

DENGUE AT BANGKOK CHILDREN'S HOSPITAL - 1981

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BACKGROUND : As has been done for the last several years, all patients admitted to the DHF ward at Bangkok Children's Hospital during the calendar year 1981 were studied to determine the serotype of the infecting virus and the seroresponse (primary or secondary infection) pattern. Selected patients with undifferentiated pyrexia were also evaluated.

MATERIALS AND METHODS : No systematic study of PUO patients was conducted in 1981; only patients specifically referred for evaluation by SN were tested.

A prospective study of DHF was conducted. The clinical evaluation, clinical record keeping, and laboratory methods used during 1981 were identical to those used during the preceding year (see AFRIMS Annual Progress Report 1980-81, page 91), except that all virus isolations were made by cocultivation of patient Ficoll-hypaque gradient purified peripheral blood mononuclear leukocytes with LLC-Mk2 cells. Viruses were typed by plaque reduction neutralization on LLC-Mk2 cells. Clinical observations including grading, were made by SN without knowledge of the serology or isolation results.

RESULTS :

1. PUO patients. 42 patients with undifferentiated pyrexia were selected for virus laboratory evaluation. No follow-up specimen was obtained in 7 cases. Of the 35 cases with paired sera available for examination by HAI serology, 26 showed no evidence for acute dengue, 5 showed a primary seroresponse pattern, and 4 showed a secondary seroresponse pattern. Four dengue viruses, all serotype 1, were isolated from blood specimens taken from the nine serologically confirmed cases (2 primary and 2 secondary cases).

2. Hemorrhagic fever patients. 1981 was a very small year for DHF in Bangkok; only 198 patients were admitted to the study. Data are presented in tabular form in Tables 1 through 9.

COMMENT : Overall during 1981, 10 viruses were isolated from blood specimens obtained from patients with PUO, dengue fever, and grade I DHF; the ratio of Den 1 to Den 2 in this group was 8 to 2. From patients with DHF grade II, 12 viruses were isolated; 6 Den 1, 5 Den 2, and 1 Den 3. Sixteen viruses were isolated from patients with Dengue Shock Syndrome; 0 Den 1, 13 Den 2, 2 Den 3, and 1 Den 4. As in 1980, severe disease was strongly associated with isolation of Den 2 and with a secondary seroresponse pattern, while mild dengue was associated with isolation of Den 1 and with an equal probability of primary or secondary seroresponse.

Table 1. Age distribution of patients admitted to Bangkok Children's Hospital in 1981 with clinical diagnoses of possible DHF ("D81" cases).

<1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	15	Total
11	3	10	14	25	15	26	24	14	14	6	8	10	8	6	2	2	198

Table 2. Final clinical grade of illness of "D81" patients

Not DHF	Grade					Total
	1	2	3	4	?	
21	10	55	102	9	1	198

Table 3. Other statistics describing "D81" patients

1. MALE: FEMALE = 100:98
2. ADDRESS IN METROPOLITAN BANGKOK = 139
ADDRESS OUTSIDE METROPOLITAN BANGKOK = 59
3. PAIRED SERA OBTAINED FOR SEROLOGY: 174 (88%)
WITH S1-S2 INTERVAL \geq 7 DAYS AND \leq 28 DAYS: 167 (84%)
4. SEROLOGIC FOLLOW-UP OF CLINICAL CASE NOT DHF = 14/21 (67%)
SEROLOGIC FOLLOW-UP OF CLINICAL DHF NON SHOCK = 60/65 (92%)
SEROLOGIC FOLLOW-UP OF CLINICAL DENGUE SHOCK SYNDROME = 99/111 (89%)

Table 4. Overall seroresponses to dengue among D81 cases.

# Patients with second serum ("S2") obtained :	174
# Patients with ≥ 4 fold HAI rise to one or more dengue antigens :	91
# Patients with HAI titer of $\geq 1:2560$ to one or more dengue antigens in S2 but no four fold HAI rise (presumptive evidence; "high fixed titer")	75
# Patients with confirmed or presumptive confirmation :	166
# Patients not confirmed as having dengue etiology :	8*

Final clinical diagnoses : Not DHF, 4; grade I or II, 3; grade III, 1.

Table 5. Isolation of dengue viruses from D81 patients.

I. Serotypes isolated (% of total)

D1: 10 (29%)

D2: 20 (59%)

D3: 3 (9%)

D4: 1 (3%)

All 34 (100%)

II. Isolation rate from patients with primary seroresponse patterns = (8/19) (42%).

Isolation rate from patients with secondary (Anamnestic) seroresponse patterns = (25/147) (17%).

Overall isolation rate from all confirmed or presumptive confirmed cases* = 33/166 (20%)

* One Den 2 isolated from one case in which no S2 was obtained is not included.

Table 6. Seroresponse patterns in isolate proven D81 cases.

<u>Serotype Isolated</u>	<u>No. of Cases</u>	<u>No S2 Obtained</u>	<u>S2 Obtained</u>	<u>Primary Seroresponse</u>	<u>Secondary Seroresponse</u>	<u>No Serologic Evidence for Dengue</u>
None	164	23 ^{f,f}	141	11 ^{n,n,n}	122	8 ^{n,n}
Den 1	10	0	10	6 ^{n,n}	4	0
Den 2	20	1	19	1 ⁿ	18	0
Den 3	3	0	3	1 ⁿ	2	0
Den 4	1	0	1	0	1	0
All	198	24	174	19	147	8

* (age 12 mos)

f : fatal case in an infant

n : non-fatal case in an infant

Table 7. Association of grade of illness and seroresponse pattern in D81 cases, Age \geq 12 months (N = 186^a).

<u>Grade</u>	<u>Total No.</u>	<u>No. with S2 Obtained</u>	<u>Seroresponse</u>		
			<u>Not Dengue</u>	<u>Primary</u>	<u>Secondary</u>
0	20	13	3	0	10
I or II	61	56	2	7	47
III or IV	105	95	1	5	89
All	186	164	6	12	147

Table 8. Association of grade of illness with serotype isolated in D81 cases.

<u>Virus Isolated</u>	<u>Total No.</u>	<u>Not DHF</u>	<u>Clinical Grade</u>				<u>Mean Grade^a +/- 1 Std Dev</u>
			<u>I</u>	<u>II</u>	<u>III</u>	<u>IV</u>	
None	163	17	8	43	87	8	2.41 ± 1.15
Den 1	10	2	2	6	0	0	1.40 ± 0.84
Den 2	20	2	0	5	12	1	2.50 ± 0.99
Den 3	3	0	0	1	2	0	2.66 ± 0.58
Den 4	1	0	0	0	1	0	-

^a Not DHF = 0, Grade I = 1, etc.

Table 9. Fatal D81 cases.

<u>Age</u>	<u>Total No. Cases</u>	<u>No. Fatal Cases</u>
< 12 mos	11	2*
≥ 12 mos	187	0

* Neither case confirmed as dengue; patients died before S2 could be obtained, and isolation attempts were negative. Tests for dengue IgM are underway.