Case Report

A Case of Nosocomial Cholera during a Community Outbreak in a Thai-Myanmar Border Area

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The present study presents a case of nosocomial cholera in one general hospital located in a Thai-Myanmar border area. Between May and October 2007, a community outbreak of cholera with 477 cases took place in Mae Sot District, Tak Province. A 71-year-old diabetic female who had undergone craniotomy following intracerebral hemorrhage contracted nosocomial cholera with mild diarrhea on August 6, 2007, 37 days after admission in a female ward of the Mae Sot hospital. She received a nasogastric tube-fed diet four times a day. The investigation suggested that the tube-fed diet might have been contaminated with V. cholerae *O1 directly from an infected caretaker. This caretaker was culture-positive for cholera of the same biotype, serotype, and antibiograms. The present report indicates that during a community outbreak of cholera, nosocomial infection can occur in the hospital. Thus, a program of nosocomial infection control is essential in the hospital.*

Keywords: *Cholera, Nosocomial infection, Tube-fed diet*

J Med Assoc Thai 2010; 93 (9): 1112-4
Full text. e-Journal: *http://www.mat.or.th/journal*

Hospital outbreaks of cholera have been occasionally reported from areas where the disease is endemic or epidemic[1-6]. Person-to-person contact is considered to be the main mode of cholera transmission in these outbreaks. In Thailand, the first nosocomial outbreak with 32 bacteriologically confirmed cholera cases was recognized in the pediatric ward of a 300-bed general hospital in the central region[7]. Contaminated water used in the ward was incriminated as the source of infection. The second outbreak involving 11 cholera cases took place in a 755-bed hospital in southern Thailand[8]. The outbreak occurred primarily among patients admitted with severe illness. A case-control study revealed a significant association between infection and receiving liquid tube-fed diet, but it could not be determined how the diet was contaminated with cholera. The present report presents a case of nosocomial cholera in one general hospital located in a Thai-Myanmar border area.

Between May and October 2007, a cholera outbreak with 477 cases of biotype El Tor, serotype Inaba, took place in Mae Sot District, Tak Province, northwestern Thailand[9]. Only six cases of cholera had been reported from this district in 2005 and none in 2006. The district shared a 60 km border with Myanmar by the Moei River. Because of political instability and widespread poverty in Myanmar and the rapid growth of the Thai economy in recent years, a large number of people migrated from Myanmar to work in the district. The district had only one public hospital with 317 beds (Mae Sot General Hospital). The majority of cholera cases (93.1%) were detected by active case surveillance in the communities and only 44 (9.2%) cases were admitted to the hospital for intravenous fluid replacement. The outbreak affected mainly Myanmar migrants living in this border area.

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Case Report

A 71-year-old diabetic female who had undergone craniotomy following intracerebral hemorrhage developed mild diarrhea on August 6, 2007, 37 days after admission in a female ward of the hospital. She had semi-consciousness and hemiparalysis. She received a nasogastric tube-fed diet four times a day. *V. cholerae* O1, biotype El Tor, serotype Inaba, was isolated from her stool specimen. The organism was sensitive to tetracycline, norfloxacin, and ampicillin but resistant to co-trimoxazole, and chloramphenicol. The organism had antibiograms similar to those isolated

from the cases in the community. Norfloxacin was used for treatment of cholera and she recovered uneventfully.

The affected ward did not receive any community-acquired case of cholera during the outbreak. In the ward, 14 hospital personnel, 11 patients, and 10 relatives of the case were screened for *V. cholerae* O1 by rectal swab culture on August 8, 2007. All persons reported no diarrhea and had no cholera organisms in their stools. There was only one piped public water system serving the hospital. None of the five water samples collected from the ward and the hospital water source on August 8, 2007 was positive for *V. cholerae* O1. The ward was clean and not crowded. However, some flies were found in the ward surroundings.

