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EDITORIAL

A New Statistical Approach to Analyze *Plasmodium vivax* Malaria Endemic in Korea

After more than 10 years of absence in Korea, *Plasmodium vivax* malaria re-emerged in 1993 near the Korean demilitarized zone. Since then it has been a major public health concern in the Republic of Korea. Although the mosquitoes from North Korea were suspected to be the main cause of the re-emerging infection, the subject is a matter of controversy, because the prevalence of malaria in North Korea was reported only in 1997−1998 [1]. While it was initially suggested that the incidence rate will decrease soon [2], it has not decreased rapidly and there was a fluctuation of incidence rate even after 10 years owing to the fluctuation of the malarial incidence in North Korea [3].

In this issue Noh and co-workers have estimated the annual pattern of malarial incidence by age, gender, and year in Korea using the data from the last 12 years (2001−2011) by adopting the hierarchical generalized linear model (HGLM) [4]. Spatial and temporal correlations have been estimated and the best model has been selected out of nine models. Results were presented as diseases map according to age and gender. In the model, spatial and temporal correlations were also considered for the best estimation. Results of estimated incidence were represented as diseases map [5]. To draw a diseases map by estimating the incidence rate from small regions, empirical Bayesian and hierarchical Bayesian estimation methods have been used. Bayesian approach requires assumption of previous parameters, but HGLM approach presents hierarchical likelihood so that there are no sensitivity problems of parameter estimation that may occur in the case of wrong assumption of previous parameters [5]. The advantage of using HGLM instead of Bayesian approaches is to avoid complicated calculation process such as Gibbs sampling procedure for parameter estimation. The authors have developed R package for estimation [6].

The analysis well addresses the following question: Does the malarial incidence of one region in a year correlates with that of adjacent regions and the previous year? The study also clearly specifies the characteristics of malarial incidence by age and gender. Finally, the spatial and temporal correlations of malarial incidence are presented using the HGLM model.

The results of the study suggest that it is possible to predict malarial transmission according to time and geographic location, and it has also provided an analytical basis to define strategy and identify countermeasures for preventing malaria in Korea.

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