Volume 13, Number 11–November 2007

Letter

Possible Typhoon-related Melioidosis Epidemic, Taiwan, 2005

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Suggested citation for this article

To the Editor: Melioidosis is a severe infection caused by *Burkholderia pseudomallei*. This organism is present in tropical and subtropical regions where melioidosis is endemic. Before 1995, melioidosis was rare in Taiwan. In 2001, when the annual number of cases of melioidosis in Taiwan was determined to be 1–3 per year from 1996 to 2000, the idea was first proposed that the disease was endemic (*1*).

From July 21 through August 24, 2005, an unusually large number (54) of melioidosis cases occurred in Taiwan. This number exceeded the average case number of 9.4 per year from 2001 to 2004. Since this outbreak appeared to be a common-source epidemic, all persons were suspected of becoming infected from this source at the same time.

To determine this common source, we investigated the role of Typhoon Haitang, which hit Taiwan on July 18 and 19, 2005, and resulted in heavy rainfall. Because the date of this typhoon overlapped the incubation period (1–21 days in most cases) (*2*) and rain is a factor in outbreaks of melioidosis (*3*), Typhoon Haitaing may have been the cause.

All 57 clinical strains of *B*. *pseudomallei* isolated during this outbreak were typed by pulsed-field gel electrophoresis (PFGE) DNA macrorestriction analysis (*4*). A higher incidence rate (8.86% per million) and clonal diversity (9 PFGE types) of *B*. *pseudomallei* were observed in the subtropical zone (south of 23.5°N) of Taiwan than in the temperate zone (north of 23.5°N) (0.18% per million and 2 PFGE types) (Table). Because clonal diversity in outbreaks of melioidosis is characteristic of extreme weather (*5*), these data support possible involvement of the typhoon in this outbreak.

Because *B*. *pseudomallei* can grow at a temperature as low as 4°C (*6*) and the possible spread of melioidosis into temperate zones has been reported (*7*), the epidemic distribution of *B*. *pseudomallei* in the temperate zone of Taiwan is still not clear. Determining the role of Typhoon Haitang in exposing microbes distributed in the soil, as described by Thomas et al. (*8*), may provide evidence of differences in the distribution of *B*. *pseudomallei* in the soil of subtropical and temperate zones of Taiwan.

Most clones of *B*. *pseudomallei* in this study were isolated in the subtropical zone of Taiwan, but 2 clones (S2 and S7) that each caused 1 case of melioidosis were found in the temperate zone. The 2 patients infected with the S2 and S7 clones lived »200 km north of the boundary between the subtropical and temperate zones and had not crossed this boundary for ≥3 years. Although the incubation period for *B*. *pseudomallei* may be as long as 62 years (*9*), and the presence of this organism in the temperate zone before Typhoon Haitang cannot be excluded, we believe that these 2 patients are newly infected cases in the temperate zone.

The 2 predominant clones in this outbreak, S1 and S3a, caused 30 and 10 cases of melioidosis, respectively. Since the appearance of predominant clones, a case-cluster of melioidosis been regarded as an indicator of contamination of an environmental source (*5*). This clustering suggests contamination of soil in the subtropical zone of Taiwan with the S1 and S3a clones.

Patients in this outbreak had severe symptoms of melioidosis, including fever (38/54), cough (16/54), pneumonia (12/54), septic shock (9/54), shortness of breath (4/54), and chest pain (2/54). Eleven of the 54 patients died. Because few patients had skin injuries and most (32/54) had a short incubation period of 1–9 days, inhalation may have been the route of transmission. Increased inhalation of *B*. *pseudomallei* has been reported in cases of melioidosis during heavy monsoonal rain and wind (*3*).

In conclusion, Typhoon Haitang likely had a role in an outbreak of melioidosis in the subtropical zone of Taiwan that showed high incidence rates and clonal diversity of isolates of *B*. *pseudomallei*. Our findings showed differences in distribution of *B*. *pseudomallei* in the soil of subtropical and temperate zones of Taiwan. *B*. *pseudomallei* clones found only in the temperate zone warrant further study to help prevent their spread. Some clones predominant in the subtropical zone may be suitable for vaccine development.

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