

Guillain-Barré Syndrome after Chikungunya Infection

To the Editor: *Chikungunya virus* is an RNA alphavirus (group A arbovirus) in the family *Togaviridae*. The known vectors are *Aedes aegypti* and *Ae. albopictus* mosquitoes. Chikungunya infection, after an incubation period of 2–10 days, has the main clinical manifestations of fever, polyarthralgia, and rash. Treatment consists of rest and medication for pain. Outcome is marked by incapacitating arthralgia, which can persist for several weeks or months (1). Complications are rare and consist of mild hemorrhage, myocarditis, and hepatitis (2). Neurologic manifestations are less well known (3). Infection is confirmed by the identification of genomic products in acute-phase blood specimens, (reverse transcription–PCR [RT-PCR]) or, more recently, by serum immunoglobulin (Ig) M or a 4-fold increase in other antibodies. In 2006, chikungunya virus was found on Réunion Island; seroprevalence on the island was estimated to be 38.2% among 785,000 inhabitants (95% confidence interval 35.9%–40.6%) (4).

Guillain-Barré syndrome (GBS) is an acute inflammatory demyelinating polyneuropathy; incidence worldwide is 0.6–4/100,000 persons/year. In two thirds of patients, neuropathic GBS occurs after an infection (5,6).

Cases of GBS have been described in association with the arboviruses dengue and West Nile but not with chikungunya virus. We report 2 cases of acute and severe GBS related to infection with chikungunya virus.

The first patient was a 51-year-old woman who in 2006 was admitted to an intensive care unit in Réunion Island's Centre Hospitalier Departemental for treatment of polyradiculoneuropathy. Her medical history consisted of poorly treated type 2 diabetes and hyper-

tension. Three weeks before hospital admission, she had had fever, arthralgia, rash, and diarrhea. One week later, rapidly progressing motor weakness and sensory disturbances developed, e.g., tingling in all limbs. She had facial diplegia, and her tendon reflexes were absent. Cerebrospinal fluid (CSF) contained increased protein (1.44 g/L) but not increased leukocytes (1/mm³). Electromyography displayed typical signs of demyelinating sensorimotor neuropathy with increased distal motor latency and reduced motor conduction velocity. Sensory nerve action potential was absent. Antichikungunya IgM was found in serum at 15 days after onset of signs and symptoms. This seroconversion confirms an acute infection by an alphavirus. Serum genomic product (RT-PCR, TaqMan method) (7) was negative for chikungunya virus. Antichikungunya IgM and IgG were also found in CSF.

The patient's respiration rapidly deteriorated, and she required tracheal intubation and mechanical ventilation for 12 days. She was given intravenous immunoglobulin for 5 days (TEGELINE; LBF Biomedicaments, Courtaboeuf, France). She recovered and was extubated on day 12. Two months after onset of symptoms, the patient reported a satisfactory recovery; she was able to walk, and her sensory disturbances had rapidly disappeared.

The second patient was a 48-year-old woman who in 2006 was admitted to the intensive care unit in Réunion Island's Centre Hospitalier Departemental unit for a rapidly developing polyradiculoneuropathy. She had no relevant past medical history. Two weeks before her admission, she had been febrile and had had arthralgia and a rash. Later, weakness with facial diplegia and sensory disturbances developed, e.g., tingling in all limbs. Tendon reflexes were absent. CSF contained increased protein but not increased leukocytes. Electromyography displayed signs of a peripheral neuropathy and evidence of a con-

duction block. At the time of hospital admission, antichikungunya IgM and IgG were detected in 2 serum samples. RT-PCR for chikungunya virus in serum and CSF was negative.

The patient's respiration rapidly deteriorated, and she required tracheal intubation and mechanical ventilation for 9 days. After receiving intravenous immunoglobulin for 5 days, she recovered quickly. Return of a productive cough and satisfactory muscle tone enabled her to be removed from mechanical ventilation on day 9.

For the 2 patients reported here, GBS diagnosis was based on a typical clinical acute motor and sensory polyradiculoneuropathy, which evolved in 3 characteristic stages: rapid deterioration, plateau, and slow recovery (6). Also typical of GBS are normal CSF counts, increased CSF proteins, and electromyography data (peripheral neuropathy, conduction block). The widespread screening for organisms known to be associated with GBS produced negative results. However, antichikungunya IgM was found in serum and CSF, although genomic products in serum and CSF were negative, which was not surprising, given the brief period (4–5 days) of viremia (8). These findings strongly supported a disseminated acute chikungunya infection and enabled us to conclude that chikungunya virus was probably responsible for the GBS.

Epidemiologic data also support a causal relationship between chikungunya infection and GBS. The incidence rate of GBS increased ≈22% in 2006 (26/787,000 [3.3/100,000] persons) over the rate in 2005 (21/775,000 [2.7/10,000] persons) and then declined to a rate closer to baseline in 2007 (23/800,000 [2.87/100,000] persons).

These 2 cases of GBS on Réunion Island were related to an acute and documented chikungunya infection. In the absence of an effective treatment, patients with these suspected infections should receive supportive care for classic GBS.

