

Hepatitis A Outbreak in Hulu Langat District, Selangor State, Malaysia During April - October 2002

B Venugopalan, MPH*, **N A R Nik Rubiah, MPH****, **T Meftahuddin, MPH****, **M Ayu, MPH-Epidemiology*****, **R Prema, MPH***, **I Ruhaini, MPH******, **S Murugan, M.Env****

*Disease Control Unit, Selangor State Health Department, **Disease Control Unit, Hulu Langat District Health Office, ***Masters of Public Health Student, Faculty of Medicine, University Malaya, ****Disease Control Unit, Gombak District Health Office

Summary

A Hepatitis A outbreak occurred in Mukim Hulu Langat, Hulu Langat district from April 2002 to October 2002. Of the 51 cases notified, most were among students and the ethnic groups involved were Malays and the Orang Asli (local indigenous community). Epidemiological investigations revealed that the cases were localized along rivers used for recreational activities in this area. River water analysis indicated human faecal contamination and it was believed that the contamination was due to the Orang Asli community living upstream. This occurred due to lack of toilet facilities, water at point of use and the existing traditional practices of the Orang Asli community. Control measures instituted were intense health education to the Orang Asli to avoid using the rivers for defecation, multi agency efforts to provide sanitary toilets and adequate water to the villages affected. Future measures include conducting a sero- prevalence survey to determine the feasibility of Hepatitis A immunization to the susceptible population in this area. The outbreak that began in April 2002 was controlled by October 2002.

Key Words: Hepatitis A, Orang Asli, River water faecal contamination

Introduction

Hepatitis A is one of the diseases spread by the oro-faecal route and it is related to situations where water or food has been contaminated due to poor environmental sanitation, inadequate sewerage services, contaminated drinking water and finally poor personal hygiene by food handlers in food preparation. Most infections in children below the age of 6 years are asymptomatic, while infections in older children and adults are usually symptomatic, with jaundice occurring in more than 70% of the patients. Improvements in personal hygiene and environmental sanitation have led to a decline in natural immunity against the virus¹.

Outbreaks of Hepatitis A had been frequently reported in communities with poor water supply, latrine coverage and environmental sanitation that are usually

observed in developing countries. In these countries, most of the children would have gained natural immunity to Hepatitis A by the time they reach adolescence. In more developed countries, with better sanitation, water and toilet facilities, sporadic infections are usually reported from food contaminated by unhygienic practices of food handlers. As a result of this, seroprevalence of Hepatitis A antibody is low in developed countries.

Hulu Langat is one of the 9 districts in Selangor. It is one of the more urbanized districts in Selangor with a population of about 990,300 in the year 2002². The indigenous community, known as the Orang Asli lives in scattered pockets in this district and their population was about 2000. Due to their lifestyle and low socio-economic group, the majority of the orang asli live in

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Corresponding Author: B Venugopalan, Disease Control Unit, Selangor State Health Department

settlements without adequate drinking water supply, electricity and poor latrine coverage. For the period 1997-2001, a total of 9 clinically diagnosed Hepatitis A cases have been notified in this district.

Objective

The main objective of this report is to identify the predisposing factors to the Hepatitis A outbreak in Hulu Langat in the year 2002 and to discuss the control measures taken to prevent future outbreaks.

Materials and Methods

All Hepatitis A cases were notified to the Hulu Langat district health office. Further descriptive epidemiological investigations were conducted on these cases by the health inspectors from this office. Environmental investigations conducted were river sampling for faecal contamination and evaluation of coverage of drinking water supply and latrines in the affected areas.

In this outbreak, an active case of Hepatitis A was defined as a person with a recent history of fever, with or without jaundice and serologically positive for IgM Hepatitis A. The results of these investigations were analyzed by the Epi Info 2002 and SPSS statistical programmes.

Study Limitations

The limitations of this study was the inability to detect all recent Hepatitis A cases from this outbreak as the reported incidence of sub clinical infection in Hepatitis A infections was about 15%. This was taken together with the possibility that patients from other districts, who were infected from this region, may not have been epidemiologically linked to this outbreak.

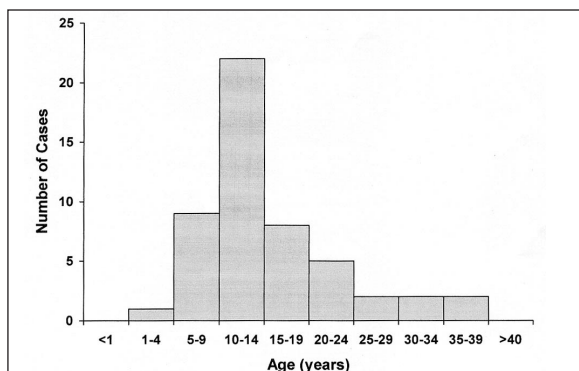


Fig. 1: Age Profile of Hepatitis A Cases

Results

The index case was reported to the district health office on 7.4.2002. Since then the number of Hepatitis A cases notified had been noted to be on the increasing trend and till October 2002, a total of 51 cases were diagnosed to be Hepatitis A based on their clinical presentation and serological findings. All these cases were reported from the sub district of Hulu Langat and involved mainly 2 Orang Asli and 2 Malay villages in this area.

Of the cases notified, 39 cases (76.5%) were males. The ethnic groups involved were Malays (43 cases) and the Orang Asli (8 cases). The occupational distribution showed that students (78%) were the main group involved in this outbreak.

