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ORIGINAL ARTICLE

OUTBREAK OF HEPATITIS A IN TERENGGANU JAN – DEC 2000

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ABSTRACT

In August 2000, the Disease Control Unit of Terengganu noted an increase in the number of serologically confirmed cases of hepatitis A virus (HAV) in Kuala Terengganu Hospital. Preliminary investigation revealed that there were an outbreak of hepatitis A in districts of Kuala Terengganu and Marang. Eventually, a total of 334 associated cases were reported among Kuala Terengganu residents and 59 cases among residents of Marang. The age of the patients range from 2 years to 71 years old (median 16 years). Males accounted for 69.5% of cases and had a higher sex specific attack rate (96.35/100,000) than females (42.70/100,000). The highest attack rate (128.3/100,000) occurred among patients aged 10 – 14 years. The health staff of Kuala Terengganu and Marang District Health Office had investigated a total of 229 case. Most cases (62.4%) occurred amongst school children. A case control study was carried out amongst 35 cases that were matched with 71 controls by age group, class and sex, to identify the potential source of infection. The results indicated that eating fried noodle with shellfish significantly increased the risk of being infected during the outbreak (OR 16.38[4.21-74.53]).

INTRODUCTION

Hepatitis A is a very common infection in the early years of life in the economically developing countries of Africa, Asia and Latin America, where sero-prevalence rates are almost 100%.[1] Most infection occurs by the age of 5 years. In contrast, sero-prevalence rates in the USA, Western Europe and several Mediterranean countries, have fallen during the past few decades. In some countries, not more than 10% of the population were previously infected.[2]

Hepatitis A can be differentiated from other forms of acute viral hepatitis via serological testing. Diagnosis is made on the detection of HAV IgM antibody during the acute phase of the illness. IgM antibody can persists for 3 to 6 months after infection, but is seldom found after vaccination against HAV. Patients with asymptomatic Hepatitis A may have a shorter period of detectable IgM anti-HAV when compared against patients with symptomatic disease.[2]

The incidence rate of hepatitis A in Terengganu increased by 172% in the year 2000 as compared to 1999. Terengganu was the state with highest incidence rate of Hepatitis A (12.39/100,000) in 1999, followed by Sabah (3.30/100,000). Another outbreak of Hepatitis A was reported in Marang in 1999 but investigation by health office did not implicate any event nor any food-handler and ruled out contaminated water as a source for the outbreak.

A total of 336 cases were reported in Terengganu in the year 2000. Of these cases, 93 percent were from the District of Kuala Terengganu and Marang (75% and 18% respectively), Hulu Terengganu 3.3%, Kemaman 1.6%, Setiu 0.5% and Besut 0.3%. This report summarized the recent food-borne related outbreaks of Hepatitis A in Kuala Terengganu and Marang. It was considered as a single outbreak due to the geographical distribution and the period of occurrence.

INVESTIGATION OF THE OUTBREAK

METHOD

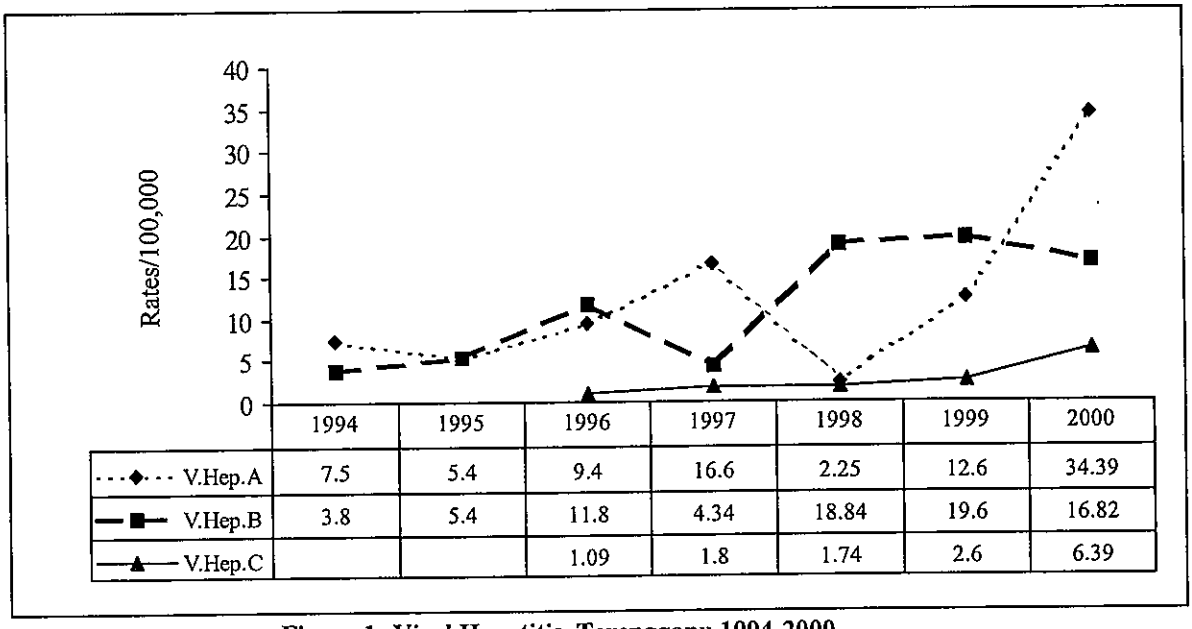
A survey using standard surveillance questionnaires was conducted from August till December 2000 by public health inspectors on all cases (or their parents for underage cases). A case was defined as a person with an acute illness clinically compatible with Hepatitis A, with laboratory confirmation (presence of IgM antibody to hepatitis A virus) or epidemiological link to laboratory confirmed cases.

