

Full Length Research Paper

Seroprevalence of hepatitis-A virus among children aged 1-16 years in Eastern Anatolia, Turkey

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This study aims to determine the seroprevalence of hepatitis A among children aged 1-16 years in eastern region of Turkey. The study was conducted at Tunceli State Hospital in Eastern Anatolia, Turkey. Anti-HAV IgM and Anti-HAV IgG antibodies were evaluated among 351 patients admitted to our pediatric polyclinic. Anti-HAV IgM and Anti-HAV IgG serologic markers were determined using the ELISA method. The mean age of 351 pediatric patients was 7.5 ± 4.2 ; of these, 198 (56.4%) were male and 153 (43.6%) were female. A total of 305 (86.9%) cases in this study were seronegative against hepatitis A. Anti-HAV IgG was positive among 46 (13.1%) patients, of these 22 (47.8%) were male and 24 (52.2%) were female. The mean age of seropositive cases was 8.4 ± 4.8 . Anti-HAV IgM seropositivity was not detected in the study. The application of a routine hepatitis A vaccine among children will reduce the potential for the development of severe complications.

Key words: Hepatitis A, seroprevalence, children, vaccination.

INTRODUCTION

Viral hepatitis is a major public health problem in developing and developed countries worldwide (Ustun et al., 2009). Hepatitis A infections spread predominantly by fecal-oral route and occur throughout the world. However the disease is seen most commonly in developing countries, where the prevalence rate approaches 100% in children by 5 years of age (Yazigi, 2007). The prevalence rate of hepatitis A has been reported as 64.4% overall in Turkey. The prevalence rate for western and central regions has been reported as 80% and it was more than 90% for south-eastern and eastern regions of Turkey (Ceyhan et al., 2008).

The clinical spectrum of hepatitis A virus infection ranges from asymptomatic infection to fulminant hepatitis. Clinical manifestations depend on the age of the host: less than 30% of infected young children are

symptomatic, while about 80% of infected adults manifest severe hepatitis with remarkably elevated serum aminotransferases (Jeong and Lee, 2010). Hepatitis A may lead to severe clinical manifestations, including fulminant hepatitis, in about 10-15% of adults. Thus, the outbreaks of hepatitis A can cause the severe economic and work force lost (Richardus et al., 2004).

This study aims to determine the seroprevalence of hepatitis A virus among children aged 1-16 years and to observe the changes in the seroprevalence of hepatitis A and, whether the hepatitis A vaccination is necessary in Tunceli Province of Eastern Anatolia of Turkey or not.

MATERIALS AND METHODS

This retrospective study was conducted in Tunceli State Hospital, which is a general hospital that contains 150-beds and is located in Eastern Anatolia of Turkey, between August and December 2010. A total of 351 patients admitted to pediatric polyclinic with any reason were included into the study. Patients aged between 1-16 years, who have not any chronic liver disease were screened. The

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Table 1. The demographic characteristics of 351 patients.

	Patient count (%)	Mean Age \pm Sd*	Male (%)	Female (%)
All cases	351 (100)	7.5 \pm 4.2	198 (56.4)	153 (43.6)
Seropositive cases	46 (13.1)	8.4 \pm 4.8	22 (47.8)	24 (52.2)
Seronegative cases	305 (86.9)	7.4 \pm 4.0	176 (57.7)	129 (42.3)

*Sd: Standard deviation.

Table 2. The studies of hepatitis A seroprevalence conducted in Turkey.

Researcher	Location of Turkey	Date	Age	Case number	Seropositivity rate (%)
Kanra et al. (2002)	General	2002	1-4 years	727	42.7
Alabaz et al. (2005)	Southern	2005	12 months	147	36.1
Ozen et al. (2006)	Eastern	2006	3-6 years	286	17.5
Ceyhan et al. (2008)	Southeastern	2006	0-14 years	701	90
Aslan et al. (2001)	Southeastern	1999	2-64 years	400	66.5
Tekay (2006)	Eastern	2004	0-14 years	416	63
Present study	Eastern	2010	1-16 years	351	13.1

data of hepatitis A serological markers were retrospectively collected from patients' files. Anti-HAV IgM and Anti-HAV IgG serological markers were tested by using the ELISA method (Abbott Architect I 2000 SR).

