

Acute polyradiculoneuropathy and Dengue Fever infection

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1- Introduction

Neurological complications of dengue virus infection

Francisco Javier Carod-Artal, Ole Wichmann, Jeremy Farrar, Joaquim Gascón

Lancet Neurol 2013; 12: 906–19

- **Proportion of Dengue virus infection with neurological manifestations :**
 - **0.5% to 5.4%** in four studies from southeast Asia
 - **21 %** of cases in a prospective study from Brazil.
- **Neurological complications of Dengue fever can be categorised into:**
 - Encephalopathy
 - Encephalitis
 - Immune-mediated syndromes
 - Dengue muscle dysfunction
 - Neuro-ophthalmic disorders
- **Peripheral nervous system manifestations:**
 - 5% of neurological manifestations of Dengue fever

1- Introduction

Guillain–Barré Syndrome

Nobuhiro Yuki, M.D., Ph.D., and Hans-Peter Hartung, M.D.

The NEW ENGLAND JOURNAL of MEDICINE

- **GBS is characterized by** acute areflexic paralysis with albuminocytologic dissociation (present in only 50% of patients during the first week of illness)
- **Preceded by** infectious symptoms 3 days to 6 weeks in 2/3 of cases with a peak incidence between 1 and 2 weeks
- **Evolution in 3 phases** : progress (1-3 weeks) plateau (weeks or months) and recovery (weeks or months)
- **Autoimmune origin** of this syndrome is well established.
- **2 subtypes of GBS:**
 - Acute inflammatory demyelinating polyneuropathy
 - Acute motor axonal neuropathy

Acute polyradiculoneuropathy and Dengue Fever

1- Introduction

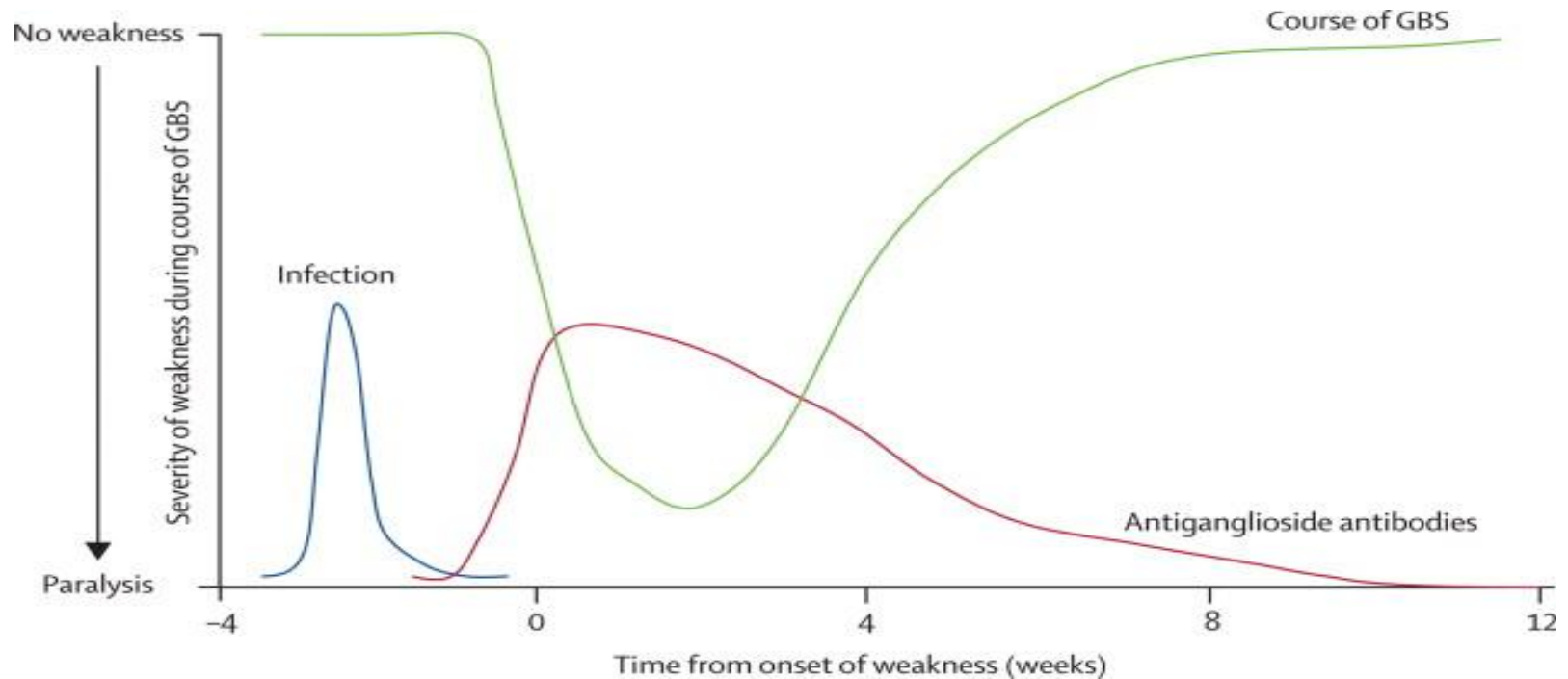


Figure 1 Relation between infections, antiganglioside antibodies, and clinical course of GBS

