Short Report

Viral hepatitis A infection amidst Covid-19 outbreak in central part of Sri Lanka

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Abstract

The COVID-19 pandemic has caused resource depletion and a shift in priorities in the public health system, impacting the control of other communicable diseases of public interest. Hepatitis A virus is a notifiable disease transmitted through faeco-oral transmission. We conducted a retrospective analysis of patients with a clinical diagnosis of hepatitis whose specimens were submitted to the Virology Laboratory of the National Hospital, Kandy, from January 2019 to December 2021. During pre-pandemic time 28 (4.4%) were positive for hepatitis A, while it was 86 (10.2%) during the pandemic. There was a statistically significant difference in incidence between the two cohorts ($p < 0.0001$). The majority of patients in 2021 (25 patients; 64.1%) resided in Badulla. Our data shows an increased incidence of hepatitis A cases during the pandemic, and residents in Badulla were predominantly affected in 2021. Strategies should therefore be undertaken to prevent further cases in the central part of the country.

Keywords: Hepatitis A virus, Hepatitis, COVID-19, public health, outbreak

Introduction

The COVID-19 pandemic has caused resource depletion and a shift in priorities in the public health system which might impact the control of other communicable diseases of public interest. For example, outbreaks of the hepatitis A virus are a global public health concern. The impact on the public health system by outbreaks of communicable diseases was evident by a massive outbreak of hepatitis A infection in 2009 around the end of the Sri Lankan war involving more than 14,000 patients.[1,2]

Hepatitis A virus is a single-stranded mRNA virus belonging to the Picornaviridae family.[3] Hepatitis A virus is transmitted through the faeco-oral route and causes acute liver infection. Transmission can be through ingestion of contaminated food and water or direct contact with an

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infectious person. The incubation period ranges from 2 to 4 weeks.[3] Most infections in children are asymptomatic, while about two-thirds of adult patients present with icterus.[3] Anti-HAV IgM can be detected during the acute illness and is used to establish the diagnosis of acute hepatitis A infection. During convalescence, anti-IgG appears and persists for life. It is an indicator of past exposure to the virus[3] or vaccination. Hepatitis A is a notifiable disease in Sri Lanka. The seroprevalence of hepatitis A virus infection was 80.7% in 2015/16.[4]

The aim of this study was to identify any impact of the COVID-19 pandemic on the epidemiology of hepatitis A infection.

Methods

The National Hospital Kandy received samples for virology investigations from all hospitals of Central, Uva and Eastern provinces and some hospitals in the North-Western and Sabaragamuwa provinces. We conducted a retrospective data analysis of samples received from patients with a clinical diagnosis of hepatitis at the Virology Laboratory of the National Hospital, Kandy for three years from January 2019 to December 2021. The samples received in the pre-pandemic period from January 2019 to December 2019 and those received in the pandemic period from January 2020 to December 2021 were analysed separately as two cohorts in our study. We reviewed demographic data of patients positive for hepatitis IgM antibody and compared the results among these two groups of patients. In addition, we calculated the seroprevalence of hepatitis A by retrospectively analysing the samples received for hepatitis A IgG testing over three years from January 2019 to December 2021.

Results

Twenty-eight samples were positive for hepatitis IgM antibody in 2019, 47 in 2020, and 39 in 2021. The incidence of hepatitis A among patients who were clinically suspected to have hepatitis A was 4.4%, 8.9%, and 12.4% in 2019, 2020, and 2021 respectively (Table 1).

Table 1
Acute hepatitis A infection :2019 -2021

Year	Total no of samples tested	No of specimen positive (%)
2019	640	28 (4.4%)
2020	530	47 (8.9%)
2021	315	39 (12.4%)

Among the 640 samples tested during the pre-pandemic time, 28 (4.4%) were positive for hepatitis IgM antibodies, while 86 were positive among 845 samples (10.2%) during the pandemic. There was a statistically significant difference in incidence between the two cohorts ($p < 0.0001$).

We analysed the trend of patients positive for acute hepatitis A infection by time and place. We observed decreased absolute number of cases and percentages in the first quarter in all three years (less than 5%), with the number of cases increasing towards the end of the year. Moreover, 21.3% of samples received during the 4th quarter of 2021 were positive for hepatitis A virus infection.

