

Studies on the Etiology of Acute Encephalitis in Patients at Bangkok Children's Hospital

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OBJECTIVE : To determine the causative agent of encephalitis in patients admitted to Children's Hospital.

BACKGROUND : Encephalitis remains a major cause of morbidity and mortality among children in Thailand; the major known causes of the disease in this country include enteroviruses and Japanese Encephalitis Virus (JEV). Dengue viruses are generally thought to lack encephalitogenic potential in man; however, in mice and in monkeys certain strains of dengue can clearly grow well in brain tissue in vivo. This observation, coupled with scattered case reports from other countries of acute encephalitis in man due to dengue viruses, leave open the possibility that dengue viruses may under certain poorly understood circumstances be encephalitogenic in man.

Over the past several years cases of encephalitis have occurred frequently in children from within the greater metropolitan Bangkok area; in some of these cases a rise in anti-falvivirus HAI antibodies can be found. As dengue viruses are known to be endemic in greater metropolitan Bangkok and JEV is not, we investigated the possibility that occasional cases of encephalitis in metropolitan Bangkok were caused by dengue viruses.

METHODS : Beginning 1 May 1979 a detailed clinical history was recorded on patients with acute encephalitis admitted to Children's Hospital. Acute phase blood plasma and leukocytes, cerebro-spinal fluid, and autopsy materials (especially brain) were tested for isolation of arboviruses by standard tissue culture techniques in LLC-Mk2 cells.

Serological diagnosis of arboviruses infection acute and convalescent phase sera was performed by hemagglutination inhibition test using the standard micro-method.

RESULTS : Results of the first 4 months of the study are summarized in Tables

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1 and 2. Sucrose density gradient fractionation is being done to clarify the diagnosis falling into the "Probable JEV" and "Unspecified Flavivirus" diagnostic categories. One definite virus isolate has been made, a JEV isolate from post-mortem brain tissue from case E-002.

This study will continue for a one year period.

Table 1. Serologic Diagnoses of Acute Encephalitis Cases.

Diagnosis	# of patients with diagnosis	Case #
Definite JEV	3	E-002, 003, 004
Probable JEV	3	E-006, 009, 010
Unspecified Flavivirus	3	E-005, 008, 001
Other diagnosis (postmumps)	1	E-012
Unknown	2	E-007
Total	12	

Table 2. HAI Titers of Acute Encephalitis Patients Against Dengue and JEV Antigens.

Study No.	Age	Sex Home	Day of Disease	HAI vs				
				D1	D2	D3	D4	JE
	11	F Ayuthaya	12	1280	640	1280	1280	2560
			14	5120	640	1280	1280	1280
			28	5120	1280	2560	2560	5120
E002*	5	M Supanburi	4	10	10	10	10	10
			6	10	10	10	10	20
			7	10	10	10	10	40
	4	M Chachengsao	6	10	10	10	10	10
			22	10	10	10	20	40
E004*	3	F Chachengsao	4	10	10	10	10	20
			6	10	10	10	10	160
			6	10	10	10	10	10
E005	8	F Ayuthaya	8	640	1280	1280	5120	10240
E006*	9	M Bangkok	15	80	80	160	160	160
	2	M Samuthsakorn	4	10	10	20	80	20
			19	10	10	20	80	20
E008	9	F Smuthprakarn	8	160	160	640	640	320
			25	1280	32	1280	1280	1280
	4	M Smuthsakorn	6	10	10	20	40	640
			23	10	10	20	40	640
	12	F Petchaboon	6	10	10	10	10	20

Table 2. (Continued)

Study No.	Age	Sex Home	Day of Disease	HAI vs				
				D1	D2	D3	D4	JE
E011*	3	F Chaiyapoom	60(HB1) (CSF)	20	10	40	20	10
				10	10	10	10	10
E012 (post- mumps)	4	M Bangkok	2	10	10	10	10	10
				10	10	10	10	10

* Fatal case.