

## Trends of Hepatitis A & E Infection in a Tertiary Care Hospital of North India

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### ABSTRACT

**Background & Objectives:** Acute viral hepatitis (AVH) is a systemic infection affecting the liver predominantly. It is a major public health problem in India and other developing nations having inadequate sanitary conditions. This study was undertaken to determine the trends of Hepatitis A & E & their coinfection in a tertiary care hospital so that appropriate management of cases as well as prevention can be planned.

**Material & Methods :** Over a 2-year period, a total of 5894 serum samples were collected from clinically suspected cases of hepatitis. The serum samples were screened for IgM anti-HAV and IgM anti-HEV. Seasonal variation & age group wise seropositivity of hepatitis A & E was studied.

**Results:** Out of the total 5894 samples screened, the percentage positivity of Hepatitis A was 6.7%, 6.2% and Hepatitis E was 14.1%, 13.9% respectively in 2012 & 2013. Of both Hepatitis A & E positive cases, males outnumbered females. Majority of HAV positive cases were children whereas majority of hepatitis E positive cases were adults.

**Interpretation & Conclusion:** The prevalence of HEV was more than HAV in enterally transmitted viruses, making them a major public health problem in our area. Seasonal trends of infection were observed in addition, co-infection though infrequent, but still detected in many cases.

### INTRODUCTION

Acute viral hepatitis (AVH) is a systemic infection affecting the liver predominantly. It is a major public health problem in India and other developing nations having inadequate sanitary conditions which associated with substantial morbidity and mortality.<sup>1</sup> Hepatitis A and Hepatitis E are both enterally transmitted virus infections resulting in sporadic and epidemic forms. Both these viruses do not cause chronic hepatitis. India is hyperendemic for HAV and HEV.<sup>2</sup> The anti-hepatitis A virus (HAV) seroprevalence rate is presently decreasing in many parts of the world. Several factors contribute to the decline of the infection rate, including rising

socioeconomic levels, increased access to clean water and the availability of a hepatitis A vaccine. The illness due to HAV is age related, whereas HEV occurring during pregnancy results in high mortality. Fulminant hepatic failure is higher in coinfections of A and E, than in single infection. Since, HAV and HEV are spread through orofecal route, the infection rate is expected to be similar.<sup>3</sup> Therefore, this study was undertaken to determine the trends of Hepatitis A & E & their coinfection in a tertiary care hospital so that appropriate management of cases as well as prevention can be planned.

### MATERIAL & METHODS

Over a 2-year period, a total of 5894 serum samples (HAV – 1649, 1424, HEV – 1535, 1286 in 2012 & 13 respectively) were collected from clinically suspected cases of hepatitis. Approximately 5-10 ml venous blood sample was collected in a vacutainer without anticoagulant from all cases. Serum was separated after centrifugation and then stored at 4°C until further processing. The serum samples were screened for IgM

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anti-HAV and IgM anti-HEV using General Biologicals Anti-HAV IgM EIA (Mfd by General Biologicals Corp, Taiwan) and anti-HEV IgM EIA (ImmunoVision, USA). Cases were categorized into two groups - children (<18 years) and adults (>18 years). Seasonal trends of hepatitis A & E for winter (November- February), summer (March - June) and monsoon (July- October) were studied.

**RESULTS**

Out of the total 5894 samples screened, 198 samples were positive for anti HAV IgM and 396 were positive for anti HEV IgM. The percentage positivity of Hepatitis A was 6.7%, 6.2% and Hepatitis E was 14.1%, 13.9% respectively in 2012 & 2013. (Table-1) Coinfection of hepatitis A & E was seen in 2.7% cases (2.1% & 3.3 % in 2012 & 2013 respectively). Of both Hepatitis A & E positive cases, males (72.8%) outnumbered females (27.2%). Majority of HAV positive cases were children whereas majority of hepatitis E positive cases were adults. (Figure-I) Higher seropositivity of hepatitis A infection was observed in monsoon season and for

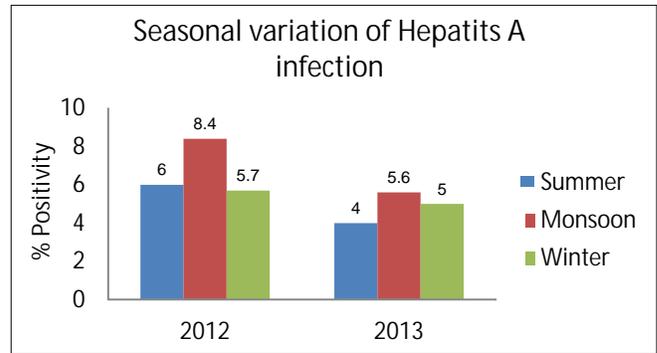


Fig.II : Seasonal variation of Hepatitis A infection.

