The Features of Imported Dengue Fever Cases Confirmed at National Institute of Infectious Diseases Japan, during 2001+

by

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Abstract

The demographic features of the dengue cases confirmed during 2001 at the National Institute of Infectious Diseases, Japan, were determined. Thirty-five cases were confirmed to be of dengue fever, 18 cases were male and 17 female. The youngest case was 19 years old and the oldest was 64 years old. Thirty-four cases were determined to be of primary infection, and one was secondary. Most of the dengue patients developed illness after returning from countries in Southeast and South Asia. In addition, two patients had visited Tahiti and one had visited Samoa before developing dengue fever. Dengue fever/dengue haemorrhagic fever is the infectious disease that should attract more attention in Japan.

Keywords: Dengue fever, imported cases, serodiagnosis, Japan.

Introduction

Dengue fever/dengue haemorrhagic fever is one of the infectious diseases that all physicians are required to report in Japan, according to the Japanese infectious disease control law. Dengue outbreaks occurred in

+ Information generated on the circulation of dengue serotypes is equally important for 'travellers contact' countries. Introduction of new DEN serotype has been found to be a good predictive indicator for larger epidemics. During the present study, out of the 21 virus genome detections from countries of South-East and South Asia, 15 isolations belonged to DEN-1 and three each to DEN-2 and DEN-3. DEN-1 was the predominant virus circulating in the region during 2001. Besides, this information is important for DHF/DSS case management. In Thailand it has been established that the severity of DEN-1 and DEN-2 is associated with more plasma leakage, more shock and complication with fluid overload cases, whereas DEN-3 and DEN-4 severity is associated with hepatic dysfunction and encephalophathy. Advance stocking of DEN serotype-specific requirements in hospitals will result in better case management and help in lowering the case fatality rates. – Editor

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Osaka, Kobe, Hiroshima and Nagasaki from 1942 to 1945[1]. Dengue virus infection has not been epidemic in Japan since then, and there are no domestic dengue virus infections today. However, there have been dengue cases imported into Japan[2,3,4].

Laboratory diagnosis is essential for the confirmation of dengue virus infection. We have performed laboratory diagnosis of dengue virus infection upon request from hospitals and clinics. The features of imported dengue cases that were confirmed at the National Institute of Infectious Diseases from 1985 to 2000 have been previously reported[2,3,4,5].

Materials and methods

Serum specimens were collected from dengue-suspected cases in clinics and hospitals, and sent to the Department of Virology 1, National Institute of Infectious Diseases, Tokyo, for laboratory diagnosis. In the present paper, we report the features of the dengue cases confirmed at our laboratory during 2001. Dengue virus infections were confirmed by IgM-capture enzyme-linked immunosorbent assay (ELISA), IgG-ELISA, rapid immuno-chromatographic test, haemmagglutination inhibition (HI) test, and reverse transcriptase-polymerase chain reaction (RT-PCR) as previously reported[3,4].

Commercial IgM-capture ELISA and IgG-ELISA (MRL, California, USA) and rapid immunochromatographic test (PanBio, East Brisbane, Australia) were purchased and used for serodiagnosis. RT-PCR was performed as previously reported[6,7]. The primer sequences used to amplify each serotype of dengue viruses and target size were previously reported[6,7]. HI test was done on microtiter plate, using 4 haemagglutinatin units of DEN-2 viral antigen as previously reported[2].

Results

The summary of dengue cases confirmed at our laboratory during 2001 is given in the Table. Blood samples from 76 suspected cases were tested and 35 were confirmed to be of dengue. All the cases were of dengue fever, and there was no case of dengue haemorrhagic fever. Of the 35 confirmed dengue fever cases, 18 were male and 17 female. The youngest case was 19 years old and the oldest 64 years old.

Most of the Japanese dengue patients developed illness after they had visited countries in Southeast and South Asia (Table), e.g. Indonesia (2), Thailand (8); Philippines (7); Cambodia (3), India (2), Tahiti (2), Viet Nam (1) and Samoa (1). There were nine patients who had visited more than one country. Thirty-four of the 35 cases were determined to be primary dengue virus infection based on antibody response. There was one patient (patient #27) who was determined to be of secondary dengue virus infection. This was the first secondary dengue case we experienced during the past five years.

