Seasonal and monthly trends in the occurrence of Guillain-Barre syndrome over a 5-year period: A tertiary care hospital-based study from South India

Sir,

Seasonal variations have not been adequately studied in Guillain-Barre Syndrome (GBS). During our clinical practice, it was observed that there was clustering in the occurrence of GBS during certain seasons and months of the year. We did a retrospective study in our institute, a tertiary care center in South India from June 2008 to May 2013, in the departments of Neurology, Medicine, and Pediatrics to analyze the monthly and seasonal occurrence of GBS. The outpatient and inpatient records of all patients who had presented to our hospital with symptoms of acute flaccid paralysis were reviewed retrospectively from June 2008 to May 2013 with special attention to the time of occurrence with respect to month and season. A diagnosis of GBS was made when the clinical features, electrophysiological findings, and CSF parameters satisfied the Asbury and Cornblath diagnostic criteria.[1] Patients with other causes of acute flaccid quadriparesis like acute transverse myelitis, hypokalemic paralysis, polymyositis, and myasthenia gravis were excluded. The seasons in India were divided as: Summer: March to May; Monsoon: June to September; Post-Monsoon: October to November: Winter: December to February according to the seasonal classification of Indian Meteorological Department.[2]

During the 5-year period, there were a total of 284 patients diagnosed with GBS. The male to female ratio was 1.7:1 (males: 179, females: 105), with age of onset from 5 months to 85 years.

The highest incidence of GBS was seen in the monsoon (n = 92, 32.39%) and winter (n = 75, 26.40%). There were 67 (23.59%) cases in summer and 50 (17.60%) cases in post-Monsoon [Table 1, Figure 1].The monthly incidences of the disease were significantly high during January (10.21%), May (9.15%), June (9.85%), November (10.91%), and December (10.56%) [Table 2].

This observation can be attributed to the fact that the major preceding infections like gastroenteritis[3-5] and Influenza[6] tend to occur during these seasons and hence increasing the risk of acquiring GBS. The seasonal epidemiology of *Campylobacter jejuni* gastroenteritis has been studied in different regions of India, and a significant seasonal and monthly incidence have also been shown. The seasonality of *Campylobacter* species has been studied by Singh *et al*.,[7] which showed the highest prevalence of *C. jejuni* in the fecal samples during the rainy seasons and in the month of September.

Similar results were observed season-wise in a study from Pune by Saba *et al*.,[8] which showed a dual peak in the month of May and October. Studies from in and around Delhi showed influenza virus circulation peaks coincided with rainy and winter seasons.[9] A recent study from South India, which observed the seasonal variation in the clinical recovery of patients with GBS requiring mechanical ventilation, showed increase occurrence of GBS during the months of June to August and December to February, which is consistent with our seasonal and monthly peaks.[10] A comparison of the seasonal trends reported from various Indian studies is given in Table 3.

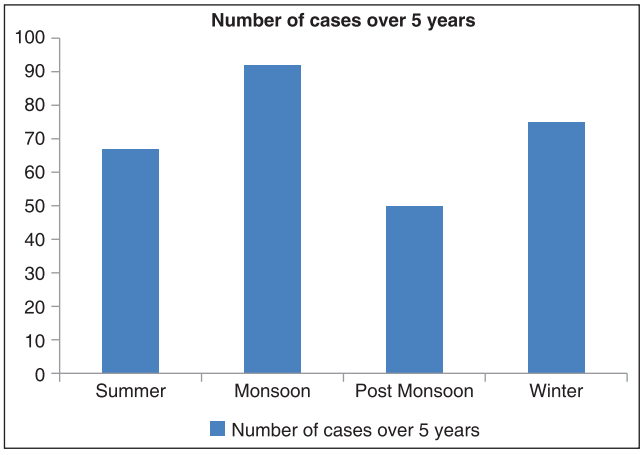

Figure 1: Seasonal trends over 5-year period

The main highlight and purpose of undertaking this study is to create public awareness among individuals, families, and the government to be prepared round the year for the treatment and management of GBS, especially during monsoon and winter seasons. However, to strengthen this observation, further large multi-centric studies have to be done in future. To have a country wide registry of GBS would be an ideal step forwards, in knowing the incidence, prevalence, and seasonal trends of GBS.

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Table 1: Seasonal trends over a 5-year period

Seasons	Number of cases over 5 years (n =)	Percentages (%)	Significance
Summer	67	23.59	ANOVA
Monsoon	92	32.39	F=0.85
Post-monsoon	50	17.60	P=0.59*
Winter	75	26.40	

*not significant

Table 2: Monthly trends in the distribution Guillain Barre syndrome over a 5-year period

Months	Number of cases over 5 years	Percentage
January	29	10.21
February	16	5.63
March	21	7.39
April	20	7.04
May	26	9.15
June	28	9.85
July	20	7.04
August	20	7.04
September	24	8.45
October	19	6.69
November	31	10.91
December	30	10.56

Table 3: Seasonal trends from different Indian studies

Study group	Summer (%)	Monsoon (%)	Post monsoon (%)	Winter (%)
Present study	67 (23.59)	92 (32.39)	50 (17.60)	75 (26.40)
Sharma, *et al.*[11]	27 (41.53)	19 (29.23)	8 (12.30)	11 (16.92)
Sriganesh, *et al.*[10]	52 (33.54)	40 (25.80)	35 (22.58)	28 (18.06)

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Quick Response Code:	**Website:** www.annalsofian.org
	DOI: 10.4103/0972-2327.132662