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Shigella sonnei Outbreak among Japanese Travelers Returning from Hawaii

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On August 25, 2004, a traveler returning from Hawaii became ill with shigellosis. By September 2, it was revealed that seven other individuals who had traveled to Hawaii with the patient were also infected. By September 8, a total of 15 epidemiologically linked cases had been reported through the National Epidemiological Surveillance of Infectious Diseases (NESID) program. Simultaneously, our informal inquiry with the Hawaii Department of Health confirmed that there were other reports of shigellosis associated with U.S. domestic and international air travel from Hawaii. Through NESID in Japan, two cases were suspected to be associated with air travel from Hawaii among 16 cases of shigellosis during the 35th week of 2004. Thirteen (43%) among 30 cases in the 36th week were suspected to be associated with air travel from Hawaii. No cases were reported after the 37th week (Figure 1). All 15 patients boarded N airline at Honolulu airport in Hawaii between the 22nd and 24th of August and no secondary transmission of the infection was confirmed. All 15 cases had diarrhea, 7 (47%) had abdominal pain, and 13 (87%) had fever. Three were hospitalized, but no fatal case was reported. *Shigella sonnei* was isolated from the stool samples of all 15 cases. The patients were spread over Japan, residing in Wakayama, Mie, Osaka, Chiba, Kanagawa, Kagawa, and Hyogo Prefectures as well as in the Tokyo metropolitan area. Combining the results of the Japanese and U.S. epidemiological investigations of the outbreak, it is most likely that salad served on-board the associated airlines may be the source of the infection. Isolates from all 15 patients were analyzed by pulsed-field gel electrophoresis (PFGE) according to the standardized PFGE protocol that was developed for PulseNet by the U.S. Centers for Disease Control and Prevention (CDC) (1,2). Among the 15 strains restricted with *Xba*I, nine strains showed an h1 pattern, five showed an h2 pattern that differed from h1 by one band, and one strain showed an h3 pattern that differed by two bands (Figure 2). The strains with the h1 pattern and h2 pattern restricted with *Bln*I showed slightly different patterns respectively but indistinguishable within each pattern (data not shown). In addition to an informal exchange of outbreak information with investigators in Hawaii, we received an urgent notice from the CDC's PulseNet International on September 4 regarding a shigellosis outbreak associated with air travel from Hawaii, along with tiff images of the PFGE patterns of the associated *Shigella* isolates. Two major patterns were also observed in these tiff images; moreover, based on PFGE analysis of strains from the CDC and those from our laboratory, we confirmed that the two sets of patterns were indistinguishable.

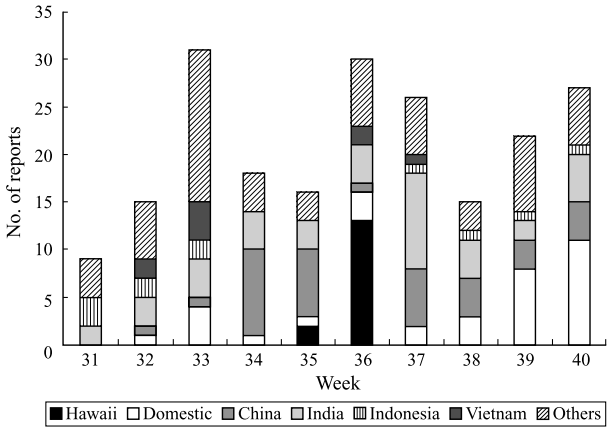

Fig. 1. Number of reports of shigellosis in Japan through NESID during the week of 31st to 40th in 2004. The places/nations where the patients presumably acquired the infection are represented by different patterns.

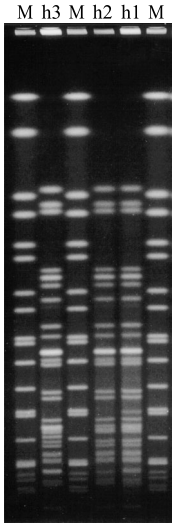

Fig. 2. Representative PFGE patterns of *Shigella sonnei* isolates from air-travel related cases. Lanes h1 to h3 are isolates from the patients. Lanes M are *Salmonella* Braenderup H9812 strain used as a molecular size marker.

Cooperation with our U.S. partners responsible for laboratory and epidemiological investigation was extremely useful

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for prompt recognition and investigation of this outbreak and for taking preventive measures. For any international outbreak investigation, it is essential to reinforce the global framework of information exchange.

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