



BRIEF REPORT

Comparison of the Epidemiological Aspects of Imported Dengue Cases between Korea and Japan, 2006–2010

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Abstract

To compare the epidemiological characteristics of dengue cases imported by travelers or immigration in both Korea and Japan, we determined dengue incidence and related risk factors. During 2006–2010, 367 and 589 imported dengue cases were reported in Korea and Japan, respectively. In Korea, the presumptive origins for the dengue infections were Southeast Asia (82.6%), Southern Asia (13.9%), Eastern Asia (1.1%), South America (0.3%), Central America (0.3%), Africa (0.3%), and other countries (1.6%). In Japan, the origins of the infections were Southeast Asia (69.8%), Southern Asia (20.0%), Eastern Asia (1.7%), South America (2.5%), Central America (1.2%), Africa (1.2%), Oceania (2.4%), and other countries (1.2%). In both countries, more dengue cases were reported for men than for women ($p < 0.01$), and those aged 20–30 years accounted for > 60% of the total cases. The frequency of imported cases in summer and autumn (~70% of total cases) was similar in both countries. This study demonstrates that there is a similar pattern of imported dengue cases in Korea and Japan. Therefore, there is a risk of an autochthonous dengue outbreak in Korea, as indicated by the recent outbreak in Japan in 2014.

1. Introduction

Dengue fever (DF) is a mosquito-borne febrile disease caused by dengue virus (DENV), which belongs to the genus *Flavivirus* of the family *Flaviviridae* [1]. Four distinct serotypes of the virus (DENV-1–DENV-4) cause various forms of illness from mild fever to severe

dengue [2]. According to the latest World Health Organization report, 50–100 million annual dengue infections have been estimated in >100 countries [3].

The virus is transmitted mainly by *Aedes aegypti* and *Aede albopictus* mosquitoes [2,3]. The *Aedes aegypti* mosquito, the principal vector, usually lives in regions where the winter isotherm is maintained at $\geq 10^{\circ}\text{C}$ [3].

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Table 1. Comparison of the prevalence of dengue infection and geographical origin of infections between Korea and Japan, 2006–2010.

	Korea		Japan	
	No. of cases (%)	95% CI	No. of cases (%)	95% CI
No. of cases	367		589	
Prevalence rate	0.15	0.06–0.24	0.09	0.07–0.11
Region				
Southeast Asia:	303 (82.6)	78.3–86.1	411 (69.8)	65.1–72.5
The Philippines	118 (32.2)	27.6–37.1	83 (14.1)	11.3–16.9
Indonesia	55 (15.0)	11.7–19.0	146 (24.8)	21.3–38.2
Thailand	42 (11.4)	8.6–15.1	64 (10.9)	7.7–14.1
Vietnam	30 (8.2)	5.8–11.5	26 (4.4)	2.7–6.1
Cambodia	27 (7.4)	5.1–10.5	20 (3.4)	1.9–4.8
Laos	12 (3.3)	1.8–5.7	12 (2.0)	0.9–3.1
Malaysia	10 (2.7)	1.4–5.0	24 (4.1)	2.5–5.0
Myanmar	6 (1.6)	0.7–3.6	6 (1.0)	0.2–1.8
Singapore	1 (0.3)	–	6 (1.0)	0.2–1.8
East Timor	2 (0.5)	–	5 (0.8)	–
Others	–	–	19 (3.2)	1.8–3.6
Southern Asia:	51(13.9)	10.7–17.8	118 (20.0)	17.8–24.4
India	39 (10.6)	7.9–14.2	90 (15.3)	12.4–18.2
Pakistan	–	–	1 (0.2)	–
Bangladesh	6 (1.6)	0.7–3.6	10 (1.7)	0.7–2.7
Maldives	3 (0.8)	0.2–2.5	4 (0.7)	–
Nepal	–	–	2 (0.3)	–
Sri Lanka	2 (0.5)	–	6 (1.0)	0.2–1.8
Others	1 (0.3)	–	5 (0.8)	–
Eastern Asia:	4 (1.1)	0.3–2.9	10 (1.7)	0.7–2.74
China	3 (0.8)	–	–	–
Taiwan	1 (0.3)	–	1 (0.2)	–
Others	–	–	9 (1.5)	0.5–2.5
South America	1 (0.3)	–	15 (2.5)	1.3–3.9
Central America	1 (0.3)	–	7 (1.2)	0.3–2.0
Africa	1 (0.3)	–	7 (1.2)	0.3–2.0
Oceania	–	–	14 (2.4)	1.2–3.6
Other countries	6 (1.6)	0.7–3.6	7 (1.2)	0.3–2.0
<i>p</i>	<i>p</i> < 0.01		<i>p</i> < 0.01	
Total	367 (100)		589 (100)	

The Chi-square test was used to assess whether differences according to each variable are statistically associated. Prevalence rate per 100,000 population. CI = confidence interval.

Because both Korea and Japan are located above this winter isotherm, the *Aedes aegypti* mosquito cannot survive. However, *Aedes albopictus* mosquito, a secondary vector, is abundant in both countries [4,5]. Thus, both countries could be at risk of dengue establishment.

In Korea, no indigenous dengue cases have been confirmed, and all reported cases were diagnosed in travelers returning from endemic or epidemic countries [6–8]. In Korea, DF was legally classified as a notifiable infectious disease in August 2000. DF is a notifiable infectious disease in Japan, designated by the Infectious Disease Control Law in 1999 [9,10]. In Japan, there were DF outbreaks between 1942 and 1945; however, no domestic cases were reported prior to 2014 [9–11] when Japan experienced an unexpected small dengue outbreak in 2014 [12].

In this study, we conducted a comparative observation of the epidemiological characteristics and risk factors of DF between Korea and Japan during 2006 to 2010.

2. Materials and methods

We used raw data of 367 DF cases in Korea between 2006 and 2010, which were obtained from the infectious diseases surveillance yearbook available on the Korea Centers for Disease Control and Prevention website [13]. Data of 589 DF cases in Japan during the same time period were obtained from Annual Surveillance Data and the Infectious Diseases Weekly Report, both available on the Infectious Diseases Surveillance Center (IDSC) website [14,15].

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