RESEARCH ARTICLE

Sensory symptoms on admission as a predictor of respiratory insufficiency in patients of Guillain-Barre Syndrome (GBS)

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Abstract

Objective: To assess sensory symptoms on presentation as a predictor of respiratory insufficiency in patients of Guillain-Barre Syndrome.

Methods: The descriptive cross-sectional study was conducted from November 2018 to March 2019 at the Neurology Department of King Edward Medical University, Lahore, Pakistan, and comprised patients aged 18-60 years suffering from Guillain-Barre Syndrome as per Brighton criteria. All patients were monitored for respiratory insufficiency by single breath count and arterial blood gases. Data was analysed using SPSS 22.

Results: Of the 87 patients, 61(70.1%) were male and 26(29.9%) were female. The overall mean age was 37.51±15.36 years. Sensory symptoms were noted in 27(31%) patients, and respiratory distress in 17(19.5%). Of those who had sensory symptoms, 10(37%) also had sensory symptoms.

Conclusion: Respiratory insufficiency in Guillain-Barre Syndrome patients presenting with sensory symptoms was common.

Keywords: Guillain Barre syndrome, GBS), Respiratory distress, Sensory symptoms. (JPMA 71: 446; 2021)

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Introduction

Guillain-Barre Syndrome (GBS) is a potentially disabling, immune-mediated, acquired demyelinating or axonal polyradiculo neuropathy, typically characterised by acute onset of ascending flaccid paralysis, which can progress to respiratory muscle paralysis requiring ventilator support.[1] The overall incidence of GBS is 1.1/0.1 million/year to 1.8/0.1 million/year. The incidence increases with age, and after 50 years it ranges from 1.7/0.1 million/year to 3.3/0.1 million/year.[2]

Adequate treatment does not guarantee complete cure as some of the patients (14%) continue to suffer from persistent disability even after one year.[3] Different countries like Thailand,[4] India,[5] China,[6] Bangladesh[7] and other Asian countries have shown variable outcomes regarding GBS.[8] Prognosis not only varies with the change in region, but also due to change in clinical sub-types, like axonal GBS mostly showing worse outcome with patients requiring respiratory support due to severe weakness at the outset.[9,10]

There are few studies on the association of sensory disturbances and respiratory involvement in GBS. Malik MB et al. reported sensory symptoms in 77% patients and, amongst them, 33% had respiratory distress, indicating significant relation.[11] Karkare K et al. reported that respiratory involvement was significantly present in GBS patients with pain and paresthesias.[12] Another study on 214 patients showed that poor outcome was associated with mechanical ventilation, but sensory symptoms were not studied as a predictor of poor outcome in these patients.[13]

The current study was planned to assess sensory symptoms on presentation as a predictor of respiratory insufficiency in GBS patients.

Patients and Methods

The descriptive cross-sectional study was conducted from November 2018 to March 2019 at the Neurology Department of King Edward Medical University (KEMU), Lahore, Pakistan, After approval from the institutional ethics review committee, the sample size was calculated at 95% confidence level with 9% absolute precision and expected percentage of respiratory distress in patients with sensory symptoms as 77.27%.[11]

The sample was raised using consecutive sampling from among GBS patients aged 18-60 years of either gender regardless of variants and subtypes using the Brighton criteria.[14] Informed consent was taken from all patients included in the study. Patients with chronic inflammatory demyelinating poly-radiculo-neuropathy (CIDP) and having hypokalaemic paralysis were excluded.

All the subjects were monitored for respiratory insufficiency by single breath count (SBC) and arterial blood gases (ABGs) at the time of admission. Those who had SBC <20 and partial pressure of Oxygen (pO_2) <80mmHg were labelled as having respiratory insufficiency.

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Data was analysed using SPSS 22. Frequency and percentage were used for gender, respiratory distress and sensory symptoms, and mean ± standard deviation (SD) for age (years) and Hughes grade.[15] Chi square test was used to see association among categorical variables, and independent t-test was used for comparing means among respiratory distress groups with respect to age and Hughes grade. Statistical significance was set at $p \leq 0.05$.

Results

Of the 87 patients, 61(70.1%) were male and 26(29.9%) were female. The overall mean age was 37.51±15.36 years (Table 1). Sensory symptoms were noted in 27(31%) patients, and respiratory distress in 17(19.5%). Gender-based difference were not significant ($p>0.05$) (Figure).

Of the patients with respiratory distress, 10(37%) also had sensory symptoms, while 7(11.7%) were without sensory symptoms ($p=0.006$) (Table 2).

