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Vibrio cholerae in Traveler from Haiti to Canada

To the Editor: A nationwide outbreak of cholera caused by *Vibrio cholerae* O1 serotype Ogawa began in Haiti in October 2010 and has since resulted in >200,000 illnesses and 4,000 deaths (1). Additional cases of cholera attributed to the outbreak strain have subsequently been reported in the neighboring Dominican Republic and in Florida and New Jersey in the United States. In these instances, illness was related to travel to Haiti or consumption of contaminated water on the island of Hispaniola (which is shared by Haiti and Dominican Republic).

In Canada, the province of Québec has a large Haitian immigrant population. In early November 2010, the Québec public health authorities provided clinicians and laboratories with recommendations regarding the diagnosis of *V. cholerae* infections. We report a case of *V. cholerae* O1 serotype Ogawa in Canada related to the outbreak in Haiti. It was diagnosed in Montréal, Québec, on January 5, 2011.

A 49-year-old Canadian woman traveled to Haiti with her 5 brothers and sisters during December 22–29, 2010, to attend her mother's funeral. While in Haiti, they stayed with family members. She came to the emergency department of the Centre Hospitalier de l'Université de Montréal on January 1, 2011, with abdominal cramps and diarrhea of moderate intensity that had started on December 29, the day she returned from Haiti. The patient was asthenic, but vital signs and results of a physical examination were normal. A complete blood count, levels of serum electrolytes and serum creatinine, and results of liver function tests were within reference ranges. A fecal sample was submitted and the patient received intravenous fluids and 1 dose (300 mg) of doxycycline. She improved rapidly and was discharged on January 3. The patient returned to the outpatient clinic on January 7, and she had recovered from her illness. Control fecal specimens obtained on January 9 and 10 were negative for *V. cholerae*. Family members

that traveled with her did not get ill, and there were no secondary cases among her family members in Montréal.

The fecal culture of the sample provided on December 29 contained *V. cholerae*. The isolate was confirmed as toxigenic *V. cholerae* serogroup O1, serotype Ogawa, biotype El Tor, and matched the Haiti outbreak strain when tested by pulsed-field gel electrophoresis (PFGE). Antimicrobial drug susceptibility testing was performed by continuous gradient dilution (Etest), and results were interpreted according to standard criteria (2). The strain was susceptible to azithromycin (0.25 mg/L), ciprofloxacin (0.5 mg/L), and tetracycline (1 mg/L) and resistant to trimethoprim/sulfamethoxazole (>32/608 mg/L).

Cases of diagnosed cholera are rare in Canada (0–3 laboratory-confirmed isolations of serogroup O1 and O139 *V. cholerae* per year (3). All cases in Canada have been associated with travel to cholera-endemic areas, including Africa and Southeast Asia. Monitoring of cholera in Canada is completed through the National Notifiable Diseases Program and through the public health laboratory network. Biochemical identification, serotyping, and PFGE testing are performed on all suspected *V. cholerae* isolates. Confirmed isolations of a serogroup O1 or O139 *V. cholerae* strain that produces cholera toxin are also reported through the International Health Regulations focal point.

Whole genome sequencing has been completed for several isolates to investigate the origin of the Haiti cholera outbreak (4,5). However, PFGE remains one of the primary tools for defining the outbreak strain (4). The highly standardized methods of PulseNet International for generating, analyzing, and comparing PFGE patterns are used worldwide to track the temporal and geographic distribution of *V. cholerae* (6,7).

PFGE for *V. cholerae* was performed by using restriction enzymes *SfiI* and *NotI* (8). The PFGE patterns of this travel-associated case matched patterns of the representative Haiti cholera outbreak strain that was deposited into the American Type Culture Collection (Manassas, VA, USA) by the Centers for Disease Control and Prevention (Atlanta, GA, USA; strain BAA-2163; CDC isolate 2010EL-1786) (Figure). PulseNet Canada *SfiI* and *NotI* PFGE pattern designations were VCSFI.0006 and VCNTI.0006, respectively, and were equivalent to PulseNet USA patterns KZGS12.0088 and KZGN11.0092.

Prevention, treatment and control efforts are currently under way in Haiti. Loss of infrastructure during the earthquake of January 12, 2010, has affected implementation of sanitation and public health measures. Travel advisories and travel health precautions were subsequently released, including those from Canada and United States (9,10). These precautions recommended that preventative measures such as vaccination and safe food and water consumption practices be adhered to by residents and visitors to affected regions. Although the public health community anticipated that travel-associated cases would be diagnosed in Québec, this report of a documented case (supported by laboratory and epidemiologic data) emphasizes the domestic and international public health risk caused by the nationwide outbreak in Haiti. It also illustrates the need for an accurate travel history in clinical and laboratory diagnosis of cholera infections.

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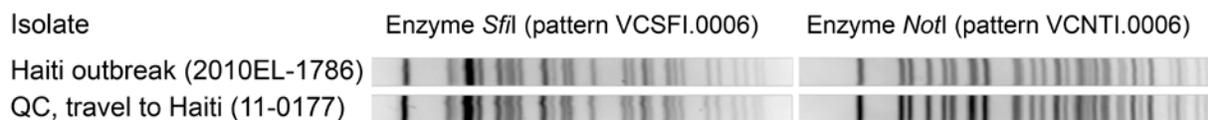


Figure. Pulsed-field gel electrophoresis of cholera outbreak strain from Haiti and travel-associated isolate in the patient, by using *SfiI* and *NotI* and PulseNet Canada pulsed-field gel electrophoresis pattern designations.