

Guillain-Barre Syndrome Following Dengue Fever in Adult Patient

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Abstract:

Guillain-Barre syndrome is a post infectious ascending, usually demyelinating polyradiculoneuropathy. Dengue fever as an antecedent infection in GBS is uncommon. A 39-year-old female presented with acute flaccid weakness of both upper and lower limbs which developed in ascending and progressive fashion following a febrile illness of three days. During work-up IgM for dengue virus was found positive. Diagnosis of Guillain-Barre syndrome was made based on neurologic manifestations, the typical CSF findings and pattern of electrophysiological study and exclusion of other pathologies. Patient was treated with intravenous immunoglobulins. During the course of illness, she developed lower motor neuron type trigeminal, facial, glossopharyngeal, vagus and hypoglossal nerve palsy and autonomic involvement. She had significant recovery and was able to talk, eat and walk six weeks later. Dengue is endemic in Bangladesh. Post dengue Guillain-Barre syndrome in adult, as shown in previous reports, should now be considered in the part of spectrum of neurological complications of this infection.

Keyword: Guillain-Barre Syndrome (GBS), Dengue Fever.

Introduction:

Guillain-Barre syndrome (GBS) or Acute inflammatory demyelinating polyneuropathy (AIDP) is a post infectious ascending, usually demyelinating, polyradiculoneuropathy accompanied by areflexia, motor paralysis, and elevated CSF total protein without pleocytosis.¹ Sensory symptoms are less conspicuous than motor ones, but distal paresthesias and dysesthesias are common, and many patient suffers from neuropathic or radicular pain. Autonomic disturbances are also common, which may be severe, and sometimes life-threatening.² Recent infections with *Campylobacter jejuni*, Cytomegalo virus, Epstein-Barr virus, *Mycoplasma pneumoniae*, HIV are known commonly to cause GBS.^{3,4,5}

Dengue is an acute febrile infectious disease caused by arboviruses belonging to the *flavivirus* family and are transmitted by two species of mosquitos, the *Aedes aegypti* and the *Aedes albopictus*. One hundred million cases of dengue fever are reported yearly by the WHO.⁶ Epidemics of dengue are being seen in almost all countries within the tropical belt including Bangladesh and its increasing

incidence has been linked to overcrowding and increasing travel.⁷ Dengue fever as an antecedent infection in GBS is uncommon and some studies and case reports called attention to the possible association between dengue and GBS^{8,9}. We report a case of 39-year-old female seen at United Hospital limited, Dhaka who developed GBS in the course of Dengue fever.

Case report:

A 39-year-old lady was admitted at United Hospital Limited, Dhaka on August 19, 2011, with the complains of severe pain in the left side of lower back and upper thigh of both lower limbs for the last 4 days, followed by weakness of both lower limbs and the feeling of numbness in both lower and upper limbs for one day. Pain aggravated on movement and got some relief with NSAID. A week ago, she had high grade continued fever of three days duration which was associated with generalized body ache, headache, retro-orbital pain with no rash or muco-cutaneous bleeding. There was no history of trauma, recent vaccination, tuberculosis. She could pass urine without any difficulty and she had been suffering from constipation during the course of this illness.

On physical examination, she was conscious, oriented with normal vital parameters. Motor function examination revealed hypotonia with reduced power in all four limbs and lower limbs involvement was more pronounced as compared to upper limbs. Superficial and deep tendon reflexes were absent. Her gag reflex was present. Sensory function was intact. She has no diplopia and her vision was normal.

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Provisionally she was diagnosed as a case of ascending progressive polyneuropathy, most likely Guillain Barre syndrome.

Initial laboratory workup (19/8/2011) revealed normal hemoglobin, ESR, WBC count. Her serum electrolyte, liver function tests, renal function tests, chest X-ray PA view and blood culture was negative. Serology for HIV, Hepatitis B and C, Malaria work-up, ANA were negative. Dengue IgM was positive. CSF study was done on 20/8/2011 which revealed an albuminocytological dissociation (10 ml crystal clear CSF fluid. RBC: nil, WBC: 03/ cmm, N%: 0%, lymphocyte: 100%, protein: 101.56 mg/dl, Glucose: 4.22 mmol/L (RBS was 6.3 mmol/L), Gram's stain: no bacteria or fungus, AFB: not found. CSF for C/S: no growth, CSF for fungus: no growth up to 7 days at 37° C). Stool for *Campylobacter jejuni* was negative. On 22/8/2011 Electrophysiological study of nerves was done which revealed demyelinating and axonal polyneuropathy in lower and upper limbs. Finally a diagnosis of GBS associated with dengue fever was made.

