Spatio-temporal patterns of leptospirosis in Thailand: is flooding a risk factor?

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SUMMARY

We studied the temporal and spatial patterns of leptospirosis, its association with flooding and animal census data in Thailand. Flood data from 2010 to 2012 were extracted from spatial information taken from satellite images. The incidence rate ratio (IRR) was used to determine the relationship between spatio-temporal flooding patterns and the number of human leptospirosis cases. In addition, the area of flood coverage, duration of waterlogging, time lags between flood events, and a number of potential animal reservoirs were considered in a sub-analysis. There was no significant temporal trend of leptospirosis over the study period. Statistical analysis showed an inconsistent relationship between IRR and flooding across years and regions. Spatially, leptospirosis occurred repeatedly and predominantly in northeastern Thailand. Our findings suggest that flooding is less influential in leptospirosis transmission than previously assumed. High incidence of the disease in the northeastern region is explained by the fact that agriculture and animal farming are important economic activities in this area. The periodic rise and fall of reported leptospirosis cases over time might be explained by seasonal exposure from rice farming activities performed during the rainy season when flood events often occur. We conclude that leptospirosis remains an occupational disease in Thailand.
Key words

Flooding; human leptospirosis; Thailand

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