

Case Report*Open Access, Volume 4***Guillain-barre syndrome ensuing dengue fever in a filipino male: A case report****Alyssa Pauline C Co***; Lina C Laxamana*St. Luke's Medical Center, Institute for Neurosciences, 279 E Rodriguez Sr. Avenue, Quezon City, Philippines.****Corresponding Author: Alyssa Pauline C Co**

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Case presentation

A 30-year-old, right-handed, Filipino male, with no known comorbidities, presented with fever, myalgia and arthralgia for 4 days. No complaints of abdominal pain, diarrhea, bleeding, and vomiting noted. He was managed as a case of Dengue Fever with NS1 Antigen positive, Dengue IgG positive but IgM negative, the complete blood count showed a white cell count of 4×10^6 /microL, platelets of 100×10^3 /microL and hematocrit of 40. On the 5th day of illness, the patient started complaining of numbness described as tingling sensation of bilateral fingertips and toes, gradually progressing and ascending. On the 7th day of illness, numbness progressed to bilateral ankle and wrist level and now associated weakness of bilateral legs, described as heaviness, but still able to ambulate without assistance. On the 10th day of illness, noted progression of weakness now unable to grip on both hands, and with associated facial numbness on the right side of the face, with noted paralysis on the left, unable to close left eye tightly and spilling of liquids on the left side when drinking. This prompted admission at our institution.

On examination, the patient was conscious, coherent and had stable vital signs. Neurologic exam revealed facial diplegia,

left more than right, other cranial nerves were intact. Motor examination revealed diminished muscle power on both proximal and distal upper and lower extremities (4-/5). All sensory modalities were intact. His lower limb tendon reflexes were absent and his upper limb reflexes were hyporeflexive. There is an absent Babinski sign. Examination of the abdomen, respiratory and cardiovascular systems revealed no abnormalities.

Initial laboratory investigation revealed a hematocrit of 52%, and normal leukocyte and platelet counts. The renal profile was normal but liver function tests showed mild transaminitis. Nerve conduction studies revealed diffuse predominantly motor demyelinating type of polyneuropathy involving both distal and proximal nerve segments of the lower more than the upper extremities, with evidence of conduction block in the peroneal nerve on the left. While the blink reflex study is consistent with bilateral facial neuropathy, more severe on the left, involving the more proximal than distal portions. A lumbar puncture was performed and Cerebrospinal Fluid (CSF) examination revealed albuminocytologic dissociation consistent with a diagnosis of GBS (Table 1).

Table 1: Cerebrospinal fluid examination.

Parameters	Results
Glucose	62 mg/dL
Protein	82.9 mg/dL
White Cell Count	0 cells/uL
Culture	Negative

The patient was immediately started on intravenous immunoglobulins (IvIG) 0.4 g/kg/day. He was closely monitored for progression of disease, especially respiratory muscle involvement. During the 5-day course of the IvIG treatment, the patient was monitored closely for ascending weakness, especially respiratory muscle weakness but his neurologic status did not deteriorate. He was referred for physical and occupational therapy. The patient recovered from the acute illness and was discharged with no residual weakness, able to regain the strength of his grip and can walk without assistance.

Discussion

Dengue is a flavivirus, where humans and mosquitoes are the only hosts and is transmitted by *Aedes* mosquitoes. It is a major public health problem in the Philippines and is endemic in all regions of the country. The outbreaks are largely seasonal occurring during the rainy season (June-February). The Philippines has made dengue a notifiable disease, has all four DENV serotypes circulating and ranks among the countries with the highest number of dengue episodes in southeast Asia.

We presented a case of Guillain-Barré Syndrome (GBS) preceded by dengue fever infection. Neurologic sequelae of dengue fever are uncommon, but reported in the medical literature. Neurological manifestations of dengue were classified into three major categories: Those caused by metabolic disturbance like encephalopathy, caused by the viral invasion like encephalitis and the least common one caused by autoimmune reactions leading to muscle involvement and immune-mediated syndromes. However, an association of dengue infections with GBS has been reported in only a few cases.

