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An Outbreak of Hepatitis A in A Mountain Township in Ilan County

In January 1991, Ilan County Health Bureau reported that there seemed to be an outbreak of hepatitis A in two mountain villages, Woh-hua and Tung-yueh. The report further indicated that between November 1990 and January 1991, 7 suspected hepatitis A cases had been admitted to the Virgin Mary Hospital of Lotung and that after blood tests for Anti-HAV IgM, found six positive cases. Of the six, two were sisters who came from Tung-yueh and two males and two females came from Woh-hua, all were between 2 and 5 years.

Tung-yueh and Woh-hua are two neighboring villages 45 km apart in the eastern part of Ilan County (see Figure 1) with a population of 902 and 531 persons respectively, most of them of Tayal tribe. Few households in the villages are equipped with running water. The water supply is mostly from ground wells, springs and wells. In most cases, septic tanks are not used.

Children infected with hepatitis A virus are often asymptomatic. Therefore, in addition to a questionnaire survey and prevalence survey of serum hepatitis A antibody in the two villages, children under the age of 7 years in a neighboring village, Tung-au, were also investigated, as most children of Tung-au go to Tung-yueh village for schooling.

495 questionnaires were returned, and 493 serum specimens collected. The blood returned rates in Wohhua, Tung-yueh and Tung-au are 50.3%, 21.5% and 6% respectively. 38 persons were found IgM Anti-HAV positive (recently infected), which represented 7.7% of the total blood specimens collected; 391 (79.3%) were found IgM Anti-HAV negative but IgG Anti-HAV positive previously infected; and 64 persons were found without antibody (not infected) (see Table 1). The 38 children who were recently infected were all under 7 years old, with a median age of 4 years. 29 of them were from Wohhua and 9 from Tung-yueh. 23 of them (61%) are showed some symptoms. From the frequency distribution of cases (see Figure 2), the outbreak could have started in May 1990 in Woh-hua and then spread to Tung-yueh in November. The first case and the subsequent two cases on the frequency distribution were relatives. They were taken care all by the same grandmother. Though the source of infection is unknown, the outbreak has lasted for nine months, It was suspected to be a person-to-person infection.

To further identify potential risk factors of infection, children under 7 years of age of

bot IgM and IgG Anti-HAV negative were held as controls to compare to children of both groups by "whether attending kindergarten", "the source of drinking water", "whether drinking unboiled water", and "contact with sick children". No statistically significant difference, were found (see Table 2).

Immunoglobulin was administered to all children under six years old in the two villages in January 1991 by the Ilan Country Health Bureau.

Reported by: Ilan County Health Bureau, National Institute of Preventive Medicine (Divisions of Serum and Epidemiology, prepared by Dr Y.J. Chu, FETP).

Editorial Note: An outbread of hepatitis A occurred in Lun-pei and Song-lo villages of Ilan County in May and June of 1985, and again in Ying-shi, Si-chi and Nan-shan villages in July through October of the same year. The present outbreak occurred five years later and was in the eastern part of the County. These two incidences are not related.

In this outbreak all cases were under 7 years of age. The main reason is that before the outbreak, the antibody prevalence of hepatitis A for children under 7 years of age was on average 41%, This rate rose sharply to an average of 91% for children above 8 years. This is why the case were all under 7 years old.

When Anti-HAV negative or IgM Anti-HAV positive at the time of investigation is used to indicate the number of suseptible persons before outbreak, the major outbreaks of hepatitis A in Taiwan have been: an outbreak of hepatitis A in a junior college in Taoyuan County in 1981 with a suseptibility of 24.4%[1] ; another outbreak of hepatitis A in a primary school (children aged 11-13 years) in Linkou of Taipei County in 1982 with an average susceptibility of 58%[2] ; another outbreak in Lun-pei and Song-lo villages of Ilan County (children aged 14 and under) in 1985 with a suseptibility of 36%[3] ; and another outbreak in Ying-shi, Si-chi and Nan-shan villages of Ilan County (children under 14 years) in the same year with a susceptibility of 65%[4] . The susceptibility of the present outbreak (children under 7 years) was 58%. The above data show that an outbreak is still possible even if the susecptibility is as low as 24%. Data from Taipei City show that susceptibility is alearday as high as 74%[5] before children reach the age of 10 years. Because of improvements in environmental sanitation, in the quality of life and in health behaviors, the chances of a major outbreak in Taipei City are low. Even if there is an outbreak, it should be localized around the source of infection. However, in time of war or disasters when environmental sanitation is out of control, a major outbreak of hepatitis A is not unlikely. Preventive measures[6] , therefore, should be taken in advance, and the monitoring of hepatitis A and health education should be strengthened.