There are no published local reports on seasonal variation of hepatitis A cases. The peak incidence of hepatitis A cases was noted in the rainy season in a study performed in Brazil,

which they attributed to contamination of water by heavy runoff during the rainy season.[5] A study that analysed annual rainfall patterns from 1976 to 2006 found that the highest mean rainfall occurred between October to December in Badulla, Matale, and Sita Eliya.[6] Therefore, the increased incidence observed in our study may be related to the rainfall pattern in the Central province.

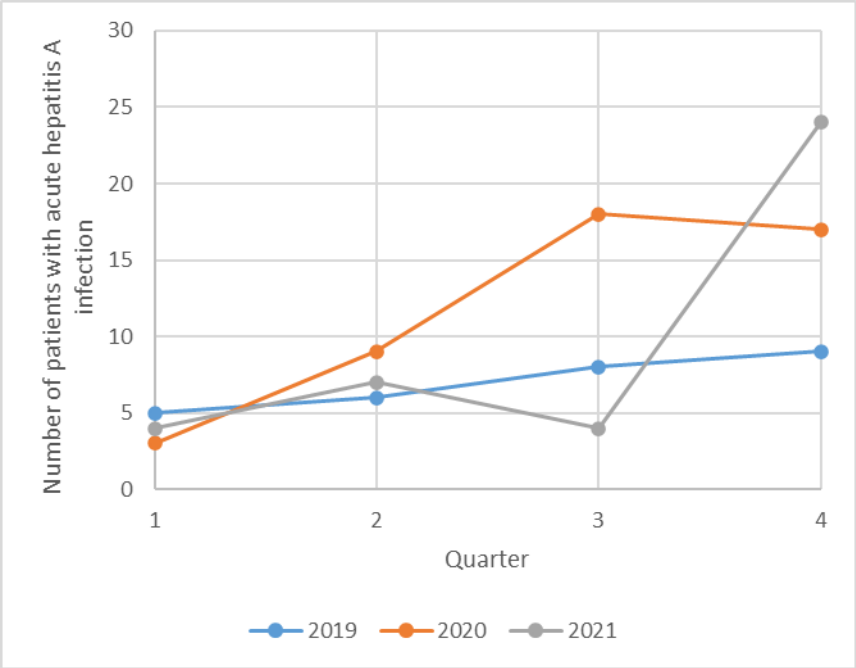

Figure 1: Viral hepatitis A infection over time

The majority of patients in 2019 and 2020 were reported from the Kandy District, with 82% and 72% respectively of laboratory-confirmed cases. However, in 2021 most of the patients (25; 64.1%) were reported from the Badulla District. The remaining patients were distributed among Kandy (n=9;23.1%), Matale (n=1), Nuwara Eliya (n=1). Kegalle (n=2) and Kurunegala (n=1) districts (Table 2).

Table 2: Distribution of cases according to the patients' residence (district)

Year	Kandy	Matale	N Eliya	Kegalle	Kurunegala	Badulla	Monaragala
2019	23	1	0	1	0	3	0
2020	32	1	0	1	0	8	5
2021	9	1	1	2	1	25	0

Our laboratory received 573 samples from 2019 to 2021 for hepatitis A IgG testing, and among them, 509 were positive for IgG, giving a seroprevalence of 88.8%. There was no significant difference in seroprevalence between pre-pandemic and pandemic time (81.5% and 90%).

Our study shows an increased incidence of hepatitis A cases during the COVID-19 pandemic, with residents in the Badulla district predominantly affected in 2021. Strategies should be undertaken to prevent further outbreaks in the Badulla district. Since hepatitis A is transmitted almost exclusively via the faeco-oral route, heightened public health measures are essential in preventing outbreaks. These measures include providing safe drinking water, collection, treatment and safe disposal of sewage, vaccination, and public health education. Vaccination against hepatitis A is most successful, provided the outbreak is contained in a small area and the vaccination programme is commenced early in the outbreak. The shift in priorities in the public health system during the COVID-19 pandemic caused resource depletion which might have led to the delay in identification of the outbreak. Early identification and implementation of measures to improve sanitation, with appropriate health education, are important in preventing and controlling outbreaks.

Conclusion

Our study shows an increased incidence of hepatitis A cases during the COVID-19 pandemic. Setting up systems to anticipate outbreaks, with early identification of communicable diseases during a pandemic is important.

Declarations

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Ethics statement / Consent for publication: Ethical approval was not sought for this study since the study utilised existing laboratory data and patient data was anonymised.
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