

## Guillain-Barré syndrome with antecedent dengue infection – a report of two cases

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### Abstract

This is a report of two cases of Guillain-Barré syndrome (GBS) occurring during the recovery phase of serologically proven dengue fever. The first case was a 43-year-old woman with severe GBS presenting with weakness of all four limbs and respiratory distress. She required assisted ventilation and immunomodulatory treatment. The second case was a 51-year-old man with bilateral facial weakness and numbness of the extremities but no weakness. He recovered without treatment. In both cases nerve conduction studies showed evidence of demyelination and cerebrospinal fluid showed raised protein. The close temporal relationship suggests that in these two patients dengue infection triggered an abnormal immune response against peripheral nerve antigens resulting in GBS. GBS should be included as part of the spectrum of neurological complication of dengue infection.

*Key words:* dengue fever, Guillain-Barré syndrome,

### INTRODUCTION

Guillain-Barré syndrome (GBS) is an acute ascending paralytic illness affecting the limbs symmetrically, with reduced or absent reflexes, minimal sensory symptoms and signs and variable autonomic dysfunction. It has become apparent recently that GBS is not single disease but a heterogeneous syndrome with several clinical and electrophysiological variants.<sup>1</sup>

GBS is thought to be a post-infectious illness in which an acute infectious illness may trigger an aberrant immune response against peripheral nerve antigens.<sup>2</sup> Various antecedent infective organisms have been reported but the strongest associations have been with *Campylobacter jejuni* and cytomegalovirus. These infections have been associated with distinct clinical variants of GBS<sup>3,4</sup> suggesting that the antecedent infectious agent may determine the underlying immunologic dysfunction and the clinical course of the GBS patient. Elucidation of the antecedent infectious agent may therefore help in the delineation of the Guillain-Barré syndrome.

Dengue fever is a common infectious disease in Southeast Asia. However the association between dengue infection and GBS has hitherto not been documented except in a single report in the non-English literature.<sup>6</sup> We report 2 patients seen at the University Hospital, Kuala Lumpur who developed Guillain-Barré syndrome after serologically proven dengue infection.

### CASE REPORT

#### Case 1

A 43 years old lady with no previous medical history was admitted to the University Hospital, Kuala Lumpur with fever, nausea and vomiting. She was diagnosed to have dengue fever based on the clinical presentation with thrombocytopenia and a positive dengue IgM serology. Her febrile illness lasted 3 days. Four days after the fever settled, she developed progressive weakness and numbness of all limbs. Initially she had difficulty standing up from sitting position but within one day she was unable to walk. There was no sphincter dysfunction. Muscle weakness was mainly proximal and symmetrical; Grade 4/5 at upper limbs and Grade 3/5 at lower limbs. There was generalised areflexia and distal sensory loss to pinprick. Plantar reflexes were equivocal. Left facial weakness was present. Cerebrospinal fluid (CSF) was bloodstained and contained 2400 red cells/ul, 6 lymphocytes /ul, glucose 4.6 mmol/l and protein 131 mg/dl. Nerve conduction study was consistent with a demyelinating polyneuropathy. The right median motor distal latency from the wrist was 6 ms with normal compound muscle action potential. The right ulnar motor conduction velocity from elbow to wrist was 35 m/sec. The right median sensory action potential (SAP) was small, the right ulnar SAP was absent. The needle electromyographic examination was

normal. She developed respiratory distress and required assisted ventilation. She was treated with plasmapheresis (five 2L exchanges over 10 days) and when this did not result in significant neurological recovery, treatment was followed up with intravenous immunoglobulin infusion of 0.4mg/kg/day for 5 days. She subsequently made a gradual recovery and was discharged after 2 months. On follow up at the clinic six months after discharge, she is independently functionally

## Case 2

A 51 years old man with hypertension had fever for 5 days with thrombocytopenia at  $28 \times 10^9/L$ . He was diagnosed to have dengue fever after dengue IgM serology was found to be positive. Three days after the fever had settled down he developed numbness over the distal aspects of four limbs. The following week he noted mild bilateral facial weakness. No sphincter dysfunction was noted. There was generalised hyporeflexia and distal symmetrical loss of sensation to pinprick. Proprioception and muscle power of the limbs was normal. He had bilateral facial nerve palsy but no ophthalmoplegia. CSF contained 162 red cells/ul, no white cell, glucose 4.7 mmol/l and protein 91 mg/dl. Nerve conduction study showed a demyelinating polyneuropathy. The right median motor distal latency from the wrist was 12 ms. The motor conduction velocity from elbow to wrist was 37 m/sec for the right median nerve and 42 m/sec for the right ulnar nerve. The right median and ulnar SAP were absent. The needle electromyographic study was normal. As his deficits were mild, he did not receive any treatment and gradually recovered after 2 months.

## DISCUSSION

The occurrence of GBS during the recovery phase of dengue infection in these 2 patients suggests a relationship between the two conditions and that GBS resulted from an abnormal immunological response to the prior dengue infection. The close temporal relationship and the fact that the preceding infection was well defined clinically with serological confirmation makes it unlikely that they are coincidental. Interestingly our 2 patients present with two different ends of the clinical spectrum of GBS, the first patient presenting with severe disease requiring ventilation and immunomodulatory treatment while the second patient presented with cranial nerve and sensory

abnormalities and did not require treatment. However, nerve conduction studies showed demyelination and recovery was good in both patients. Although GBS following dengue fever is rare, it is important that antecedent infections be defined as accurately as possible both clinically and serologically in the light of the fact that the infectious agent may underlie the clinical and immunologic heterogeneity of GBS.<sup>4</sup>

Dengue fever is a common infectious disease in Malaysia but its neurological complications have rarely been highlighted and it is usually an encephalopathy resulting from plasma leakage, haemorrhage, shock and metabolic abnormalities during the acute phase as well as direct viral invasion.<sup>5,7</sup> We have previously reported a case of transverse myelitis in association with dengue infection.<sup>8</sup> Post infectious complications of dengue fever affecting the peripheral nervous system are uncommon but have been described.<sup>5</sup> GBS should now be included in that part of the spectrum of neurological complications of dengue infection.

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