be a clinical syndrome of an acute inflammatory neuropathy encompassing a number of subtypes with evidence of different immunological mechanisms[1, 2].

The reported incidence for GBS is 1-2/100,000 population and increases linearly with age, and men are about 1.5 times more affected than women [3].

Diagnosis of GBS may be confirmed by cerebrospinal fluid (CSF) analysis and neurophysiological diagnostic testing [4, 5]. The commonly recognized variants of GBS are considered as syndromes including acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), acute motor sensory axonal neuropathy (AMSAN) and Miller-Fisher syndrome. AIDP is the most prevalent form and accounts for 70-90 per cent of cases [2, 6].

GBS can occur in any season although seasonal variability may reflect seasonal peaks of predisposing factors such as infections [7, 8]. The seasonal occurrence has been described to be peaking in summer season in Asian countries [2, 7, 8].

This study was aimed to analyze retrospectively the prevalence of different GBS variants in Gwalior Chambal region with their incidence rate in different age groups and to assess the seasonal occurrence of these variants.

MATERIALS & METHODS

The study was conducted at Gajara Raja Medical College (GRMC), Gwalior, India. In this study retrospective analysis of 49 cases with the diagnosis of GBS diagnosed at Neurophysiology Laboratory of G. R. Medical College, Gwalior from April 2014 to March 2018 were reviewed and analyzed during April to June, 2018. The data related to age, sex, date of neurophysiological testing and neurophysiological diagnostic analysis was obtained.

All patients were divided into four age groups of <20 yrs, 20-40 yrs, 40-60 yrs and above 60 yrs. These groups were named as A1, A2, A3 and A4 respectively (Table-1).

RESULTS

Out of 49 selected patients, 35 were male and 14 were female. The mean age of the patients was 31.3 ± 21.51 yr. The mean ages of male and female patients were 30.21 ± 21.68 yr (02-72 yr) and 34 ±21.61 yr (03-68 yr), respectively. The male to female ratio was 2.5:1 with male preponderance. Maximum number of patients were in <20 yr age group (40.82%, n=20). The next common age group was 20-40 yr (24.49 %, n=12) (Table-1).

On analyzing neurophysiological diagnosis AMAN cases were maximum of the total patients with 55.10 % (N=27). Male female ratio in AMAN cases was 2:1. Next common diagnosis was AIDP with 40.82 % (n=20) and 2.04 % cases were diagnosed in AMSAN (n=1) and mixed axonal variety (n=1) each (Table 2). The disease incidence was observed throughout the year; month-wise occurrence was found to be highest in May followed by June (Fig-1). Highest numbers of cases were observed in summer and spring season with total cases more than 65% (Table-3).

Table-1: Age and sex distribution of Guillain–Barre syndrome (GBS) patients

S. No.	Groups	Age	Males	Females	No. of Subjects and Total %
1	A1	< 20 Yrs	16	4	20 (40.82%)
2	A2	20-40 Yrs	7	5	12 (24.49 %)
3	A3	40-60 Yrs	8	3	11 (22.45 %)
4	A4	>60 Yrs	4	2	6 (12.24 %)
Total			**35**	**14**	**49**

Table-2: Incidence of GBS variants

S. No.	GBS Variant	Male	Female	Total (Percent Total)
1	**AMAN**	18	9	27 (55.10%)
2	**AIDP**	15	5	20 (40.82 %)
3	**AMSAN**	1	0	1 (2.04 %)
4	**Mixed Axonal Variety**	1	0	1 (2.04 %)
Total		35	14	49

Table-3: Seasonal Variation of GBS patients

Season	Male	Female	Total
Feb- April (Spring)	10	6	16 (32.65 %)
May- July (Summer)	13	4	17 (34.69 %)
Aug- Oct (Rainy)	6	2	8 (16.33 %)
Nov-Jan (Winter)	6	2	8 (16.33 %)
Total	35	14	49

