

*Case Report***Guillain-Barre Syndrome: Rare manifestation of dengue haemorrhagic fever: A Case Report**WRAM Premasiri¹, S Pirasath¹, AGH Sugathapala¹*Sri Lankan Journal of Infectious Diseases 2020 Vol.10(2):162-166*DOI: <http://dx.doi.org/10.4038/sljid.v10i2.8304>**Abstract**

Dengue is a mosquito borne, flavivirus, endemic infection in Sri Lanka which presents with a wide spectrum of clinical presentations, ranging from asymptomatic infection to haemorrhagic fever and severe shock. Neurological manifestations due to dengue are very rare but can be caused by serotypes 2 and 3. Here we present a patient with Guillain-Barre syndrome occurring as a manifestation of dengue haemorrhagic fever (DHF). She presented with symmetrical bilateral ascending weakness of the lower limbs which was confirmed by nerve conduction study, cerebrospinal fluid analysis and serological findings. The patient was treated according to the dengue national guidelines and intravenous immunoglobulin therapy. She had complete recovery without residual neurological deficit.

Keywords: Dengue haemorrhagic fever, Guillain-Barre Syndrome, dengue NS1 antigen

Introduction

Dengue (DEN) is a mosquito born flavivirus infection with a clinical spectrum ranging from asymptomatic infection to haemorrhagic fever and severe shock.¹ Even though neurological manifestations of dengue fever (DF) are uncommon, some cases have been reported in the medical literature² and can be caused by serotypes 2 and 3.³ It is reported to occur in 0.5–6% of cases among patients with dengue.⁴ Here, we present a patient with Guillain-Barre Syndrome (GBS) occurring as a manifestation of dengue haemorrhagic fever (DHF) who developed symmetrical ascending weakness of the lower limbs which was confirmed by serologic and electroencephalographic findings. She responded well to intravenous immunoglobulin therapy.

Case History

A 57 year old woman presented with fever of 4 days duration with constitutional symptoms. She had a past history of diabetes mellitus of 5 years duration.

On examination, she was febrile, appeared flushed, had a narrow pulse pressure of 20 (blood

