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A STUDY ON CLINICAL, ELECTROPHYSIOLOGICAL SUBTYPES AND SEASONAL VARIATIONS OF GUILLAIN BARRÉ SYNDROME IN CENTRAL TAMIL NADU IN TWO YEARS.

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ABSTRACT

Introduction: Guillain barré syndrome is an acute autoimmune disease causing flaccid paralysis and having a good prognosis with modern treatment. The clinical course and prognosis is variable in different clinical and electrophysiological types. Our aim was to study clinical, electrophysiological subtypes and seasonal variations amongst the patients with GBS admitted in two years in Thanjavur Medical College Hospital in Central Tamil Nadu.

Materials And Methods: A Retrospective study of 95 patients with Acute Guillain barré syndrome (Acute inflammatory demyelinating polyradiculoneuropathy) who fulfilled Asberry's criteria was conducted. We extracted data from the Thanjavur medical college hospital records retrospectively over a two year period (January 2015 to December 2016). The patients were divided in to four seasonal groups: S1 (spring -February to April), S2 (summer- May to July), S3 (rainy -August to October), S4 (winter- November to January) and parameters were studied.

Results: From 92 cases of GBS 56 (60.87%) were male and 36 (39.13%) were female with a M: F ratio being 1: 0.64. Summer and winter had the most GBS cases. Most of the patients were admitted in the months of July (15), December (11), February (10) and June (9). Most common clinical type of GBS seen in the studied cases was pure motor (84.78%) followed by motor sensory (11.96%), miller fisher (2.17%) and pure sensory (1.08%). Classical AIDP (Pure motor-Demyelinating) was the commonest type (>76%) followed by AMSAN Variant (17%)

Conclusion: Our study shows that there is significant seasonal variation and type of GBS occurring in Tamil Nadu. Our study showed that there was more incidence of GBS in July and December months. There were summer and winter peaks observed which has to be correlated with epidemiological data about prevalent viral infections and serological studies.

KEYWORDS : Guillain-barré syndrome, acute inflammatory demyelinating polyradiculoneuropathy (AIDP), Seasonal variation, Clinical types, Electrophysiological subtypes.

Introduction:

Guillain barré syndrome is an acute autoimmune disease manifesting as an acute inflammatory polyradiculoneuropathy[1]. The characteristics clinical findings include motor weakness and diminished reflexes. Sensory changes may also be present and may manifest as prolonged terminal latencies in motor nerves. The motor weakness may present as diplopia, dysarthria, ophthalmoplegia and dysphagia. The various types of GBS include acute inflammatory demyelinating polyneuropathy (AIDP), acute motor axonal neuropathy (AMAN), acute motor-sensory axonal neuropathy (AMSAN), Miller-Fisher syndrome (MFS), acute pan-autonomic neuropathy (APN) and rarely pure sensory GBS[2].

The incidence of GBS in western world is 2-3 per 100,000 persons and it is the most common cause of acute flaccid paralysis in the developed world[3]. Though the data about incidence of GBS in developing world including India is insufficient to define the burden of this disease in developing world, it still remain one of the important cause of acute flaccid paralysis. For this reason it has been included in AFP surveillance along with traumatic neuritis, myelitis, encephalitis and several paralytic syndromes. It is more commonly seen in males. The most common age group affected include young adults (age 15-35 y) and elderly persons (ages 50-75 y)[4].

The etiology of GBS is considered to be post-infectious and immune-mediated in which autoantibodies are formed against myelin sheath and peripheral nerves. The post infectious immune mediated etiology appears to be more likely since majority of the patients (up to 65%) have a history of bacterial or viral illness in recent past[5]. The common pathogens involved in causation of GBS are cytomegalovirus, C.Jenjuni, Epstein-Barr virus, Mycoplasma pneumoniae and varicella-zoster virus. Rarely GBS may occur following influenza, rabies, streptococcal and swine-flu vaccination[6]. The risk of GBS following these vaccination is very small and evidence of association of GBS with vaccination is only by temporal association. Other rare causes of GBS reported in various case reports include pregnancy, epidural anesthesia, major surgeries and trauma[7].

The management of GBS mainly consist of supportive treatment. Since GBS may progress from mild muscle weakness to profound paralysis causing respiratory failure and cardiovascular complications all patients suspected to be having GBS should ideally be hospitalized[8]. Approximately 20-30% patients with GBS may require ICU admission for assisted ventilation, others can be treated in neurological wards. Use of corticosteroids have not be supported by evidence. IvIg and plasmapheresis both are found to be equally effective[9].