Age profile of Hepatitis A cases (Figure 1)

Epidemic Curve according to Date of Onset (Figure 2)

River Water Analysis for Coliforms

River water samples from 8 rivers or their tributaries in this region were found to have faecal contamination (Escherichia Coli) ranging from 9000 - 25000 MPN (most probable number)/ 100 ml.

Water & Latrine Coverage of Affected Villages

The functioning latrine coverage in the Malay villages was 87% while the supply of clean drinking water (both treated piped water and gravity feed system) was 77%. In the Orang Asli villages, the supply of clean drinking water was 100% while no functioning latrines were noted during this period.

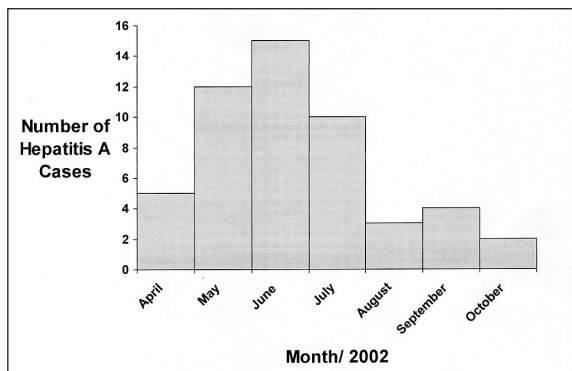


Fig. 2: Epidemic Curve of Hepatitis A Cases (According to Date of Onset) (April - October 2002)

Discussion

The majority of the cases were among Malays living in villages downstream to the Orang Asli villages. The age distribution of the cases indicated that the 59% of the cases were between the ages of 10-19 years. Of the total number of confirmed cases, 40 (78%) cases were among students. All these indicate that the outbreak of Hepatitis A was related to a common activity involving young adults especially school children.

From the distribution of Hepatitis A cases notified, the majority of the cases reported lived downstream, along the Pangsoon River and its tributaries, from the Orang Asli villages. These rivers are popular recreational areas for the local population and tourists from other areas. The close distribution of these cases with these rivers suggests that the present outbreak of Hepatitis A outbreak could be water borne.

The epidemic curve showed a propagated outbreak that started in April 2002, peaked in June 2002 and subsided by October 2002. Control measures taken by the Hulu Langat district were implemented from June 2002, and the measures were effective to limit the extent of the outbreak, as noted from the epidemic curve.

The river water analysis indicated human sewage contamination of the rivers related to this locality. It was noted that these rivers were recreational spots in this area. As Hepatitis A virus isolation from river water was not technically feasible, the *Escherichia coli* contamination served as a proxy indicator for these river waters to be contaminated with the Hepatitis A virus.

Although statistics indicate that the Orang Asli villages were provided with sanitary toilets and safe drinking water supply, on-site inspection indicated that most of the toilets were not maintained well and there was lack of water at point of use in the toilets. This was compounded with the fact that the Orang Asli, due to their traditional beliefs, are reluctant to use sanitary toilets as they are more comfortable to use the bush and river for defecation.

The Malay villages downstream, had better access to sanitary toilets and their water supply was from the state water board. Analysis of the water provided by the state water board to this region was found to be clean and safe for drinking. The Malay villagers were also more receptive to the use of sanitary toilets.

From these findings, it was postulated that the current episode of Hepatitis A outbreak occurred due to human sewage contamination of rivers used for recreational purposes. This outbreak originated from the Orang Asli communities living upstream who had poor toilet facilities and water supply and this was compounded by their traditional belief of not using toilets for defecation.

Once the underlying factors for this outbreak were identified, the following measures were implemented to control this outbreak:

- a) Intense health education of the Orang Asli community on the need to use sanitary toilets for defecation and to avoid using the rivers as toilets.
- b) Coordination of multiple agencies to provide sanitary toilets and water at point of use in the villages affected.
- c) Warning signs posted at recreational areas on the precautions to be observed while using the river water during the outbreak period.
- d) A sero-prevalence survey for Hepatitis A has been planned for the affected villages with the possibility of vaccination for at risk individuals as a long-term protective measure³.

As observed from the epidemic curve, these measures have been effective in controlling this outbreak. However, surveillance and the control measures instituted have to be monitored on a long-term basis to prevent similar outbreaks in the future.

Recommendations

The following recommendations are made to prevent similar outbreaks in the future in this area:

1. The district health office, with the assistance of the Orang Asli Welfare Department, will have to engage the Orang Asli community in this area in continual health education so as to ensure that sanitary toilet habits are followed all the time. Cultural practices that are detrimental to community health will have to be dealt in a sensitive way by local Orang Asli outreach workers.
2. The health department will have to lead the way to ensure that the marginalized Orang Asli community in this area are provided with basic life amenities such as drinking water at point of use, sanitary

toilets and hygienic refuse disposal. This objective will involve networking with other agencies such as Orang Asli welfare department, state water management board, electricity board, local councils, welfare department and even the political parties.

3. The need for active immunization with the Hepatitis A vaccine can only be decided once the seroprevalence study is completed. However, this is only one of the strategies to prevent future outbreaks as the measures in (1) and (2) will also have to be addressed comprehensively to prevent future outbreaks effectively.

Acknowledgements

1. Director General of Health, Ministry of Health, Malaysia.
2. Hulu Langat District Health Office.
3. Engineering Unit, Selangor State Health Department.
4. Virology Unit, Institute of Medical Research, Kuala Lumpur.
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