The patient's family had employed two Myanmar housemaids. Both alternately came to the ward to take care of the patient. They frequently assisted the ward personnel in preparation of the tube-fed diet for the patient. The diet was made from Glucerna SR™ (Abbott Laboratories) and boiled water. It was newly prepared for each feeding but sometimes was kept for a few hours before feeding the patient. Samples of tube-fed diet, Glucerna SR™, and water used to prepare the diet collected on August 8, 2007 were negative for *V. cholerae* O1. One of the two housemaids was culture-positive for cholera of the same biotype, serotype, and antibiograms. This infected caretaker had no symptoms of cholera. She reported a history of frequently having food purchased from Myanmar food handlers in the municipal community where cholera cases were detected. Control measures included sanitary handling of the tube-fed diet and intensive health education of hospital personnel and the patient's relatives. The housemaids were encouraged to regularly wash their hands and wear gloves before preparation of the tube-fed diet. No additional cases were detected by intensive diarrhea surveillance in the hospital during the following three months.

Discussion

The patient who became infected with nosocomial cholera was immunocompromised. The investigation suggested that the tube-fed diet might be the transmission source of infection. A significant association between contracting nosocomial cholera and receiving liquid tube-fed diet was detected in a previously published report in the country[8]. Many studies have shown that El Tor vibrios can survive well and multiply rapidly in a variety of foods such as milk, cooked rice, and meat[10-13]. The tube-fed diet might be contaminated with *V. cholerae* O1 directly from the infected caretaker or perhaps by flies. Susceptibility to cholera infection is increased by more rapid gastric emptying following intake of large amounts of food and water[14]. The volume of the tube-fed diet might enhance the risk of infection in the patient.

Although the patient who contracted nosocomial cholera already had a severe illness, she developed only mild symptoms of the disease. The authors suspect that the transmission source of infection might contain small numbers of vibrios, which could cause mild illness in this risk patient. The present report indicates that during a community outbreak of cholera, nosocomial infection can occur in the hospital. In addition to close person-to-person transmission, food contaminated from an infected caretaker may be another possible source of cholera spread in the hospital. A program of nosocomial infection control is essential in the hospital. Effective surveillance of nosocomial infection will provide early detection of an abnormal event or outbreaks.

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ผู้ป่วยติดเชื้ออหิวาตกโรคในโรงพยาบาล ระหว่างการระบาดของโรคในชุมชนชายแดนไทย-พม่า

วิทยา สวัสดิวุฒิพงศ์, พงษ์พจน์ เปี้ยน้ำล้อม

รายงานนี้นำเสนอผู้ป่วยติดเชื้ออหิวาตกโรคในโรงพยาบาล 1 ราย ระหว่างการระบาดของโรคในชุมชนชายแดนไทย-พม่า อำเภอแม่สอด จังหวัดตาก ซึ่งในช่วงเดือน พฤษภาคม ถึง ตุลาคม พ.ศ. 2550 พบผู้ติดเชื้ออหิวาตกโรคในพื้นที่รวม 477 ราย ผู้ป่วยที่ติดเชื้ออหิวาตกโรคในโรงพยาบาลแม่สอดรายนี้อายุ 71 ปี เป็นโรคเบาหวานและได้รับการผ่าตัดสมองเนื่องจากมีเลือดออกในสมอง ผู้ป่วยเริ่มมีอาการอุจจาระร่วงแบบไม่รุนแรงในวันที่ 6 สิงหาคม พ.ศ. 2550 ภายหลังการรักษาตัวในโรงพยาบาล 37 วัน ผู้ป่วยได้รับอาหารทางสาย nasogastric tube วันละ 4 ครั้ง จากการสอบสวนโรคพบว่า อาหารที่ให้ทางสาย nasogastric tube น่าจะเป็นแหล่งแพร่โรค โดยอาจปนเปื้อนเชื้อจากผู้ดูแลที่ตรวจพบเชื้อแบบเดียวกัน การติดเชื้ออหิวาตกโรคในโรงพยาบาลสามารถเกิดขึ้นได้ โดยเฉพาะในช่วงที่มีการระบาดของโรคในชุมชน ด้วยเหตุนี้การควบคุมและป้องกันการติดเชื้อในโรงพยาบาลจึงมีความสำคัญระหว่างการดูแลรักษาผู้ป่วย