Table: *Demographic information of 35 dengue cases*

No.	Age, Sex	Disease day	Type (PCR)	IgM-ELISA	IgG-ELISA	Countries of contact
1	33, F	9	-	+(1.1)**	+(7.3)	Indonesia
2	29, M	3	DEN-2	-(0.3)	-(0.7)	Indonesia
		7	-	+(3.2)	+(3.7)	
		9	-	+(3.6)	+(4.4)	
		14	-	+(3.7)	+(5.3)	
3	30, M	6	DEN-3	+(6.7)	-(0.6)	Thailand
		17	nd	+(15.4)	+(3.8)	Malaysia
4	30, M	6	DEN-1	-(0.2)	-(0.6)	India
		13	nd	+(4.0)	nd	Thailand
5	25, F	8	DEN-3	+(2.7)	+(5.9)	Cambodia
		10	nd	+(3.8)	+(7.9)	
		13	nd	+(4.1)	+(9.1)	
		17	nd	+(2.2)	+(9.5)	
6	49, M	7	DEN-1	+(1.5)	+(7.8)	Tahiti
		8	nd	+(2.3)	+(8.2)	
		13	nd	+(5.2)	+(9.3)	
7	56, M	18	-	+(2.5)	+(10.6)	Viet Nam
8	53, F	9	-	+(4.4)	+(9.2)	Philippines
		10	nd	+(3.8)	+(9.4)	
9	58, M	7	DEN-1	+(1.7)	+(5.8)	Philippines
		8	nd	+(2.8)	+(7.5)	
10	45, F	8	-	+(11.3)	+(2.4)	Philippines
11	23, M	4	-	-(0.8)	+(4.6)	Thailand
		5	-	+(1.4)	+(6.7)	Cambodia
		6	nd	+(2.2)	+(8.6)	Laos
		13	nd	+(8.2)	+(9.3)	
12	22, F	4	DEN-1	-(0.5)	-(1.0)	Philippines
		11	nd	+(4.1)	+(9.0)	
13	44, M	15	-	+(6.9)	+(8.1)	Thailand
		19	nd	+(6.7)	+(7.9)	
14	35, F	8	DEN-1	+(2.2)	+(6.8)	Singapore
		19	nd	+(2.4)	+(3.0)	Malaysia
						Thailand
						Indonesia
15	42, M	2	DEN-1	-(0.9)	-(0.7)	Samoa
		8	nd	+(5.0)	+(3.4)	
		14	nd	+(5.2)	+(1.6)	
		27	nd	+(3.4)	+(1.7)	
16	43, M	5	DEN-1	-(0.3)	+(2.2)	Thailand
		12	nd	+(3.6)	+(3.0)	Cambodia
						China

No.	Age, Sex	Disease day	Type (PCR)	IgM-ELISA	IgG-ELISA	Countries of contact
17	24, F	15	-	+(4.6)	+(1.5)	Thailand
		29	nd	+(3.2)	+(1.5)	Cambodia
18	22, M	5	DEN-1	-(0.2)	-(0.2)	Tahiti
		9	nd	+(2.5)	-(0.9)	
19	26, M	6	DEN-2	+(2.1)	+(1.1)	Thailand
		13	nd	+(3.1)	+(1.8)	
20	51, M	4	DEN-2	-(0.8)	-(0.1)	Philippines
		9	nd	+(4.0)	-(0.3)	
21	32, F	8	-	+(3.0)	+(1.3)	Cambodia
		16	-	+(3.5)	+(1.6)	
22	24, F	9	-	+(3.4)	+(1.7)	India
		23	nd	+(2.8)	+(1.7)	
23	28, F	7	-	+(3.7)	nd	Thailand
		8	nd	+(6.6)	-(0.4)	Cambodia
24	22, M	4	DEN-1	-(0.7)	-(0.1)	India
		16	nd	+(7.6)	+(10.2)	
25	26, F	8	DEN-1	+(5.7)	-(0.4)	Thailand
		23	nd	+(8.6)	+(6.5)	
26	28, F	7	DEN-1	+(4.9)	-(1.0)	Thailand
		16	nd	+(7.7)	+(1.8)	
27*	24, F	10	-	+(1.3)	+(2.0)	Philippines
		20	nd	+(1.1)	+(2.0)	
28	19, M	6	-	+(4.1)	-(1.0)	Thailand
		16	nd	+(6.5)	+(8.4)	
29	27, M	6	DEN-1	-(0.8)	-(0.1)	Cambodia
		13	nd	+(5.6)	+(1.3)	
30	21, F	5	DEN-3	-(0.7)	-(0.4)	Philippines
		6	nd	+(2.0)	-(0.9)	
		8	nd	+(3.8)	+(1.2)	
31	25, M	2	DEN-1	-(0.7)	-(0.2)	Thailand
		7	nd	+(6.8)	-(0.1)	
32	27, F	4	DEN-1	-(0.8)	-(0.2)	Thailand
		7	nd	+(5.1)	+(1.1)	
33	28, F	9	-	+(8.5)	+(7.9)	Thailand
34	25, F	7	DEN-1	+(4.9)	+(1.3)	Thailand
		29	nd	+(7.0)	+(7.0)	Laos
35	64, M	6	-	+(14.1)	+(6.9)	Myanmar
		16	nd	+(18.6)	+(8.7)	Thailand

*: secondary infection: not detected nd: not done

**: Numbers in parentheses are index values. The values greater than 1.0 were determined to be positive.

Discussion

Dengue virus infection is a serious cause of morbidity and mortality in most countries in the tropical and subtropical areas of the world[8,9]. Dengue is considered to be one of the most important infectious diseases in these regions. The cases that we confirmed to be of dengue at our laboratory accounted for only a part of the total imported cases in Japan. Nearly 5 million Japanese visit countries in the tropical and subtropical areas annually, and 2 million people visit Japan from these areas. Therefore, DF/DHF is one infectious disease that should attract more attention in Japan.

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