Emerging Infectious Diseases

Imported Cholera Associated with a Newly Described Toxigenic *Vibrio cholerae* O139 Strain — California, 1993

Epidemics of cholera-like illness caused by a previously unrecognized organism occurred recently in southern Asia (1). This report documents the first case of cholera imported into the United States that was caused by this organism, the newly described toxigenic *Vibrio cholerae* O139 strain.

On February 5, 1993, a 48-year-old female resident of Los Angeles County sought care at a local outpatient health-care facility for acute onset of watery diarrhea and back pain. A few hours before seeking medical care, she had returned to the United States from a 6-week visit with relatives in Hyderabad, India.

Her diarrheal illness began in India on February 4 and increased in severity while she traveled to the United States. She reported a maximum of 10 watery stools per day but no vomiting, visible blood or mucous in her stools, or documented fever. The patient was prescribed trimethoprim-sulfamethoxazole without rehydration treatment and recovered uneventfully. Duration of illness was approximately 4 days. No secondary illness occurred among family members.

When the patient sought medical care, the physician suspected cholera, and a culture of a stool specimen obtained from the patient at that time yielded colonies suspected of being *V. cholerae*. This was confirmed by the Los Angeles County Public Health Laboratory. The isolate was identified as *V. cholerae* non-O1. The isolate produced cholera toxin by Y-1 adrenal cell assay and latex agglutination in the California State Public Health Laboratory. Testing at CDC identified the isolate as toxigenic *V. cholerae* serogroup O139, resistant to trimethoprim-sulfamethoxazole.

Before this illness, the patient had been in good health. In Hyderabad, she stayed with relatives and did not travel outside the city. Although the source of her infection was not confirmed, on January 30, the patient had eaten fried shrimp and prawns purchased from a local market and prepared by relatives. She also recalled drinking a half glass of unbottled water in Hyderabad on February 3.

Editorial Note: In October 1992, an epidemic of cholera-like illness began in Madras, India, associated with an atypical strain of \textit{V. cholerae} (2). In early 1993, similar epidemics began in Calcutta (with more than 13,000 cases) and in Bangladesh (with more than 10,000 cases and 500 deaths) caused by similarly atypical strains of \textit{V. cholerae} (3,4). These strains could not be identified as any of the 138 known types of \textit{V. cholerae} and have been designated as a new serogroup, O139 (5). Although the extent of the ongoing epidemic in southern Asia is unclear, this strain is now associated with epidemic cholera-like illness along a 1000-mile coastline of the Bay of Bengal (from Madras, India, to Bangladesh) and appears to have largely replaced \textit{V. cholerae} O1 strains in affected areas.

The emergence of this new cause of epidemic cholera represents an important shift in the epidemiology of this infectious disease (6). Until 1993, the only recognized causes of epidemic cholera were \textit{V. cholerae} strains that were part of serogroup O1. \textit{V. cholerae} isolates from other serogroups (i.e., non-O1) were recognized as causes of sporadic diarrheal and invasive infections but were not considered to have epidemic potential. The relation of the new non-O1 serogroup to typical O1 strains is unclear; except for the presence of O1 antigen, the strains are nearly identical in most characteristics.

Descriptions of the symptoms associated with \textit{V. cholerae} O139 infection suggest it is indistinguishable from cholera caused by \textit{V. cholerae} O1 and should be treated with the same rapid fluid replacement (7). Although the illness may be severe, it is treatable with oral and intravenous rehydration therapy. The new organism has been susceptible to tetracycline, which is the recommended antibiotic for treatment of cholera. However, the organism is reportedly resistant to trimethoprim-sulfamethoxazole and furazolidone, other antibiotics used to treat cholera.

Health-care providers should consider the new strain as a possible cause of cholera-like illness in persons returning from the Indian subcontinent. Although previous cases were reported from Madras and Calcutta in India and from Bangladesh, this report suggests that Hyderabad, India— which is inland—is also affected. Because of effective sewerage and water treatment, further spread of this strain is unlikely in the United States. However, the potential for epidemic cholera caused by \textit{V. cholerae} O139 exists for much of the developing world, and further spread to other parts of Asia is probable.

The emergence of this new strain has at least three other major public health implications. First, it expands the definition of cholera beyond the illness caused exclusively by toxigenic \textit{V. cholerae} of serogroup O1. Because it appears to cause the same illness and to have similar epidemic potential, the World Health Organization has asked all nations to report illnesses caused by this strain as cholera (7). In the United States, clinicians, laboratorians, and public health authorities should report infections with toxigenic \textit{V. cholerae} O139 as cholera, in addition to cases of toxigenic \textit{V. cholerae} O1 infection.

Second, the rapid spread of the \textit{V. cholerae} O139 epidemic in southern Asia, even among adults previously exposed to cholera caused by \textit{V. cholerae} O1, suggests that preexisting immunity to toxigenic \textit{V. cholerae} O1, whether the result of natural infection or cholera vaccine, offers little or no protective benefit. Travelers to areas affected
by this epidemic should exercise particular care in selecting food and drink and should
not assume that cholera vaccination is protective against the *V. cholerae* O139 strain.

Third, laboratory identification methods for *V. cholerae* O1 depend on detection of
the O1 antigen on the surface of the bacterium, and therefore do not identify this new
strain. A specific diagnostic antiserum for *V. cholerae* O139 is being prepared for use
in U.S. public health laboratories and will be distributed soon. Without such anti-
serum, this strain might be confused with other non-O1 *V. cholerae* isolates unrelated
to the newly described O139 strain that occasionally cause infections in the United
States.

In 1989, a pilot surveillance effort in four states determined that the reported infec-
tion rate for non-O1 *V. cholerae* was 1 per 1 million population (8). Although non-O1
strains can cause illness, non-O1 strains other than the newly described O139 have
not been implicated as a cause of epidemics and are not considered a major public
health problem. Accordingly, CDC recommends that:

1. Sporadic clinical isolates of non-O1 *V. cholerae* should be referred to a state pub-
lic health laboratory for further characterization if there is an epidemiologic link to
areas of the world known to be affected by O139 (currently India and Bangladesh);
if the disease is typical of severe cholera (i.e., watery diarrhea with life-threatening
dehydration); or if the isolate has been linked to an outbreak (i.e., more than one
linked case) of diarrheal illness.

2. Physicians should ask that specimens from persons with suspected cholera be
cultured on thiosulfate-citrate-bile salts-sucrose (TCBS) medium for isolation of
*V. cholerae*. All cases of suspected cholera should be reported immediately to
local and state health departments.

References
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