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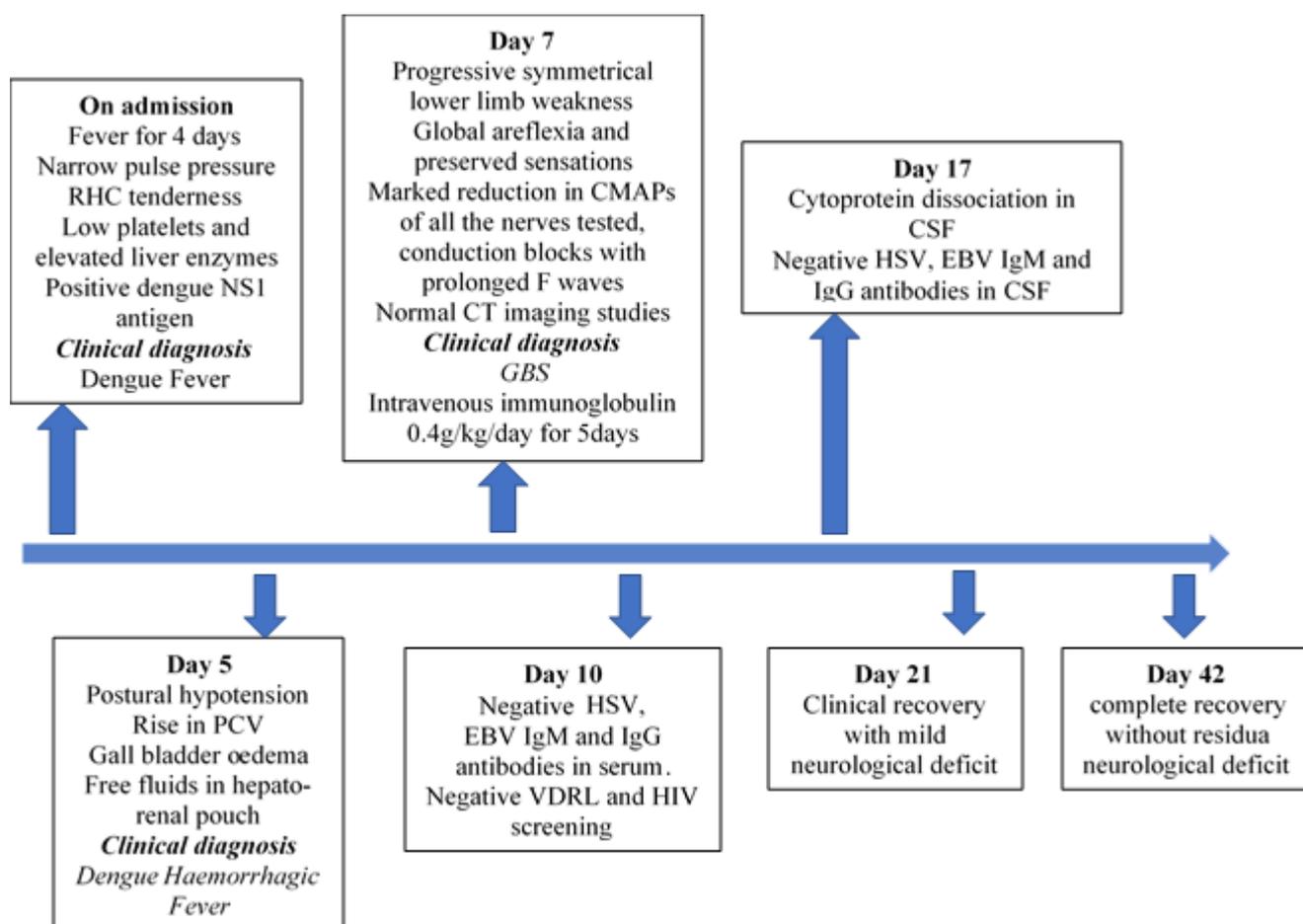
pressure–100/80) without a significant postural drop and right hypochondriac tenderness. Her initial full blood count showed a white cell count of $3,200/\text{mm}^3$ with predominant neutrophils (52%), 38 % lymphocytes and thrombocytes of $8,800/\text{mm}^3$ with normal haemoglobin and red cell counts. Her liver enzymes were high (AST – 78 IU/l, ALT – 62 IU/l) but renal function tests were normal.

Her dengue NS1 antigen was positive on day 4 of her illness . With the above presentation, the clinical impression was DF in compensated shock and management was focused according to the national dengue fever management guidelines.⁴ She was given an initial fluid bolus of normal saline 10 ml/kg and her hemodynamic parameters improved with therapy. Her urine output was maintained with an output of more than 0.5 ml/kg/hour and glycaemic control achieved by sub cutaneous soluble insulin to maintain a blood sugar level between 140-180 mg/dl. On day 5 of fever, she complained of dizziness and was found to have clinical and ultrasonic evidence of fluid leakage - a narrow pulse pressure with tachycardia and a rising packed cell volume along with gallbladder wall oedema and fluid in the hepatorenal pouch. Her subsequent full blood count showed a further drop in white cell count to $2,200/\text{mm}^3$ with predominant neutrophils (45%), 43% of lymphocytes and also a drop in thrombocytes to $3,800/\text{mm}^3$. She was managed as having DHF, in keeping with the national dengue management guidelines.

Our patient had an uneventful recovery and was hemodynamically stable with critical management. Her full blood count showed a rise in white cell count to $8,200/\text{mm}^3$ with predominant neutrophils (65%), 33 % of lymphocytes and a rise in thrombocytes to $230,000/\text{mm}^3$ in the recovery phase with normal liver and renal function tests. However, on the seventh day of her illness, she developed progressive symmetrical lower limb weakness with neurological deterioration over the next 12 to 24 hours which left her bed bound. There was reduced muscle power in the lower limbs with distal weakness (Medical Research Council – [MRC] power 1/5) noted more than proximal weakness (MRC power 2/5). She had global areflexia and preserved sensation in all modalities. Upper limb sensory and motor examination was uneventful, she had no difficulty in breathing or coughing and her sphincters were intact. Her nerve conduction study showed a marked reduction in compound muscle action potential (CMAPs) of all the nerves tested, conduction blocks with prolonged F waves compatible with a sensory motor axonal polyneuropathy, which supported a diagnosis of GBS.