Gaëtan Lebrun, Karim Chadda,
Anne-Hélène Reboux,
Olivier Martinet,
and Bernard-Alex Gaüzère

Author affiliation: Centre Hospitalier Felix Guyon, Saint-Denis, La Réunion, France

DOI: 10.3201/eid1503.071482

References

- Brighton SW, Prozesky OW, de la Harpe AL. Chikungunya virus infection. A retrospective study of 107 cases. *S Afr Med J*. 1983;63:313–5.
- Lam SK, Chua KB, Hooi PS, Rahimah MA, Kumari S, Tharmaratnam M, et al. Chikungunya infection—an emerging disease in Malaysia. *Southeast Asian J Trop Med Public Health*. 2001;32:447–51.
- Mazaud R, Salaun JJ, Montabone H, Goube P, Bazillio R. Acute neurologic and sensorial disorders in dengue and chikungunya fever [in French]. *Bull Soc Pathol Exot Filiales*. 1971;64:22–30.
- Gérardin P, Guernier V, Perrau J, Fianu A, Le Roux K, Grivard P, et al. Estimating chikungunya prevalence in La Réunion Island outbreak by serosurveys: two methods for two critical times of the epidemic. *BMC Infect Dis*. 2008;28:8:99
- Centers for Disease Control and Prevention. Arboviral infections of the central nervous system—United States, 1996–1997. *MMWR Morb Mortal Wkly Rep*. 1998;47:517–22
- Hughes RA, Cornblath DR. Guillain-Barre syndrome. *Lancet*. 2005;366:1653–66. DOI: 10.1016/S0140-6736(05)67665-9
- Pastorino B, Bessaud M, Grandadam M, Murri S, Tolou HJ, Peyrefitte CN. Development of a TaqMan RT-PCR assay without RNA extraction step for the detection and quantification of African chikungunya viruses. *J Virol Methods*. 2005;124:65–71.
- Tsai T. Chikungunya fever. In: Strickland GT, editor. *Hunter's tropical medicine and emerging infectious diseases*, part II. 8th ed. Philadelphia: WB Saunders Co.; 2000. p. 246–8.

Address for correspondence: Gaëtan Lebrun, Hôpital Européen Georges Pompidou, 20 rue Leblanc, 75908 Paris CEDEX 15, France; email: gaetan.lebrun@egp.aphp.fr

Cockroaches (*Ectobius vittiventris*) in an Intensive Care Unit, Switzerland¹

To the Editor: *Ectobius vittiventris* (Costa) is a field-dwelling cockroach and 1 of 4,000 cockroach species worldwide (1). We describe a cockroach infestation of an intensive care unit (ICU). Successful management required knowledge of the ecology of cockroaches and highlighted the need for species-level identification to tailor control strategies.

The University of Geneva Hospitals are a 2,200-bed tertiary healthcare center. The 18-bed medical ICU is located on the ground floor next to an outdoor recreational area and admits ≈1,400 patients/year. Smoking inside hospital buildings by patients and healthcare workers (HCWs) is strictly prohibited. On August 25, 2006, ≈30 cockroaches were observed in the ICU hiding inside oxygen masks, moving around on the light panels below the ceilings, or dropping onto intubated patients during the night.

An outbreak investigation was initiated. All work areas, including sinks and material stock areas, were thoroughly searched for cockroaches. External pest control experts identified only 1 species, *E. vittiventris*, which had presumably entered the ICU through windows facing the outdoor recreational area. The investigation showed that despite verbal recommendations and being repeatedly forbidden to do so, HCWs had opened the windows secretly with screwdrivers so that they could smoke during night shifts. The infestation was halted within 3 days after information regarding the infestation was provided to HCWs and all windows were bolted shut. In contrast to measures required to deal with a reported infestation in a neonatal ICU (2), no other measures such as use of insecticides, review of

the air circulation system, or changes in architectural structures were necessary to stop the infestation reported here.

Cockroaches can cause 2 potentially serious health problems. First, they may provoke allergic reactions (3). Second, they have been suggested as possible vectors of multidrug-resistant pathogens. In particular, cockroaches that live and breed in hospitals have higher bacterial loads than cockroaches in the community (4–6). Up to 98% of these “nosocomial” cockroaches may carry medically important microorganisms on their external surfaces or in their alimentary tracts (4–9) and may disseminate these microorganisms by fecal–oral transmission.

Cockroaches are capable of harboring *Escherichia coli* (6,7), *Enterobacter* spp. (6,8,9), *Klebsiella* spp. (6,7,9), *Pseudomonas aeruginosa* (6,9), *Acinetobacter baumannii* (2), other nonfermentative bacteria (7,9), *Serratia marcescens* (7,9), *Shigella* spp. (6), *Staphylococcus aureus* (6,7), group A streptococci (6,7,9), *Enterococcus* spp. (6,7), *Bacillus* spp. (7), various fungi (6–8), and parasites and their cysts (6). An outbreak of extended-spectrum β-lactamase-producing *Klebsiella pneumoniae* in a neonatal unit was attributed to cockroaches (2). Pulsed-field gel electrophoresis did not distinguish organisms from the insects from those colonizing infants or causing clinical disease (2). Unlike other investigators, we did not cultivate the cockroaches (6,9).

E. vittiventris cockroaches are easily confused with *Blattella germanica* (Linnaeus) (the German or croton cockroach), which is probably the most important cockroach pest worldwide (1,9). In contrast to *B. germanica* (6,9) and other species (online Technical Appendix, available from www.cdc.gov/EID/content/15/3/496-

¹Parts of this research have been presented as a poster at the Annual Meeting of the Swiss Society for Infectious Diseases, Zurich, Switzerland, June 14, 2007.