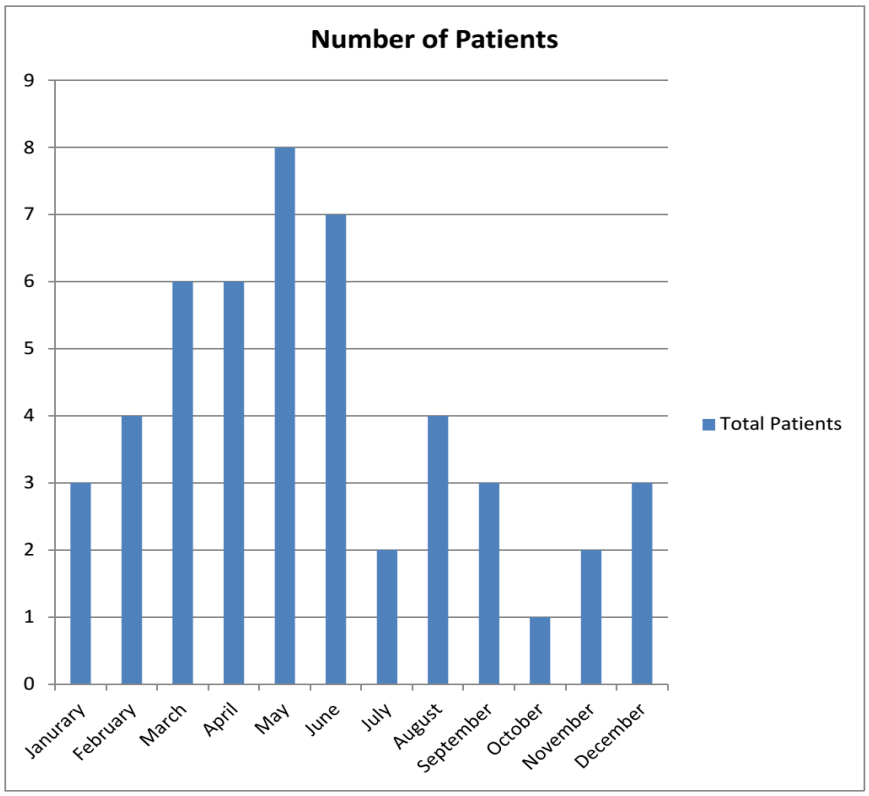

Fig-1: Month wise incidence of GBS cases

DISCUSSION

This study retrospectively analyzed the neurophysiologically diagnosed GBS patients from April 2014 to March 2018. In this study male preponderance was observed where male cases were more than twice that of females (Male: Female ratio 2.5:1). This male preponderance is observed in most of the studies with male: famale ratio ranging from 1.82: 1 to 2.4 : 1 [7-10].

In this study we observed highest cases in A1 age group followed by in A2 age group where 65.31 % of GBS cases were below 40 Yr age. Sharma G et al., observed 73.84 % cases in <40 yr age group (7). Islam et al observed higher incidence in younger age group with 73 % cases in <30 yr age group [11]. However some studies have observed that GBS rate increased exponentially with age [12].

The most common variant of GBS was AMAN (55.10 %) followed by AIDP (40.82%). Our findings corroborates with a study from Bangladesh where they have reported highest incidence of AMAN variant (67%) [11]. Some studies in India have also reported a comparatively higher incidence of AMAN than in European studies, however they reported AIDP as the most common variant [8, 10]. The incidence of AMAN in these studies is quite higher compared to other studies from different parts of the world which report AIDP as the most common variant [13, 14]. Hence AIDP is the most common variant in many regions but there are regions where AMAN has a higher occurrence.

In our study, we observed maximum GBS cases during summer season (34.69 %) followed by spring season (32.65 %). Sharma et al., have also found maximum number of cases in summer season (41.53%) followed by spring season (29.23 %) [7]. Sriganesh et al., reported a higher incidence between March and August, similar to our study (9). Zaheer et al reported a bimodal incidence of GBS during April-May (24%) and July-August (32%) as compared to the other months of the year. Increased incidence of GBS was observed in the winter in Western countries, however, reduced winter incidence in the Indian subcontinent and Latin America was observed, possibly associated with regional differences in the seasonality of prodromal illnesses [15]. The seasonal variation may be attributed to the climate differences in the seasonal conditions making certain months more prone to infections of gastrointestinal and respiratory tract, which is an important antecedent factor of GBS.