Patient was treated with a course of intravenous immunoglobulins at 0.4 gm/kg/day for 5 days. For prophylaxis of venous thrombosis and pulmonary emboli, low-molecular-weight heparin was given. On admission there was no cranial nerve involvement but two days later, during the course of hospital stay, she developed lower motor neuron type trigeminal, facial, glossopharyngeal, vagus and hypoglossal nerve palsy. Her upper limbs involvement became more pronounced during the course of illness. Four days later she developed urinary incontinence and autonomic involvement (resting tachycardia, gustatory sweating). Other systemic examinations revealed no abnormality during the course of hospital stay. With adequate treatment and supportive measures patient made a significant recovery and was able to talk, eat and walk six weeks later.

Discussion:

Dengue is the most common human arboviral infection. It was considered as a sporadic disease during nineteenth century only causing epidemics at intervals. However, currently dengue is considered the most common viral disease transmitted by mosquitoes across the globe that is endemic in 112 countries and in tropical countries annual outbreaks have occurred since 1986.¹⁰ Usually the disease has a self limiting course and common clinical-biochemical features are fever, intense muscle pain, retro-orbital headache, rash, hypotension, vomiting, thrombocytopenia, elevated serum transaminases, elevated partial thromboplastin time, hemoconcentration, leucopenia etc.

Neurological manifestations associated with dengue fever has been reported from 25 different countries from Asia-

Pacific, the Americas, the Mediterranean and Africa. Cases have been reported among ages ranging from 3 months to 60 years in both sexes.¹¹ However, there is a greater incidence among children. The incidence of neurological symptoms and complications among dengue patients varied from 1% to 25% of all dengue admissions.^{7,11,12} Neurological manifestations reported in literature include depression, convulsion, nuchal rigidity, encephalitis, encephalopathy, focal neurological deficit, peripheral facial paralysis, flaccid paraparesis, transverse myelitis, hemifacial spasm, Guillain-Barre syndrome, pyramidal tract sign etc.^{13,14,15, 16,17.}

Several previous reports have described Guillain-Barre syndrome in patients with dengue. Most of the reported cases were found among children.¹⁸⁻²¹ and first report of post-Dengue GBS in children is referred in the study of Sulekha et al.²⁰ Few cases of post-Dengue GBS were reported among adults. CHEW et al. reported two cases of post-Dengue GBS.²² Their first case was a 43-year-old woman with severe GBS presenting with tetraparesis and respiratory distress. She required assisted ventilation and immunomodulation treatment. The second case was a 51-year-old man with bilateral facial palsy and numbness of extremities but no weakness. He recovered without treatment. Gupta et al.²³ reported a 24-year-old male presenting with acute flaccid paralysis of both lower limbs following dengue. Patient was treated with intravenous immunoglobulins and had a rapid and complete recovery.²²

In all previous reports, the onset of GBS occurred after recovery of the initial infection. The mechanism for post-Dengue GBS is not fully known. There is evidence that this is an immune-mediated neurological disease.²⁴ Pro-inflammatory substances that participate in immune response to dengue virus (TNF- α , complement, interleukins) may have important role in the pathogenesis of GBS which can establish the relationship between two conditions.²⁵ Immune response evoked by dengue fever may in turn cross-react with peripheral nerve components because of sharing of cross-reactive epitopes (molecular mimicry). This immune response can be directed towards the myelin or axon of peripheral nerves.²⁶

The most important aspect of the management of GBS is good quality intensive care. Several randomized clinical trials indicate that plasma exchange is more effective than supportive treatment alone in reducing the median time taken for patients to recover.^{27,28} Intravenous immunoglobulin appears as effective as plasma exchange and may be superior with fewer side-effects.²⁹ Corticosteroids alone do not alter the outcome of GBS, and there is insufficient evidence that their use in combination with immunoglobulin is effective.³⁰

Other treatments such as CSF filtration remain experimental and unproven.³¹

In the present case, positive dengue specific IgM antibody test is an evidence of active infection or recently acquired disease. Neurologic manifestations, the typical CSF findings and pattern of electrophysiological study were consistent with the diagnosis of GBS. GBS developed about a week after the initial manifestation of dengue. Patient was treated with intravenous immunoglobulin.

Conclusion:

Dengue is a common infection in Bangladesh but other than encephalopathy its neurological various complications have rarely been addressed with importance. GBS should now be considered in the part of spectrum of neurological complications of this infection.

Conflict of Interest : None

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