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Pattern of Clinical Profile and Outcome of Gillian Barre Syndrome in Sudanese Patients

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Abstract

Introduction: Guillian Barre'-Syndrome (GBS) is an acute, autoimmune disease affecting spinal roots and peripheral nerves, characterized by a rapidly progressive, ascending weakness of the extremity, trunk and even respiratory and facial muscles and with minor sensory and autonomic dysfunction. As in Sudan there is no enough data regarding the pattern of presentation and outcome of GBS, our research aimed to study clinical profile, electrophysiological variant, and outcome of Sudanese patients diagnosed with (GBS).

Methods: A multi centers cross-sectional hospital-based study conducted in Khartoum from March to September 2020, 62 patients enrolled in the study, structured questionnaire consists of personal data, clinical history, examination findings, electrophysiological study result, management and outcome is used to assess the clinical profile and outcome of the disease.

Results: The study revealed that males and females are equally represented, 70% patients are between 18 years and 50 years. The onset of the weakness was less than or equal 3 days in 33.9% of patients, from 4 to 7 days in 41.9%, from 8 to 14 days in 11.3% and above 14 days in 12.9%.40.3% patients had Evidence of autonomic dysfunction. The majority of patients presented with weakness that started in the lower limbs (93.5%), in (4.8%) the weakness started in the upper limbs and then descend. In (1.6%) the weakness started in the pharyngeal and respiratory muscles from the start. Sensory complains were observed in 54 patients (87.1%), 3 patients (4.8%) developed urinary bladder incontinence and 36 patients (58.1%) had back pain at the onset of the disease. On clinical examination; (98.4%) of patients had absent reflexes, (35.5%) had bilateral facial nerve palsy and (4.8%) had unilateral facial nerve pals. Based on the electrophysiological studies, (37.09 %) were recorded as acute motor axonal neuropathy (AMAN), (29.03%) as acute inflammatory demyelinating poly neuropathy (AIDP) and (29.03%) as acute motor-sensory axonal neuropathy (AMSAN). Regarding the outcome, 30 patients (48.4%) fully recovered, 25 patients (40.3%) recovered with motor deficit, and 7 patients (11.3%) unfortunately died.

Conclusion: This study concluded that Guillian Barre'-Syndrome (GBS) in Sudanese population mainly affects age group from 18 to 50 years with variable maximum onset of weakness, presentation and outcome. Lower limb weakness and absent reflexes were the most presenting features. NCS showed axonal type of GBS found to be in nearly 66% of patients and 40% showed clinical evidence of dysautonomia.

Keywords: guillian barre'-syndrome; variants; outcome and sudanese patients

Introduction

Guillian Barre'-Syndrome (GBS) is an acute, autoimmune disease affecting spinal roots and peripheral nerves, characterized by a rapidly progressive, ascending weakness of the extremity, trunk and even respiratory and facial muscles and with minor sensory and autonomic dysfunction [1]. It affects .8-1.9 cases per 100,000 people per year [2], can occur in any age with bimodal distribution in age specific curve, peaks in young adults and the elderly [3] and Males appear to be affected more commonly

[4], however, most of these studies were done in Europe and North America. In most of the cases rapidly progressive weakness is key presenting features, with nadir can be reached within 4 weeks and limb weakness appear to be commonest manifestation with proximal affection more than distal. Facial palsy represents most of cranial nerve involvement, followed by bulbar weakness, ophthalmoplegia, and tongue weakness. In about half the cases the illness is associated by sensory symptoms [5].

Nerve conduction study NCS is useful confirmatory diagnostic tool, also to differentiate between demyelinating and axonal subtypes of GBS [6], along with albumin cytological dissociation in cerebrospinal fluid [3]; however, GBS is clinical diagnosis. Acute inflammatory demyelinating polyneuropathy AIDP, acute motor and sensory axonal neuropathy AMSAN and acute motor axonal neuropathy AMAN are the commonest subtypes and tow aforementioned subtypes characterized by immune attack directed at axons rather than Schwann cells and myelin [7, 8].