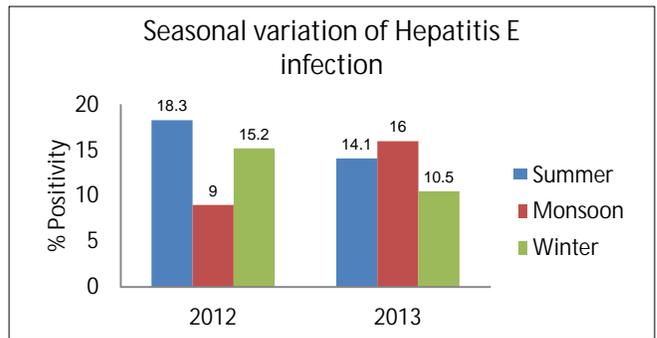


Fig.III : Seasonal variation of Hepatitis E infection.

**Table 1**

**Year wise Seropositivity of Hepatitis A & E**

Viral Hepatitis	2012		2013	
	Total samples	Positive (%)	Total samples	Positive (%)
HAV Infection	1649	110(6.67)	1535	217(6.17)
HEV Infection	1424	88(14.1)	1286	179(13.9)

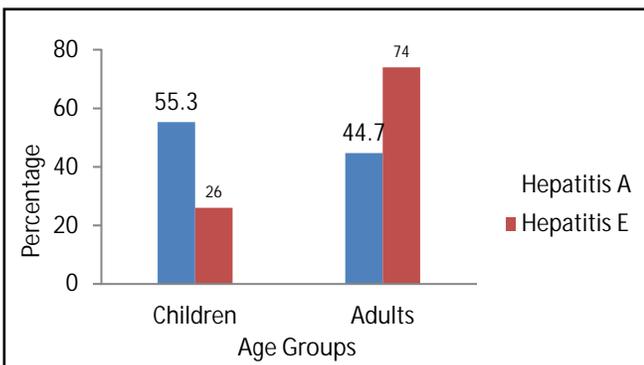


Fig.I : Distribution of Hepatitis A & E Positive cases.

hepatitis E infection maximum cases were seen in summer (2012) & in monsoon (2013). Seasonal variation of hepatitis A and hepatitis E is depicted in figure II & III.

**DISCUSSION**

Viral hepatitis is a major public health problem throughout the world. This is a serious problem in India also and has been reported from all parts of this country.

In our study among the two enterally transmitted viruses, the prevalence of HEV was more than HAV. Prevalence of hepatitis A was 6.7% & 6.2% & of hepatitis E was 14.1%, 13.9% in 2012 & 2013 respectively, whereas higher prevalence of hepatitis A (33%, 32%, 26.9%, 14.6%)<sup>4,5,1,6</sup> and hepatitis E (37.4%, 45.4%)<sup>4,6</sup> was reported by various authors. In contrast to our study low seroprevalence of hepatitis E (7%) was reported in a community based study from Alwar<sup>5</sup> while comparable results (17.9%) were reported by Gupta S *et al.*<sup>1</sup> In our study coinfection of Hepatitis A & E was seen in 2.7% cases in contrast to study by Subrat *et al.*<sup>6</sup> who found no case of coinfection whereas higher percentage (16%) of coinfection was reported in literature.<sup>1</sup>

Overall incidence of enteric viral hepatitis was more in males than females from our hospital and similar results were reported from various studies.<sup>1,7</sup> In our study hepatitis A positivity was almost similar in adults and children but hepatitis E seropositivity was found more in adults which is similar to hospital based study from North India.<sup>1</sup>

Hepatitis A & E are endemic and infection occurred throughout the year but seasonal variation was observed. In our hospital Hepatitis A infection was more prevalent in monsoon which was similar to study of Singh *et al.*<sup>5,7</sup> Hepatitis E infection was found common in summer (2012) & monsoon (2013) season which is similar to Ippagunta *et al*<sup>8</sup> & in contrast to previous study from our institute where peak incidence of hepatitis E was observed in winters.<sup>7</sup> Gupta S *et al*<sup>1</sup> observed two seasonal peaks (Feb-May, December) of hepatitis A & E.

To conclude prevalence of hepatitis E was more than hepatitis A in enterally transmitted viruses, making them a major public health problem in our area. Seasonal trends of infection were observed in addition, co-infection though infrequent, but still detected in many cases. Adequate supplies of safe drinking water and proper disposal of sewage, combined with personal hygiene practices, such as regular hand washing, reduce the spread of enteric hepatitis.

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