Factors Associated With Prognosis of Guillian Barre Syndrome

Thesis

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List of Abbreviations

AIDP : Acute inflammatory demyelinating polyneuropathy

AMAN : Acute motor axonal neuropathy

BBE : Bickerstaff's brainstem encephalitis

CIDP : Chronic inflammatory demyelinating polyradiculoneuropathy

CMAP : Compound muscle action potential

CMV : Cytomegalovirus

CNV : Cranial nerve variants

CSWS : Cerebral salt-wasting syndrome

GBS : Guillain-Barré syndrome

IVIG : Intravenous immunoglobulin

LOS : Lipooligosaccharides

MFS : Miller-Fisher syndrome

MUP : Motor unit potential

NCS : Nerve conduction study

PE : Plasma exchange

QSART : Quantitative sudomotor axon reflex test

SIADH : Syndrome of inappropriate antidiuretic hormone

SNAP : Sensory nerve action potential

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INTRODUCTION

Guillain-Barré syndrome (GBS) is a common neurological disorder that is characterized by symmetrical weakness of the limbs which reaches a maximum severity within 4 weeks **(*Yuki et al., 2010).***

GBS occurs throughout the world with a median annual incidence of 1.3 cases per population of 100 000, with men being more frequently affected than women. GBS is considered to be an autoimmune disease triggered by a preceding bacterial or viral infection. Campylobacter jejuni, cytomegalovirus, Epstein-Barr virus and Mycoplasma pneumoniae are commonly identified antecedent pathogens ***(Kuwabara et al., 2004)***.

Although intravenous immunoglobulin (IVIG) and plasma exchange (PE) were proven to be effective treatment options for GBS ***(Hughes et al., 2014*)**.

Many patients still have poor prognosis and sequelae such as decreased mobility, severe long-term fatigue syndrome and chronic pain ***(Witsch et al., 2013).***

The reported mortality of GBS varies between 3% and 7% **(*van den Berg et al., 2013).***

Typical GBS is an acute, predominantly motor neuropathy involving distal limb paresthesias, relatively symmetric leg weakness, and frequent hyporeflexia or areflexia. Recent study suggests that some patients with GBS had normal or hyperreflexia ***(Kuwabara et al., 2002).***

According to a recent classification, Bickerstaff's brainstem encephalitis (BBE) can also be included into GBS variants ***(Wakerley et al., 2014).*** Also, previous reports from western countries showed that acute inflammatory demyelinating polyneuropathy (AIDP) is the most common subtype of GBS ***(Mitsui et al., 2015).*** However, the proportion of different subtypes of GBS and their prognosis varied significantly among different regions ***(van Doorn et al., 2010).***

Patients with AIDP has significantly better outcome at 3 months follow up and 6months follow up than patients with acute motor axonal neuropathy (AMAN) and patients with BBE-GBS Prognosis of AMAN group and BBE-GBS group at 3 months follow up and 6 months follow up had no significant difference, prognosis of Miller-Fisher syndrome (MFS) group and that of cranial nerve variants (CNV) group at 6 months were both good, Previous studies have identified that high age, preceding diarrhea, and low Medical Research Council sum score (MRC sum score) are

independently associated with poor prognosis in GBS ***(Walgaard et al., 2011).***

Hyponatremia is the most common disorder of electrolytes in clinical practice, occurring in up to 15- 30% of hospitalized patients ***(Verbalis et al., 2007).***

Hyponatremia is defined as serum sodium concentration below 135 mmol/l at nadir, including mild hyponatremia (130-135 mmol/l), moderate hyponatremia (125-130 mmol/l), and severe hyponatremia (125 mmol/l). Hyponatremia is one of the most severe metabolic complications affecting patients with critical neurologic disease because even mild hyponatremia is associated with increased mortality, and rapid correction of chronic hyponatremia can cause severe neurologic deficits and death ***(Waikar et al., 2009).***

Although the association between GBS and hyponatremia has been reported previously, the small sample sizes of these studies make it difficult to address the possible prognostic value of hyponatremia in GBS ***(Saifudheen et al., 2011).***

It is reported that the main cause of hyponatremia in GBS is syndrome of inappropriate antidiuretic hormone (SIADH) ***(Saifudheen et al., 2011).***

On the other hand, cerebral salt-wasting syndrome (CSWS) was also identified as the cause of hyponatremia in GBS case report ***(Lenhard et al., 2011).***

Neurological disorders can stimulate the production of a high level of inflammation, resulting in an increase or decrease in acute phase reactans ***(Mungan et al., 2014).***

Albumin is a late-reacting negative acute-phase protein ***(Tsirpanlis et al., 2005).***

Hypoalbuminemia is common in patients with GBS, it decreases after the subacute period, and there is a negative correlation between albumin levels and GBS disability. The mean pre- and post-treatment serum albumin levels of the AIDP group were lower than those of the other groups. Such decreases in mean albumin levels in AIDP are thought to be mainly due to inflammation, hemodilution, or an acute phase response ***(Hahn et al., 1998).***

AIM OF THE WORK

To study contributing factors that may affect poor and good prognosis of GBS cases.