Several randomized controlled trials studying the effect of immunotherapy in GBS have been done in the past few decades. Intravenous immunoglobulins IVIG and plasma exchange have proved effective [9]. Nevertheless, GBS is still a life-threatening disorder, patients can die in the acute progressive stage, most probably because of ventilator insufficiency or pulmonary complications, or from autonomic dysfunction including arrhythmia [10]. And Patients who survive frequently have residual complaints and deficits, which can have a substantial effect on daily activities and quality of life [11]. As in Sudan data regarding pattern of presentation, electro-physiologic subtype and outcome in GBS are scared, therefore this research aimed to study clinical profile and electrophysiological variants of Sudanese patients diagnosed with (GBS).

Methods

A descriptive cross-sectional study involving multi-Sudanese centers in Ibrahim Malik Hospital ICU, the National Center for Neurosurgery and Neurosciences (NCSN), Soba University Hospital and Omdurman teaching hospital. These are the major hospitals in Sudan receiving neurology patients from Khartoum and all Sudan states. Also, these health facilities provide clinical and electrophysiology services and ICUs. This study conducted from March to September 2020, 62 patients was enrolled in this study, and structured questionnaire consisted of personal data, clinical history, examination findings, management and outcome of the disease. And Nerve conduction study (NCS) was performed using standard procedure, and reported by expert neurologists and electrophysiologists.

Results

In a total of 62 patients with Guillian Barre'-Syndrome, there were 32 (51.6%) males and 30 (48.4%) females with male to female ratio of (1.07: 0.93). 20 patients (32.3%) were between 18 and 30 years, 23 patients (37.1%) were between 31 and 50 years, 15 patients (24.2.2%) were between 51 and 65 years and 4 patients (6.5%) were above 65 years. The majority of patients presented with weakness that started in the lower limbs (93.5%), in (4.8%) the weakness started in the upper limbs and then descend. In (1.6%) the weakness started in the pharyngeal and respiratory muscles from the start. Onset of the weakness was less than or equal 3 days in (33.9%) of patients, from 4 to 7 days in (41.9%), from 8 to 14 days in (11.3%) and above 14 days in (12.9%) **(Figure 1).** On clinical examination; (98.4%) of patients had absent reflexes, (35.5%) had bilateral facial nerve palsy and (4.8%) had unilateral facial nerve palsy.

Distal paresthesia, pins or sensory complains preceding the weakness were observed in 54 patients (87.1%), 3 patients (4.8%) developed urinary bladder incontinence and 36 patients (58.1%) had back pain at the onset of the disease**.** Regarding the autonomic dysfunction, 4 patients (6.5%) had minimum heart rate at rest (abnormal <50), 30 patients (48.4%) had maximum heart rate at rest (abnormal >110) and 25 patients (40.3%) had liable blood pressure. Overall, 25 patients (40.3%) developed clinical evidence of autonomic dysfunction**.** Based on the electrophysiology, (40.32%) were classified as acute motor axonal neuropathy (AMAN), (30.65%) as acute inflammatory demyelinating poly neuropathy (AIDP) and (29.03%) as acute motor-sensory axonal neuropathy (AMSAN). Regarding treatment, (87.1%) received intra venous immune globulin, (3.2%) underwent plasma exchange, and (1.6%) received both of them while (8.1%) didn't receive any treatment. Near half of the patients (43.5%) were admitted to the ICU. Regarding the outcome; 30 patients (48.4%) fully recovered, 25 patients (40.3%)

recovered with motor deficit, and 7 patients (11.3%) died.

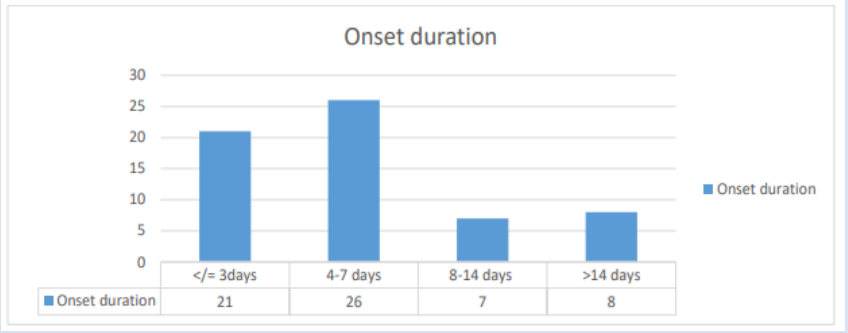

Figure 1: Onset Duration

Table 1: Clinical presentations of the disease

Presentations	Frequency	Percentage
Weakness	62	100%
Distal paresthesia/pins/or sensory complication	54	87.1%
Back pain at onset	36	58.1%
urinary bladder incontinence	3	4.8%
Evidence of autonomic dysfunction	25	40.3%