The objective of the investigation was to document the outbreak in terms of person, place and time and to establish if there was any association between illness and certain risk-related factors such as age, sex, occupation, food exposure or source of drinking water. Of the 334 confirmed cases of Hepatitis A, the health staff investigated 229 (68.6%) of them.

A case control study was carried out amongst 35 cases that were matched with 71 controls by age group, class and sex, to identify the potential source of infection. The cases were selected from schools

[1] *Terengganu State Health Department*

that have at least of four cases each, in the district of Marang. Health inspectors from the Health Director Office, the Health Office of Marang, Kuala Terengganu and Hulu Terengganu conducted the interviews. The controls were selected by matching two or three other students by age, school, class and place of residence. Both groups, cases and controls, were interviewed using the standard questionnaire.



	1994	1995	1996	1997	1998	1999	2000
V.Hep.A	7.5	5.4	9.4	16.6	2.25	12.6	34.39
V.Hep.B	3.8	5.4	11.8	4.34	18.84	19.6	16.82
V.Hep.C			1.09	1.8	1.74	2.6	6.39

Figure 1: Viral Hepatitis, Terengganu 1994-2000

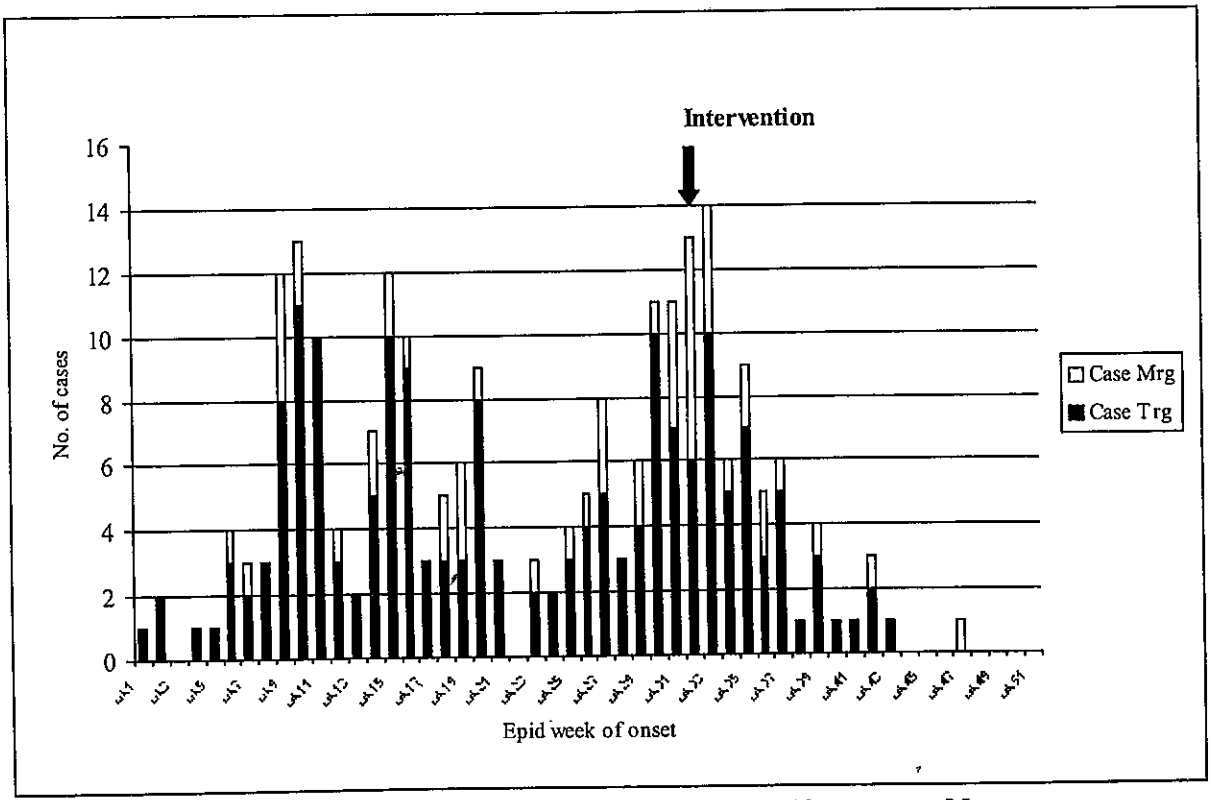


Figure 2: Hepatitis A cases by 'epid week' of onset: Kuala Terengganu, Marang, Week 1 to Week 46 year 2000