Guillain-Barré Syndrome (GBS) is the most common cause of acute or subacute generalized paralysis in practice. It occurs in all parts of the world in all seasons and may affect all ages and both genders. GBS is characterized by progressive, symmetrical weakness of the limbs accompanied by absent or depressed deep tendon reflexes with albuminocytologic dissociation.

In a study done by Tang et al (2017) [1] in Hong Kong they found out that there is a significant cross-correlation between GBS and dengue cases at ecological level. Soares et al. (2008) [2] discussed about seven cases of GBS associated with positive dengue serology. It was emphasized that dengue infection should be routinely looked for in GBS cases in the endemic zones. In relation to this, Suryapranata et al. (2016) [3] investigated the epidemiology of GBS on the Caribbean island of Aruba. They noted a seasonal distribution of GBS cases with a peak in February and concluded that the epidemiology of GBS in tropical areas can be different from temperate climate regions and that dengue may be a trigger for developing GBS.

Dalugama et al (2018) [4] presented a case of a 60-year-old Sri Lankan man with a 2-day history of fever, arthralgia, and generalized malaise. Followed by weakness of the bilateral lower limbs, which progressed in an ascending pattern involving both upper limbs and neck muscles, requiring assisted ventilation. GBS was confirmed by nerve conduction studies and dengue was confirmed with a positive antigen test with compatible clinical history.

Boo et al (2016) [5] reported two cases of Guillain Barre syndrome complicating dengue infection in two Malaysian men. The first case was a 35 year-old man who presented with a 4-day history of fever, chills, and rigors associated with nausea and vomiting followed by bilateral lower limb weakness and had been unable to ambulate since the onset of fever. Patient was discharged with residual weakness in ankle joint movement bilaterally. The second case is a 52 year-old man presented with a 3-day progressive, ascending weakness of both lower limbs who had a recent dengue infection a week ago. Patient was given IVIG but his condition deteriorated and developed respiratory muscle paralysis requiring mechanical ventilation. The patient succumbed to multi-organ failure and infection.

Globally, GBS has an incidence of 0.6-1.9 per 100,000 population. In the Philippines, incidence 0.62 to 2.66 per 100,000 population across all age groups. Most literature relate GBS in *Campylobacter jejuni* infection and there are only a few case reports and case series on dengue with GBS. There is an extensive spectrum of clinical manifestations documented, ranging from mild motor weakness to incapacitating quadriplegia and respiratory weakness requiring mechanical ventilation. Therefore, high index of suspicion is important to identify patients with GBS complications.

The available case reports and case series show that onset of symptoms occur after dengue infection, strongly suggesting that dengue is a preceding infection. It is important to note as well that the neurological picture of available cases was similar to that described in literature about GBS related with other infections: ascending paralysis as main manifestation with noted improvement after treatment was administered. The available data indicate that GBS preceded by dengue infection has similar characteristics and prognosis compared to other antecedent infections.

A single prospective study done by Hao et al (2019) [6-9] they investigated the antecedent infections in Chinese patients with Guillain-Barre Syndrome (GBS). Their study found out that two third of their samples had antecedent infections prior to having neurologic symptoms and *Campylobacter jejuni* is still the most common cause of antecedent infection in Guillain-Barre Syndrome (GBS), with the following percentages: *Campylobacter jejuni* (27%), influenza A(17%) and B(16%), hepatitis A virus (5%), dengue virus (3%), cytomegalovirus (3%), Epstein-Barr virus (3%), *Mycoplasma pneumoniae* (2%), herpes simplex virus (2%), varicella-zoster virus (1%), and rubella virus (1%). Again, only a minority of patients had dengue infection. In the Philippines, most of the GBS patients have an antecedent event prior to clinical presentation which is either a respiratory infection or a prior gastroenteritis. Only a few local data was able to document an elevated seroprevalence of *campylobacter jejuni* as most cases of diarrhea came from contamination of poultry

meat in the Philippines.

Dengue fever is endemic in the Philippines and rarely presents with neurologic manifestations. GBS is not well documented in literature both locally and globally. Hence, it is warranted to focus on the association of GBS and dengue, especially in patients presenting with acute or subacute paralysis. The prognosis of GBS is generally favorable if managed accordingly. Clinicians should recognize complications of GBS, especially respiratory failure, prompting early intervention to reduce morbidity and mortality.

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