References: 1. Chen, D.S., Sund, J.L., Lai, M.Y., et al. An outbreak of hepatitis A in junior college students verified by IgM hepatitis A antibody testing. J. Formosan med Assoc., 1983; 82:1018-27.
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Erratum:

1. Second paragraph page 1 of Vol. 6 No. 11, left-overs of foods had been sent to the National Institute of Preventive Medicine for testing should read "sent to the National Laboratories of Foods and Drugs for testing."
2. The telephone number of the 5th Sivisionof the National Laboratories of Foods and Drugs should be (02) 785-0435 or (02) 785-8283 ex 511.
3. Add L.H. Chen (National Laboratories of Foods and Drugs) among the reporters.

Figure 1. Heaptitis A Outbreaks in Ilan County

○ two outbreaks in 1985
● outbreaks in 1985-1991

Figure 2. Frequency Distribution of Hepatitis A Case
Iland County, May 1990 to January 1991

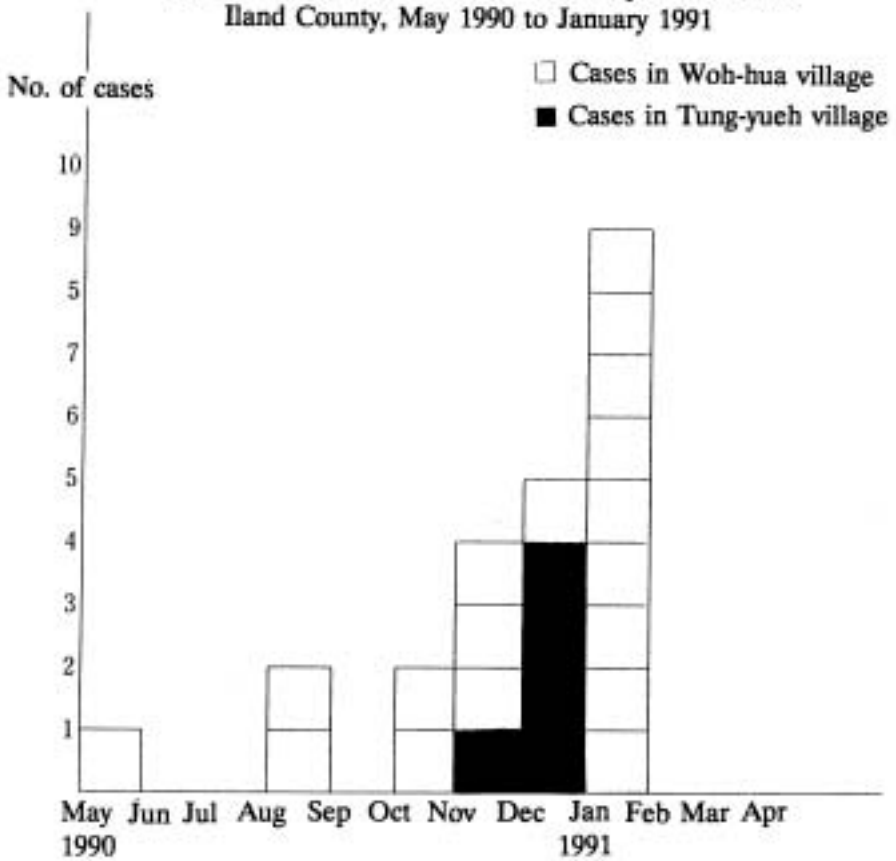

Table 1. Prevalence of Hepatitis A Antibody Ilan County, 1990-1991.

Age	Susceptible				With antibody		Total
	IgM Anti-HAV (+) (recently infected)		IgM Anti-HAV (–) IgG Anti-HAV (–) (not infected)		IgM Anti-HAV (–) IgG Anti-HAV (+) (heave been infected)		
	No.	%	No.	%	No.	%	No.
1	3	25.0	5	41.6	4	33.3	12
2	4	44.4	4	44.4	1	11.1	9
3	6	40.0	6	40.0	3	20.0	15
4	11	73.3	2	13.3	2	13.3	15
5	7	41.2	5	29.4	5	29.4	17
6	4	18.2	5	22.7	13	59.1	22
7	3	10.7	5	17.9	20	71.4	28
8	0	0	1	2.7	36	97.3	37
9	0	0	3	11.1	24	88.9	27
10	0	0	10	23.2	33	76.7	43
11-29	0	0	15	13.3	98	86.7	113
30-39	0	0	0	0	52	100.0	52
40-49	0	0	1	3.6	27	96.4	28
50+	0	0	2	3.0	65	97.0	67
unknown	0	0	0	0	8	100.0	8
Total	38	7.7	64	13.0	391	79.3	493

Table 2. Risk Factors for Hepatitis A Children Under 7 Years, Woh-hua and Tung-Yueh Villages, Ilan County

Risk Factor	Cases			Controls			OR	95% confidence interval
	Yes	No	%	Yes	No	%		
Being to kindergarten	10	27	27.0	5	19	20.8	1.41	0.36-5.70
Public water supply	36	1	97.3	22	1	95.7	1.64	0.0 -63.8
Drinking unboiled water	16	20	44.4	7	14	33.3	1.60	0.46-5.71
Contact with sick child	23	12	65.7	10	13	43.5	2.49	0.74-8.51