RESULTS

The combined attack rate (AR) for the two districts was 69.7/100,000. The attack rate was greater in the district of Kuala Terengganu when compared to Marang (74.5/100,000 and 53.4/100,00). Male accounted for 69.5% of cases and had a higher attack rate (96.35/100,000) than female (42.70/100,000).

Investigation results

Of the investigated cases, 229 (100%) reported having symptoms of jaundice, 93% experienced malaise, 84% of having abdominal pain. The graph shown in Figure 2 is suggestive of mixed common source and person to person spread. The epidemics revealed a distribution of cases over several months. The incidence of Hepatitis A initially peaked during the 9th epid week, then again during the 14th epid week and finally during the 32nd week. The number of cases declined slowly afterwards. No common event, food handling facility nor water source could be identified to account for the distribution of cases.

Table 1 illustrates the age distribution of the confirmed cases that were investigated. A large proportion of the cases were children aged 10 to 14 years (31.4%) and young people and active group aged 15 – 44 years (55.9%).

Majority of the cases lived within the neighboring districts of Kuala Terengganu and Marang. Although 62.4% of all cases investigated were students, no clusters were observed in any educational establishment.. Of the total 229 cases, 73.8% had history of consuming food from pasar malam. Another 34.5% of the cases had eaten in restaurants during the incubation period of the disease.

A total of 208 food handlers were tested for IgM antibody to Hepatitis A virus (IgM anti HAV). They were the food handlers that worked in restaurant, food outlet, pasar malam in the mukim with high percentage of cases. There of them were positive for HAV but none of them had history of illness suggestive of Hepatitis A for the past six month. Two were the employees in small restaurant in Chendering and one them employee of a restaurant in Kuala Ibai. All of them were given health education and were asked to refrain from working for the next two months.

Case control results

Case control study indicated that eating fried noodle with shellfish significantly increased the risk of being infected during the outbreak (OR 16.38[4.21-74.53]). No other food consumption ("satay ikan", ice cream. "nasi kerabu", burger) were significantly associated with the illness.

Table 1: Hepatitis A cases by age group; Kuala Terengganu & Marang 2000

Age group	No. of cases	Percentage
0-4	2	0.87
5-9	22	9.60
10-14	72	31.44
15-19	58	25.30
20-24	25	10.92
25-29	16	6.99
30-34	11	4.80
35-39	13	5.68
40-44	5	2.18
45-49	1	0.44
50-54	1	0.44
55-59	1	0.44
60-64	1	0.44
65-69	0	0.00
70-74	1	0.44
Total	229	100.0

Table 2: Distribution of hepatitis cases by mukim in Kuala Terengganu and Marang

Mukim/District	No. of cases	Percentage
Chendering (K. Terengganu)	32	13.9
Bukit Besar (K. Terengganu)	24	10.5
Rusila (Marang)	24	10.5
Pengadang Buluh (K. Terengganu)	21	9.2
Bukit Payong (Marang)	20	8.7
Atas Tol (K. Terengganu)	18	7.9
Kuala Nerus (K. Terengganu)	16	7.0
Pulau Kerengga (Marang)	11	4.8
Bandar (K. Terengganu)	8	3.5
Serada	6	2.6

DISCUSSION

HAV infection is endemic in Terengganu. The last major outbreak was in Marang 1999. Rapid identification and prompt reporting of Hepatitis A cases are important because preventive measures can be taken to prevent transmission to general public. In the first six months of 2000, only 30 cases of HAV were notified. This outbreak highlights the weaknesses in the reporting systems of notifiable diseases in Terengganu.

When investigated in August, the epidemic curve suggested that a common source infection had persisted over time or had been followed by person to person transmission. The analysis indicated that eating fried noodle with shellfish was associated with an increased risk being infected. Another identified risk factor was eating foods from 'pasar malam' but this is not proven statistically.

Measures to prevent food-borne hepatitis A outbreak include[3];

- training of food handlers on proper hygiene and food handling practices,
- investigation of food handlers who have symptoms of hepatitis or otherwise ill,
- prompt reporting by health care providers to local health department of patients with suspected food borne hepatitis A, and
- prompt investigation by health departments to identify possible sources of infection.

Inculcation of good hand washing habits and other personal hygiene measures amongst food-handlers is important because the source in food-borne outbreaks is often asymtomatic.[3] The use of immunization should be considered. The cost and benefit of such long-term intervention must be carefully evaluated in terms of Malaysian circumstances.

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