Her cerebrospinal fluid examination on day 10 of her weakness was clear and showed absence of polymorphs, lymphocytes, or red cells with a protein value of 61 mg/ dl . Her non-contrast CT brain and ultrasound scan findings were normal. Her work up for viral aetiology (HSV, EBV and retroviral screening) was negative. She was managed in an intensive care unit with monitoring for respiratory failure and intravenous immunoglobulin 0.4 g/kg/day for 5 days. She recovered clinically with an improvement of her muscle power on day five of therapy. She was discharged following rehabilitation and physiotherapy sessions on day 14 and had recovered completely without neurological deficit when seen 4 weeks after discharge.

Timeline



Discussion

Dengue is an arboviral infection commonly presenting with fever, arthralgia, headache, and rashes which is transmitted by the mosquito *Aedes aegypti* and consists of four antigenically related but distinct serotypes. It is hyper-endemic in Sri Lanka and has had a major impact on health since 1960. There was a more than 4 fold higher incidence of cases noted for the year 2017 as compared to the previous 7 years.⁶

More frequent and varying neurological manifestations have been reported affecting different parts of the nervous system.^{2,4,7,8,9} Murthi *et al* hypothesizes these manifestations to be due to either the neurotropic effects of the virus, systemic effects of the infection or due to immune mediated effects.¹ We describe a case of GBS associated with DF where the clinical manifestations were evident during the critical phase of the illness. Dengue NS1 antigen was positive in this patient, confirming the diagnosis of acute dengue fever in the initial stage of the illness

GBS is a post infectious immune mediated disease characterized by a collection of clinical syndromes that present as an acute inflammatory polyradiculopathy which causes ascending weakness and a global areflexia.¹⁰ GBS following DF is an uncommon neurological manifestation of the disease but this sequel was reported in 1999 in a 44 year old female.¹¹ More recent reports reveal a small but significant rise in the incidence of dengue related GBS with almost 10 new cases reported in Brazil in 2016.¹² Furthermore, acute flaccid paralysis, which was the manifestation in our case study, though an uncommon neurological sequel of DF, has been previously reported from Sri Lanka.^{7,13} The clinical course of the infection was

often severe and variable. However, recovery was almost always fast and complete. Acute motor sensory axonal polyneuropathy was identified in all cases as in ours and all achieved full recovery after a five day course of immunoglobulin therapy with a varying amount of time taken for recovery ranging from 9 days to 1 year.¹² Although intravenous immunoglobulin therapy and plasma exchange are equivalent treatment modalities in non-ambulant GBS patients in the early period,¹⁴ plasma exchange (PE) is not a practical therapeutic option for patients with dengue who have thrombocytopenia as PE is an invasive procedure. Our patient was managed with intravenous immunoglobulin therapy and recovered completely without neurological deficit in 4 weeks.

Though there are established preceding infective agents causing GBS, preceding DF as an aetiological factor for GBS is not well documented. However, with compatible clinical presentation, positive dengue antigen, thrombocytopenia, and leukopenia, initial diagnosis of dengue was made. Subsequent CSF analysis and nerve conduction study showed evidence of GBS. Her serology for HIV, HSV, EBV, hepatitis B and throat swab for influenza were negative. Therefore the diagnosis of dengue complicated with GBS was made. Early diagnosis and prompt timely management of patients with a high level of suspicion of neurological complications due to dengue results in significant improvement in mortality and morbidity.⁷

Thus our case report emphasizes that physicians should call attention to the possibility that GBS may occur in association with dengue in clinical practice

Conflict of Interest: Authors declare no conflicts of interest

Ethics: Informed and written consent for publication was obtained from the patient

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