The usual complications associated with GBS include neurological, respiratory and cardiovascular complications. Neurological complication may include visual disturbances, dysarthria, diplopia, bladder or bowel involvement and respiratory paralysis. Respiratory complications may include acute respiratory distress syndrome (ARDS), pneumonia and respiratory insufficiency. The cardiovascular complications may include autonomic disturbances like tachycardia, bradycardia, arrhythmias, variable blocks and labile hypertension[10].

With these facts we conducted this retrospective study in which we analyzed the data from hospital records from patients admitted in Thanjavur Medical College Hospital in Central Tamil Nadu. Our aim was to study clinical, electrophysiological subtypes and seasonal variations among the patients with GBS admitted over a period of two years.

MATERIALS AND METHODS:

A retrospective study of 95 patients with Acute Guillain barré syndrome (Acute inflammatory demyelinating polyradiculoneuropathy) who fulfilled Asberry's criteria was conducted. We extracted data from the Thanjavur medical college, the largest tertiary referral center in central Tamil Nadu, hospital records retrospectively in a two year period (January 2015 to December 2016),. Patients' demographics including age, sex, date of admission and discharge were extracted. Diagnosis was coded based on the 9th Revision of the International Classification of Diseases (ICD-9:357.0).

Diagnosis of GBS was based on guidelines provided by the National Institute of Neurological Disorders and Stroke[8]. All the patients were classified into subtypes on the basis of clinical findings and investigations. Nerve conduction study results and seasonal incidences were noted. The patients were divided in to four seasonal groups: S1 (spring-February to April), S2 (summer- May to July), S3 (rainy -August to October) and S4 (winter- November to January) and parameters were studied.

Inclusion Criteria:

- Fulfil Asberry's diagnostic criteria for GBS.
- Inclusion of all males and females of > 18 years of age.
- Duration of onset of weakness less than 2 weeks at the time of admission to the hospital.

Exclusion Criteria:

- Age less than 18 years.
- Clinical signs of neuropathy other than GBS.

Statistical analysis: The analysis were performed on a personal computer using SPSS for WINDOWS and used Chi Square test. All tests for statistical significance were two tailed with the level of significance at a<0.05.

Results:

The study comprised of 95 patients of Guillain barré syndrome fulfilling the inclusion criteria. Out of the total 92 patients 56 (60.87%) were males and 36 (39.13%) were females with a M:F ratio being 1:0.64.

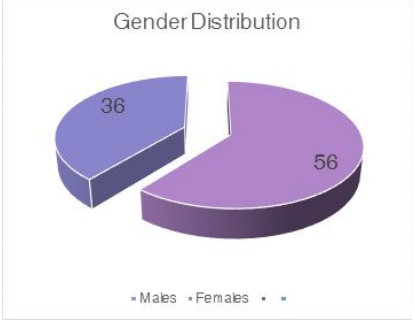

Figure 1: Gender Distribution of the studied cases.

The analysis of the cases on the basis of time of the occurrence of GBS revealed that summer and winter months had the most cases of GBS. More admissions were seen in the months of July (15), December (11), February (10) and June (9) months.

Figure 2: Month wise distribution of the cases presenting with GBS.

The analysis of seasonal variations of the cases revealed that cases most commonly presented in summer season where 28 out of 92 patients were admitted with a diagnosis of GBS. After summer season the cases were found commonly in winter (24/92) and rainy season (21/92). Least number of cases were admitted in spring (19/92).

Table 1: Seasonal incidences of GBS in the studied cases.

Season	Male		Female		TOTAL
	>18 yrs	<18yrs	>18yrs	<18yrs	
Spring	11	1	7	0	19
Summer	18	0	9	1	28
Rainy	10	1	8	2	21
Winter	12	3	7	2	24
Total	51	5	31	5	92

Cinical features of the studied cases revealed that majority of the patients (88/92) had lower limb weakness, followed by upper lib weakness (68/92), sensory involvement (11/92) and cranial nerve involvement (3/92).

Table 2: Clinical Presentation of the studied cases.

Clinical Feature	No Of cases
Lower limb Weakness	88
Upper limb weakness	58
Sensory Involvement	11
Cranial Nerve Involvement	3
Respiratory insufficiency	12

The analysis of the clinical types of GBS revealed that the most common form of GBS in the studied cases was pure motor type which was seen in 78 (%) patients followed by motor sensory and miller fisher type which were seen in 10 (%) and 3(%) patients respectively. Only 1 (%) patient had pure sensory type of GBS.

