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ANALYSIS OF HYPOALBUMINEMIA AS PROGNOSTIC INDICATOR IN GBS PATIENTS

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Abstract:

Introduction: *Despite the use of plasma exchanges and intravenous immunoglobulins, Guillain-Barré syndrome (GBS) still carries non-negligible morbidity and mortality. Furthermore, the psychosocial consequences of GBS may persist longer than expected.*

Aims and objectives: *The basic objective of the study is to analyze the level of hypoalbuminemia as prognostic indicator in GBS patients among local population of Pakistan.*

Material and methods: *This descriptive study was conducted in Nishter Hospital Multan during January 2019 to July 2019. The data were collected from 50 patients of GBS which also include adults and child. The data were divided into two parts one include adults and one group include children. Venous blood samples were drawn from all patients within the first 24 hours after admission. Complete blood count, renal function test, and hepatic function test were performed within 24 hours of hospital admission and before the treatment, and serum CRP, albumin, neutrophil, lymphocyte, thrombocyte, CRP, NLR, and PLR levels were recorded.*

Results: *The data were collected from 50 GBS patients. The mean age was 48.5±18.95 years in adults and 5±8.21 years in GBS-P. No significant relationship was found between NLR, PLR, CRP, and albumin levels and the demyelinating and axonal subtypes in both the GBS-A and GBS-P patient groups. In the GBS-P group, on the other hand, the mean NLR level at third month was significantly higher in the HDS≥3 group, but there was no significant difference with the other inflammatory markers.*

Conclusion: *It is concluded that inflammatory markers including and albumin levels may be used as cheaper, more readily available, and more rapidly studied markers for the prediction of the prognosis of GBS.*

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INTRODUCTION:

Despite the use of plasma exchanges and intravenous immunoglobulins, Guillain-Barré syndrome (GBS) still carries non-negligible morbidity and mortality. Furthermore, the psychosocial consequences of GBS may persist longer than expected. Various aetiological, clinical, electrophysiological and immunological factors may carry prognostic predictive value the prognosis of GBS is generally considered favourable [1]. In this syndrome, autoantibodies triggered by previous infections cross-react with gangliosides and result in peripheral nervous system injury. Moreover, it has been recently shown that inflammatory factors apart from cellular and humoral immunity play a role in the GBS pathogenesis [2]. Recently, neutrophil–lymphocyte ratio (NLR) is known to be widely used as a marker of inflammation and a predictor of prognosis in various disorders. Higher NLR values were shown to be an independent predictor of a worse prognosis among patients with acute ischemic stroke, cardiac disorders, and cancer. Likewise, increased platelet–lymphocyte ratio (PLR) was shown to predict a poor prognosis in patients with acute stroke and malignancy [3].

A simple measurement of serum albumin concentration could represent a prognostic biomarker in patients with Guillain-Barré syndrome (GBS) treated with intravenous immunoglobulin (IVIG), a new study suggests [4]. The study showed that 35% of patients with GBS developed hypoalbuminemia 2 weeks after IVIG treatment and that low albumin levels after treatment were strongly related to a severe clinical course and poor outcome. GBS is a post infectious immune-mediated neuropathy causing rapidly progressive weakness of limbs, and respiratory failure in 25% of cases. Guillain Barre Syndrome (GBS) is the commonest acute predominantly motor neuropathy. It comprises of heterogeneous group of disorders of presumed autoimmune etiology [5].

Aims and objectives:

The basic objective of the study is to analyze the level of hypoalbuminemia as prognostic indicator in GBS patients among local population of Pakistan.

MATERIAL AND METHODS:

This descriptive study was conducted in Nishter Hospital Multan during January 2019 to July 2019. The data were collected from 50 patients of GBS which also include adults and child. The data were divided into two parts one include adults and one group include children. Venous blood samples were drawn from all patients within the first 24 hours after admission. Complete blood count, renal function test, and hepatic function test were performed within 24 hours of hospital admission and before the treatment, and serum CRP, albumin, neutrophil, lymphocyte, thrombocyte, CRP, NLR, and PLR levels were recorded.

Statistical analysis:

The data were collected and analyzed by using SPSS version 21.0. All the values were expressed in mean and standard deviation. Descriptive statistics included mean ± SD, number, and percentage.

RESULTS:

The data were collected from 50 GBS patients. The mean age was 48.5±18.95 years in adults and 5±8.21 years in GBS-P. No significant relationship was found between NLR, PLR, CRP, and albumin levels and the demyelinating and axonal subtypes in both the GBS-A and GBS-P patient groups. In the GBS-P group, on the other hand, the mean NLR level at third month was significantly higher in the HDS≥3 group, but there was no significant difference with the other inflammatory markers. In the pediatric group, the mean age of the HDS≥3 group was significantly lower than that of the HDS<3 group.

Table 01: Comparisons of inflammatory markers between GBS patients with control groups

	GBS-A	**GBS-P**	***p-value***
Age, years	48.50±18.95	5±8.21	0.200
NLR	3.65±1.73	2.c3±1.89	0.000
PLR	166.15±64.14	118.37±72.67	0.001
CRP, mg/dL	0.80±1.48	0.20±0.31	0.001
Albumin, gr/dL	3.52±0.63	3.98±0.47	0.031

DISCUSSION:

In developing countries, less immunogenic vaccines are preferred over highly immunogenic vaccines to reduce vaccination costs. This act as a major barrier in GBS management in Pakistan. Wali Muhammad et al. compared the therapeutic efficacy of Intravenous immune globulin (IVIG) with Plasma exchange (plasmapheresis) in patients of Acute Inflammatory Demyelinating Polyneuropathy i.e., Guillain-Barre syndrome (GBS) [6]. They found that both IVIG and Plasma Exchange have equal therapeutic efficacy in the treatment of patients of GBS [7].

GBS is usually diagnosed on the basis of a patient's signs and symptoms with the assistance of laboratory cerebrospinal fluid findings and electrophysiological criteria. Among GBS patients, the role of some biomarkers such as myelin basic protein, neurofilaments, anti-ganglioside antibodies, neuron-specific enolase, hypocretin-1, tumor necrosis factor [8], chemokines, and complements in disease pathology and prognosis has been examined. There is a limited number of studies in the literature which have explored the correlation between GBS-A patients and serum inflammatory markers [9]. To date, no study has assessed the association between GBS-P patients and serum NLR, PLR, CRP, and albumin levels [10].

CONCLUSION:

It is concluded that inflammatory markers including and albumin levels may be used as cheaper, more readily available, and more rapidly studied markers for the prediction of the prognosis of GBS.

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