Clinical features, pathogenesis, and treatment of Guillain-Barré syndrome

The Lancet Neurology Volume 7, Issue 10 2008 939 - 950

Acute polyradiculoneuropathy and Dengue Fever

1- Introduction : Review of literature

- **More than 20 cases** of GBS following dengue virus infection were reviewed.
- **Neurological symptoms occurred** at least one week after Dengue fever onset.
- **Two cases of concomitant SGB and Dengue fever**
But in one case RT-PCR in both blood and CSF samples were negative.
In the other case RT-PCR was not performed
Both were treated by intravenous immunoglobulins and one recovered in one week
- **One case of concomitant Miller Fisher Syndrome (GBS variant) and dengue virus infection**
Latency between neurological manifestations and dengue fever symptoms : 2 days
Viral RNA in blood and CSF samples : both positive
Complete recovery : one week without treatment

2- Case reports

During the last dengue epidemic

we report 3 cases of

concomitant Dengue virus infection and

acute inflammatory demyelinating polyneuropathy

Acute polyradiculoneuropathy and Dengue Fever

2- Case reports

- **Characteristics of the 3 patients :**
 - **Gender:** 2 males, 1 woman
 - **Origins:** melanesian, indonesian and caucasian
 - **Mean age:** 60 years old (55-68)
 - **Medical history :** one present old history of Basedow's disease, no treatment
- **Dengue fever symptoms :**
 - **Acute fever, headaches, muscle and joint pain**
 - **No dengue haemorrhagic fever**
- **Neurological symptomes :**
 - **Tetraparesia** with gait disorder and areflexia : 100% of cases
 - **Multiple cranial nerve palsies** : 66 % of cases
(Ptosis, bilateral facial palsy, swallowing troubles)

Mean latency between Dengue fever and neurological symptomes : 2 days (1-3)

2- Case reports

- **Paraclinical Data :**

- **Electroneuromyography :**

Demyelinising disorders according to Cornblath criterias **in all cases**

Motor conduction velocity slowed : 33%

Distal motor latencies prolonged : 66%

F waves latencies prolonged : 100%

Conduction blocs : 100%

- **Cerebrospinal fluid (CSF) analysis :**

Normal, no pleiocytosis and protein level normal **in all cases**

Intrathecal immunoglobulin synthesis analysed in the only case : negative

- **Biology :**

RT-PCR for dengue virus positive in both blood and CSF **in all cases**

IgM realised 2 cases : **100 % positive**

IgG realised in all cases : **100 % negative**

2- Case reports

- **Diagnosis of Dengue Fever** was performed before AIDP in only 1 case
- **Treatment**
 - Standard care for Guillain Barre Syndrome
 - **Polyvalent intravenous immunoglobulins** for all cases (2g kg)
- **Evolution**
 - Maximum motor deficit reached in a **one or two days**
 - No other complication of dengue virus infection
 - **Global recovery** after 1 week for all cases

2- Case reports

For us these cases are not Guillain-Barré Syndrome

- **Concomitant infection**
- **Viral RNA positive in CSF**
- **No albuminocytologic dissociation in CSF**
- **Maximum neurological symptoms reached in a few days**
- **Plateau phase lasting a few days before complete recovery**

3- Discussion

- Physiopathological hypothesis

- Secondary infection, antibody-dependant enhancement ?

- > But serology IgG Dengue negative for all 3 patients

- Early Guillain Barré Syndrome?

- > But GBS generally occurs from 3 days to 6 weeks after infection

- Demyelination or oedematous lesion directly due to Dengue virus?

- > The neurotropism of Dengue virus is well established for the central nervous system

- > The neurotropism of Dengue virus for peripheral nervous system **has not been studied**

3- Discussion

- Utility of intravenous immunoglobulins ?

- 6 cases of Acute Inflammatory Demyelinating Polyneuropathy occurring at early stage or seroconversion of acute VIH infection

- > 50 % of them were treated with intravenous immunoglobulin therapy before starting highly active anti-retroviral therapy and **completely recovered.**

- 1 case of concomitant GBS and dengue virus infection

- > Recovery in one week after intravenous immunoglobulins

- **But** the Miller Fischer syndrome reported by our colleagues was extremely similar

- > **Recovery was spontaneous within 1 week.**

CONCLUSION

Acute inflammatory demyelinating polyneuropathy can be observed at **the first days** of dengue fever infection

The mechanism is not understood, **demyelination directly due to Dengue virus is not impossible**

The use of intravenous immunoglobulins seems to be **safe and efficient.**

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