Return of the Water Devil: Kerala need to be cautious about Hepatitis A Outbreaks

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ABSTRACT

Hepatitis A, a self-limiting viral disease, is the most common form of acute viral hepatitis worldwide. Hepatitis A virus (HAV) infection occurs sporadically and epidemically and every year there are about 1.4 million cases of hepatitis A occurring worldwide. Even though a significant proportion remains asymptomatic and most of the infected persons recover completely, HAV infection causes significant morbidity. People affected with HAV may take a few months to return to work, school, or daily life and so itself HAV infections can lead to economic losses and social consequences in the community.

Kerala is one state where early and rapid socioeconomic development and urbanization happened. Ironically, these improved economic and sanitary conditions lead to a higher susceptibility in older age groups and higher disease rates and large outbreaks can occur. Improvement in hygienic and socio-economic conditions in the state might have resulted in a decrease in the number of natural childhood infections.

A substantial proportion of individuals in Kerala were not exposed to HAV until adulthood. A mild contamination of water with HAV in such scenario is sufficient to lead to explosive hepatitis A outbreaks. These findings reiterate the fact that huge outbreaks of hepatitis A have to be expected in the state in coming years.

Keywords: Water borne diseases, Hepatitis A

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INTRODUCTION

Hepatitis A, a self-limiting viral disease, is the most common form of acute viral hepatitis worldwide. Hepatitis A virus (HAV) infection occurs sporadically and epidemically and every year there are about 1.4 million cases of hepatitis A occurring worldwide. Even though a significant proportion remains asymptomatic and most of the infected persons recover completely, HAV infection causes significant morbidity. People affected with HAV may take a few months to return to work, school, or daily life and so itself HAV infections can lead to economic losses and social consequences in the community.[1-3]

The HAV is transmitted through ingestion of contaminated food and water or through direct contact with an infectious person.[2-5] The virus is shed in the faeces of persons with both asymptomatic and symptomatic infection. Under favourable conditions HAV may survive in the environment for months.[2,5]

Presentation of disease is determined by the age of exposure, which tends to be asymptomatic or subclinical during childhood and symptomatic usually among adults. About 70% of children less than 6 years of age who are infected are asymptomatic or develop a mild self-limiting illness.[5,6] Immunity after infection is probably life-long.

In developing countries with very poor sanitary conditions and hygienic practices, most children (90%) have been infected with the hepatitis A virus before the age of 10. Those infected in childhood do not experience any noticeable symptoms, but will develop life-long immunity. So outbreaks of HAV are uncommon in areas with high level of infection and very poor sanitation because older children and adults are generally immune, as they contracted the disease during childhood. Symptomatic disease rates in these areas are low and outbreaks are rare.

India was considered as hyperendemic region for HAV infection with very high infection rates in the early years of life.[7-9] An epidemiological transition has been observed about the HAV infections transmission in India, from hyperendemicity to intermediate endemicity with a decline in HAV infection rate in children and

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increase in the number of susceptible adults.[9,10] A few recent hospital based studies from India suggest that the prevalence of anti-HAV antibodies among Indian adults has declined to <70%, possibly due to improved sanitation and urbanization.[10-12]

The HAV antibody sero prevalence rates reported from Kerala was <10% in children below 5 years when compared to 60-80% from many other parts of the country.[10,13-16] Kerala is one state where early and rapid socioeconomic development and urbanization happened. Ironically, these improved economic and sanitary conditions lead to a higher susceptibility in older age groups and higher disease rates and large outbreaks can occur. Improvement in hygienic and socio-economic conditions in the state might have resulted in a decrease in the number of natural childhood infections. An epidemic of hepatitis A in the age range of 2-75 year was reported from central Kerala in 1998. Out of 399 cases of acute hepatitis A during that outbreak, majority (65%) were in the age range of 15-33 year.[17] In 2004, an epidemic of hepatitis A occurred in Kottayam district of Kerala, which also mainly involved young adults.[18] The age group affected mostly in an outbreak reported from Kollam was also 10-25 years as in the previous two huge hepatitis A outbreaks reported from the state.[19]

These outbreaks of hepatitis A in young adults from Kerala are suggestive of a region with intermediate HAV endemicity. A substantial proportion of individuals in Kerala were not exposed to HAV until adulthood. A mild contamination of water with HAV in such scenario is sufficient to lead to explosive hepatitis A outbreaks. These findings reiterate the fact that huge outbreaks of hepatitis A have to be expected in the state in coming years.

Community-wide outbreaks of HAV infection are often prolonged and difficult to control. Usually they persist for 6-18 months, until the pool of susceptible persons is exhausted.[20-21] Same is the experience with hepatitis A outbreaks in Kerala.[17-19]

The key to providing microbiologically safe drinking water lies in understanding the various mechanisms by which water gets contaminated, and formulating interventions at critical points to decrease and prevent contamination of drinking water. The mechanism for water quality surveillance seems to be poor in the State. The districts constantly reporting maximum number of hepatitis A cases are ill equipped to do water quality testing. At least two major outbreaks of Hepatitis A in the State have been due to the mixing of sewage with the drinking water supplied through piped water distribution. Intermittent water supply, closely running pipelines and drainages, frequent breaks in the pipelines, contaminated water sources, not ensuring scientific chlorination of water supply in rural areas are some of the factors that favours transmission of HAV through water distribution system.

In a country like India with an extensive variations and heterogeneity in the determinants of acquiring anti-HAV antibodies, a unified approach for vaccination would appear epidemiologically inappropriate.[9] Routine vaccination is recommended in populations who remain unexposed to the HAV infection during early childhood. Nearly 100% of people develop protective levels of antibodies to the virus within one month after a single dose of the vaccine.[1] Small localized or large outbreaks of HAV infection will remain a threat in areas like Kerala where an obvious epidemiological transition is happening. Universalizing HAV vaccination could prevent the disease incidence incommunity, but the cost of vaccine is a limiting factor. In Kerala, families who can afford should be advised to consider immunizing their children with hepatitis A vaccine. The situation demands capturing epidemiological data regarding HAV systematically and economic analysis of initiating universal HAV vaccination in the State. Vaccination efforts should be supplemented by public health efforts to improve sanitation, hygiene practices and food safety.

END NOTE

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Editorial comments:

Water borne disease outbreaks get common during the monsoon months and when water scarcity strikes in the summer months. Public memory is often short

after major disease outbreaks occur. Hence the need to be ever vigilant to prevent these severe outbreaks.

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