Statistical analysis of the data was done by SPSS for Windows 16.0 software (SPSS Inc, Chicago, USA). *Student's t*-test was used to compare the data of patients.

RESULTS

The demographic characteristics of 351 patients are shown in Table 1. Anti-HAV IgG seropositivity was found among 46 (13.1%) patients. Anti-HAV IgM seropositivity was not detected in any case during study period. There were no statistical significant differences between seropositive and seronegative cases in terms of the mean age of cases ($p=0.7$).

DISCUSSION

To our knowledge, this is the first study to investigate the seroprevalence of hepatitis A virus in Tunceli Province in Eastern of Turkey. The seroprevalence rates of hepatitis A virus in previous studies conducted in the eastern and south-eastern region of our country is presented in Table 2. According to these results, the seroprevalence rate of hepatitis A virus in our study was lower than the other studies presented in Table 2. This discordance has been considered probably due to the high socioeconomic level of population admitted to our hospital. Also, improved sanitary and hygienic condition of the population included to present study because of the fact that the present government has increased the investment for sewerage,

and sanitary and hygienic condition in our region in the last 8 years. In Turkey, socio-economic improvements and drinking water quality have been followed by a decrease in HAV infection. [<http://www.saglik.gov.tr>]. Our lowest rate of hepatitis A virus seropositivity among children indicates the requirement of vaccination against hepatitis A virus; because hepatitis A leads to severe complication as the child gets older. Nowadays, age of exposure to hepatitis A virus infection is increasing towards puberty worldwide. This is probably because of the epidemiological changes of hepatitis A virus (Jeong and Lee, 2010). Similarly, nowadays, hepatitis A virus is the most common detected cause of fulminant hepatitis among children in our country as well as worldwide (Santos et al., 2009; Aydogdu et al., 2003). In this study, being the 8.4 \pm 4.8 years of the mean age of hepatitis A seropositivity may be due to the exposure to hepatitis A during school and nursery school age. Improved sanitary conditions and hygienic practices have reduced the incidence of HAV infection, especially in developed countries. Reduction in the number of new cases is generally accompanied by a shift in the age of first contact with HAV towards older age groups. As a consequence, both the severity of the reported cases and the risk of outbreaks of disease would increase (Ceyhan et al., 2008). In the present study, the reason for not detecting anti HAV IgM seropositivity may be due to the population including to the study and the time of study which was made between August and December 2010.

In our country, Topal et al. (2011) have reported that the seropositivity rate of hepatitis A virus among children aged between 1-6 years is 9.4% in western region. Ince et al. (2011) have reported that the seroprevalence rate of hepatitis A virus among infants aged 12-month old is

23.5% in central region. It is noticed that Turkey has intermediate endemicity of hepatitis A infections, and endemicity may be change by the geographical and socio-economic conditions (Ceyhan et al., 2008). The results of present study have confirmed this condition as the reported previous studies. The lower results from this study have shown that the age of exposure to hepatitis A has increased toward puberty. Thus, the vaccination is necessary for children older than 2 years in order to prevent the severe complications of the disease among adults.

Routine vaccination of young children can prevent infection at a later age which likely would be more serious. Universal vaccination of young children in Israel and Catalonia has resulted in significant reductions in the incidence of hepatitis A disease in these countries (Dagan et al., 2005; Dominguez et al., 2004).

The limitation of this study is that its results do not indicate the general population of our region, because this study is limited with patients admitted to pediatric polyclinic.

Conclusion

The present study demonstrated that the age of exposure to hepatitis A infection has been increasing towards puberty in our region. The immunization against hepatitis A is necessary. The application of a routine hepatitis A vaccine among children will reduce the potential for the development of severe complications.

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