In terms of Hughes grade, 16(26.7%) patients with respiratory distress showed grade ≤3 and 1(3.7%) had grade >3 ($p=0.012$) (Table 3).

Table-1: Descriptive Statistics.

Variable		n (%)
Age (years) 37.51±15.36*	≤35	45 (51.7)
	>35	42 (48.3)
Gender	Male	61 (70.1)
	Female	26 (29.9)
Total		87 (100)

*Mean±Standard Deviation.

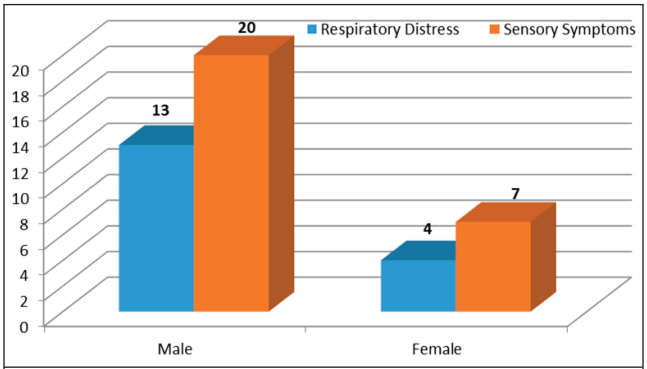

Figure: Frequency of respiratory distress and sensory symptoms according to gender in Guillain-Barre Syndrome (GBS) patients.

Table-2: Respiratory Distress and Sensory Symptoms.

Variable		Respiratory Distress Yes	Respiratory Distress No	Total	*p*-value
Sensory Symptoms	Present	10 (37.0)	17 (63.0)	27 (100)	0.006*
	Absent	07 (11.7)	53 (88.3)	60 (100)	
Total	17 (19.5)	70 (80.5)	87 (100)		

* Significant (p-value ≤ 0.05)

Table-3: Mean comparison of Hughes Grade among patients with respiratory distress.

Variable		Respiratory Distress Yes	Respiratory Distress No	Total	*p*-value
Hughes Grade	≤ 3	16 (26.7)	44 (73.3)	60 (100)	0.012*
	> 3	01 (3.7)	26 (96.3)	27 (100)	
Total		17 (19.5)	70 (80.5)	87 (100)	

* Significant (p-value ≤ 0.05)

Discussion

In the current study, respiratory distress was noted in 17 GBS patients; 13 males, and 4 females, with males being 3.25 times more prone to distress than females. The results are slightly higher than the other studies where it ranged from 1.5 times to 2.75 times in males than females.[16,17] The reason for this difference might be the small sample size and geographical differences among the studies.

Respiratory failure progresses rapidly from its onset and the pace is so dramatic that ventilator support is sometimes necessary within 24-48 hours. On the other hand, the progression might be sub-acute or over 3-4 weeks' time.[18] So, the tests that are extremely important include SBC followed by ABGs and pulmonary function tests at bedside.[19] Literature shows prevalence regarding sensory symptoms, especially pain, among acute GBS patients, and its long-term impact on outcome.[20] However, there are only a few studies focussing on the sensory symptoms and their association with the occurrence of respiratory distress among GBS patients. In the current study, 31% patients showed sensory symptoms whereas 69% had no such symptoms. Out of 87 GBS patients, 19.5% suffered from respiratory distress whereas 80.5% had no such distress. Out of total, 61 patients were males and 26 were females. Comparison of various variables among GBS patients showed statistical significance between respiratory distress and sensory symptoms and Hughes grade ($p \leq 0.05$). None of the other variables were found significant for age and gender with respect to respiratory distress and sensory symptoms. Karkare et al. reported data from 60 GBS patients with 48(80%) having sensory dysfunction. Pain and paresthesias was present in 8(20.5%) patients with respiratory involvement ($p=0.02$) compared to patients without any sort of sensory symptoms.[12] Taly AB et al. reported that sensory signs and symptoms were present in the upper limbs (45%) and lower limbs (59%) of GBS patients.[21] Yawar Y et al. reported 34 cases with gastrointestinal infections as the common problem at onset, followed by respiratory infections. Respiratory failure was seen in 55.9% patients.[22]

The current study has certain limitations. Critically ill patients could not be subjected to any questionnaire-based enquiry. A small sample size and use of purposive

sampling were the other limitations.

Conclusion

Patients with a clinical diagnosis of GBS having sensory symptoms at the time of admission had higher frequency of respiratory distress during admission. This suggests a probable association of sensory symptoms with poor outcome in GBS.

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Conflict of interest: None.

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