Table 2: Disease variants based on electrophysiological study

Clinical variants based on electrophysiological study	Frequency	percentage
AMAN	25	39.51%
AMSAN	18	29.03%
AIDP	19	31.45%

Discussion

GBS occurs throughout the world, it affects .8-1.9 cases per 100,000 people per year. Our results showed that there were no differences in incidence distribution between male and female, this may be due to the type of study and the number of cases, these results are similar to studies conducted in India [12, 13]. Study conducted in USA showed that males are more likely to be affected than female. GBS has been reported in all age groups from infancy to elderly with bimodal age distribution [14]; however, it is more frequently affected adults and older people. In this study, people who are 50 years and less are more commonly affected, finding similar to results from previous studies [12, 13]. The most frequent symptom at the onset of the disease was limb weakness, mainly due to inflammation of the nerves which lead to muscle weakness. The weakness starts in the feet and then ascends to involve the upper body and limb [4]. Focal conduction block at the level of the lumbar and cervical nerve roots, rather than along the length of the nerve fiber can easily explained this [6]. No obvious differences in the pattern of classical muscle weakness were noted in this study.

Respiratory failure is dangerous consequences in GBS due to Weakness of respiratory and bulbar muscles as progressive weakness of both inspiratory and the expiratory muscles is the mechanism leading to respiratory failure in patient with GBS [15]. In this study few patients developed respiratory or bulbar muscle weakness, findings are less to another studies [15, 16]. Distal paresthesia is common in GBS. The study showed that about 87% of patients experienced distal paresthesia. This result supported by another study concluded that more than half of GBS patients developed paresthesia of distal extremities [17]. Autonomic dysfunctions in GBS are high and reported to affect (65%) of patients with mild GBS and may reach up to (90%) in moderate to severe GBS [18] and autonomic disturbance is reported to occur in (40%) of patients with GBS in this study with abnormal heart rate and labile blood pressure appear to be the most frequent manifestations. The frequency of autonomic dysfunction is low in our study because we did not use any of validated autonomic testing to document autonomic

dysfunction, we just depended on reviewing the records of pulse and blood pressure monitoring.

Reduced or absent deep tendon reflexes is of particular importance to diagnose GBS, this may reflect desynchronization or dispersion of impulses carried by myelinated fibers in the afferent arm of the reflex arc. Our study showed that approximately all patients have reduced or absent deep tendon reflexes at the time they are first examined. Several studies support this result [12, 17]. Facial nerve is the most commonly affected cranial nerve in GBS affecting around half of the cases and typically occurs when there is substantial limb weakness. It is often bilateral (35.5%), but occasionally asymmetrical and rarely unilateral (4.8%). GBS variants vary in frequency, severity and from region to region. This study revealed that AMAN was still the commonest subtype accounted for 37.09% followed by AIDP and AMSAN (29.03% for each). Study from north china showed that AMAN was the commonest subtype there. On the other hand, AIDP subtype was found to be dominated in Europe and United States [19, 20].

GBS is still a life-threatening disorder, patients can die in the acute progressive stage and patients who survive frequently have residual complaints and deficits [10, 11]. In this study 48.4%fully recovered, 40.3% recovered with motor deficit, and 11.3% died, in contrary to study conducted in Nepal in which 90% of cases showed good functional outcome and 6.45% died [21]. The increase in mortality number in our study partially encountered due to limited resources like ICU beds and the high cost of IVIG and plasma exchange.

Conclusion

This study concluded that Guillian Barre'-Syndrome (GBS) in Sudanese population affects age group from 18 to 50 years with variable maximum onset of weakness, presentation and outcome. Lower limb weakness and absent reflexes were the most presenting features. NCS showed axonal type of GBS found to be in nearly 66% of patients and 40% showed clinical evidence of dysautonomia.

Declarations

Ethical considerations

Ethical clearance was obtained from committee of SMSB (Sudan Medical Specialization Board). Acceptance of hospitals administrations on approval was obtained. Written informed consent from patients was obtained before participation.

Conflict of interest

The authors declare no conflict of interest

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