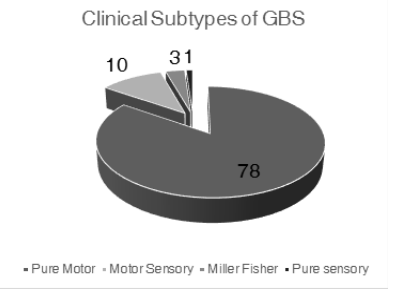

Figure 3: Clinical Subtypes of GBS in studied cases

Finally the analysis of electrophysiological subtypes of the patients showed that acute inflammatory demyelinating polyradiculoneuropathy (AIDP) was the most common type of GBS which was seen in in 70 patients (76.09%) followed by acute motor sensory axonopathy (AMSAN) seen in 16patients (17.39%) and acute motor axonopathy (AMAN) in 4 patients (4.35%).GBS subtype coud not be determined in 2 patients(2.17%) because of equivocal results of electrophysiological tests. Hence Classical AIDP (Pure motor-Demyelinating) was found to be the commonest type (76.09 % type of GBS on the basis of electrophysiological studies.

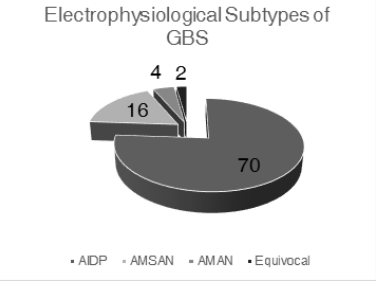

Figure 4: Electrophysiological Subtypes of the GBS in studied cases.

DISCUSSION:

We found that seasonal variations of GBS incidence is significant. Seasonal variations were reported in several studies (Spring in Northwest Greece[11,12] and Taiwan[13], Spring and Summer in Brazil[14], Summer in China[15] and South chorea[16], Autumn in Sweden[17], Spring and Winter in Iran[18], Winter and June in Netherlands[19]). Higher frequency in summer and winter which was seen in our series was similar to reports from China, South Korea and Netherlands. Kalita J & Misra UK et al reported peak incidence in summer[20] Shrivastava M et al reported maximum incidence in July and most cases occurred from February to July in Central India[21]. Webb AJ in their study found that incidence of GBS was more in winter than summer. But this variation was not seen in all geographical regions. The authors concluded that the seasonal variations were likely to be related to regional variation in prodromal illnesses[22].

Seasonal variation varies in different regions of the world because causative factors or triggering events (respiratory and enteric infections) have opposite seasonality[23]. Campylobacter Jejunei gastroenteritis outbreak commonly occur in summer which was the reason for peak incidence in summer noted in some studies (Mexico China and Iran)[24]. Recent outbreak of H1N1 Influenza A virus and its association with GBS has been a topic of immense interest amongst the epidemiologists. GBS associated with H1N1 influenza outbreaks is predominantly seen damaging peripheral nerves (demyelinating type). This type of GBS is having a better prognosis than GBS caused after Camphylobacter Jejunei gastroenteritis which usually cause axonal form of GBS having severe and debilitating. Silvana Romio et al concluded in their study that influenza A(H1N1) and vaccine against it both may have a possible association with GBS[25].

In our study clinical types were pure motor in 78 patients (84.78%), motor sensory in 11 patients (11.96%), Miller fisher in 2 patients (2.17%) and pure sensory in 1 patient (1.08%). The GBS Electrophysiological subtypes in our study were acute inflammatory demyelinating polyradiculoneuropathy (AIDP) in 70 patients (76.09%), acute motor sensory axonopathy (AMSAN) in 16 patients (17.39%), acute motor axonopathy (AMAN) in 4 patients (4.35%), and Equivocal in 2 patients (2.17%). In our study Classical AIDP (Pure motor-Demyelinating) was the commonest type which was seen in >76% cases. AMSAN Variant is the second commonest type noted in 17% patients. When compared with other studies AMAN type is rare in our areas. Axonal type of GBS is rare particularly in pediatric age group. Demyelinating form of GBS is common with good prognosis. Though various authors like Kalita J & Misra U K et al reported that pure motor demyelinating AIDP is the commonest type in northern India in our study AMAN was found to be more common than AMSAN c. Kannan MA et al reported AMAN subtype accounted for significant pediatric GBS which is rare in our study.

Conclusion:

Our study shows that there is a significant seasonal variation and type of GBS occurrence in Tamil Nadu. There are no studies in India exploring the epidemic infection and notifying GBS incidence. Hereby we report more incidence in July and December months, summer and winter peak which has to be correlated with epidemic infection and serology study needed to prevent or decrease the incidence of GBS.

Conflict Of Interest: Nil

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