Thus we concluded that although AIDP is the most common variant worldwide however, AMAN is most commonly observed in Gwalior Chambal Region. Moreover, the peak seasonal occurrence in summer months was similar to other Indian studies. The age and sex distribution of GBS showed children (<20 yr) and male preponderance respectively.

CONCLUSION

Higher AMAN occurrence is observed in some geographical regions including Gwalior-Chambal Region. The peak seasonal clustering observed by us in the summer months was similar to other Indian studies. The age and sex distribution of GBS showed children (<20 yr) and male preponderance respectively.

REFERENCES

1. Winer JB. An update in Guillain-Barré syndrome. Autoimmune diseases. 2014;2014.
2. Kalita J, Misra UK, Goyal G, Das M. Guillain-Barré syndrome: subtypes and predictors of outcome from India. Journal of the Peripheral Nervous System. 2014 Mar 1;19(1):36-43.
3. Van Doorn PA, Ruts L, Jacobs BC. Clinical features, pathogenesis, and treatment of Guillain-Barré syndrome. The Lancet Neurology. 2008 Oct 1;7(10):939-50.
4. Burns TM. Guillain-Barré syndrome. InSeminars in neurology 2008 Apr 1 (Vol. 28, No. 2, pp. 152-167). [New York]: Thieme-Stratton Inc.,[c1981-.
5. Van den Berg B, Walgaard C, Drenthen J, Fokke C, Jacobs BC, Van Doorn PA. Guillain–Barré syndrome: pathogenesis, diagnosis, treatment and prognosis. Nature Reviews Neurology. 2014 Aug;10(8):469.
6. Dimachkie MM, Barohn RJ. Guillain-Barré syndrome and variants. Neurologic clinics. 2013 May 1;31(2):491-510.
7. Sharma G, Sood S, Sharma S. Seasonal, age & gender variation of Guillain Barre syndrome in a tertiary referral center in India. Neuroscience and Medicine. 2013 Mar 5;4(01):23.
8. Shrivastava M, Nehal S, Seema N. Guillain–Barre syndrome: Demographics, clinical profile & seasonal variation in a tertiary care centre of central India. The Indian Journal of Medical Research. 2017 Feb;145(2):203.
9. Sriganesh K, Netto A, Kulkarni GB, Taly AB, Rao GS. Seasonal variation in the clinical recovery of patients with Guillain Barré syndrome requiring mechanical ventilation. Neurology India. 2013 Jul 1;61(4):349.
10. Kannan MA, Ch RK, Jabeen SA, Mridula KR, Rao P, Borgohain R. Clinical, electrophysiological subtypes and antiganglioside antibodies in childhood Guillain-Barré syndrome. Neurology India. 2011 Sep 1;59(5):727.
11. Islam Z, Jacobs BC, van Belkum A, Mohammad QD, Islam MB, Herbrink P, Diorditsa S, Luby SP, Talukder KA, Endtz HP. Axonal variant of Guillain-Barre syndrome associated with Campylobacter infection in Bangladesh. Neurology. 2010 Feb 16;74(7):581-7.
12. Sejvar JJ, Baughman AL, Wise M, Morgan OW. Population incidence of Guillain-Barré syndrome: a systematic review and meta-analysis. Neuroepidemiology. 2011;36(2):123-33.
13. Van Koningsveld R, Rico R, Gerstenbluth I, Schmitz PI, Ang CW, Merkies IS, Jacobs BC, Halabi Y, Endtz HP, van der Meché FG, Van Doorn PA. Gastroenteritis-associated Guillain–Barre syndrome on the Caribbean island Curacao. Neurology. 2001 Jun 12;56(11):1467-72.
14. Deepak G, Muraleedharan N, Baheti NN, Sarma SP, Abraham K. Electrodiagnostic and clinical aspects of Guillain-Barré syndrome: an analysis of 142 cases. Journal of clinical neuromuscular disease. 2008 Dec 1;10(2):42-51.
15. Cooper, C. J., Murphy, T. P., Cutlip, D. E., Jamerson, K., Henrich, W., Reid, D. M., ... & Prince, M. R. (2014). Stenting and medical therapy for atherosclerotic renal-artery stenosis. *New England Journal of Medicine*, *370*(1), 13-22.