

# Original Article



## Clinical manifestations of hepatitis a virus infection in Kyrgyzstan children

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### Abstract

**Background:** Acute hepatitis is one of the more common causes of hepatitis A virus (HAV). Humans appear to be the only reservoir for this virus. Clinical manifestations, and natural history of hepatitis A virus. The relative frequency of hepatitis A virus in Western country. **Objectives:** Hepatitis A infection developing countries where sanitation is still a public health issue. In Kyrgyzstan, there is no epidemiological data on children for this infection. **Materials & Methods:** A community based cross sectional study was carried in occurs around the southern city of Osh (Osh region) state in Kyrgyzstan in one of the smaller country central Asia. Total 260 children aged 1-18 years. Blood samples were analysed for anti-HAV total antibody (IgM and IgG) using a ELISA. **Results:** One hundred and forty four subjects tested positive for anti-HAV total antibody giving a prevalence rate of 55.4%. The median age for those positive was 9 years and for those without evidence of HAV infection was 4 years. 65 (45.1%) males and 79 (54.9) females were positive. The study population was mainly of the low social class with 94.1%. **Conclusion:** In the study population was HAV infection. Educational campaign is imperative and vaccine provision is advocated to further curb the spread of this infection.

**Keywords:** Hepatitis A Virus, Kyrgyzstan Children.

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### Introduction

Hepatitis A is a (RNA) virus that is transmittal faeco-orally.<sup>1-3</sup> It has a worldwide distribution with the highest prevalence in developing countries, where environmental and socio-economic conditions favour nearly universal exposure in early childhood.<sup>1-3</sup> Improvements in public health sanitation have led to a decline in the incidence of hepatitis A infections in the developed countries and to a shift of the time of first exposure to older age groups.<sup>5</sup> This is not so in the developing countries where sanitation is still a major public health issue and nearly all children are infected with HAV before the age of nine.<sup>4</sup> In most developed countries, endemic HAV transmission is unlikely.<sup>4</sup> In the developing regions of the world, inadequate

sanitation results in continuous transmission of HAV infection in children and young individuals.<sup>4</sup> Recent changes in the epidemiology of HAV infection and the availability of effective vaccines have renewed interest in this infection.<sup>4</sup> Hepatitis A infection among children of different socioeconomic status with a lower prevalence of anti-HAV antibody among the higher socio-economic status and better environmental conditions.<sup>6</sup> Hepatitis A infections in developing countries because HAV infections in young children are mostly asymptomatic and therefore unrecognized. HAV infection frequently causes acute liver failure. In Kyrgyzstan, hepatitis A infection was an urban based hospital study involving children and adults.<sup>6</sup>

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## Materials and Methods

This study was conducted in the Kyrgyzstan, land locked in the North-east of central Asia occupation past of the Tien-Shan and Pamir the chain of northern Altai. This was a cross sectional prospective study carried out on children with Hepatitis A virus over a period of three months. Data was collected enrolling 260 subjects under Osh state Medical University, Osh, Bishkek, Kyrgyzstan (USSR) using structures interviewer administered questionnaire: 1) General characteristics (age, sex); 2) family socioeconomic characteristics and sanitation: parents/guardian's occupation and education, total number of persons in the household, toilet types, method of disposal of domestic household waste, source of drinking water. The social class of parents/guardians was determined using the social classification proposed by Olusanya<sup>8</sup> considering the parents/guardian's occupation and educational qualification; 3) Clinical history was obtained from each subject to find out those who were eligible for the study. After collecting the all data were converted in usable form by considering them according to the checklist. The usable forms were maintained in files and analyzed were carried out by using the statistical package for social sciences (SPSS) version 17.0 Inc. Chicago, Illinois-USA. The quantitative observations were indicated by frequency and percentage, chi-square test was used to analyze the categorical variables. Results were presented in tables.

## Results

Two hundred and sixty (260) children aged 1-18 years participated in this study. The age group 1 - 4 years was the highest represented with a total number of 96 (37.0%). The age group 15-18 years was least represented with a total of 32 (12.3%). The median age was 6 years and the interquartile range was 3-12 years. One hundred and thirty three (133) (51.0%) were females and one hundred and twenty seven (127) (49.0%) were males, giving a female to male ratio of 1:1. Table I shows the age and sex distribution of the study population. 15 (5.8%) of the subjects belonged to the middle class and 245 (94.2%) were of the low social class. There was no subject in the high social class.

**Table I:** age and sex distribution of the study population (n-260)

Age (years) Groups	Female n (%)	Male n (%)
1 - 4	40 (30.1 )	56 (44.1)
5-9	37 (27.8)	33(26.0)
10 - 14	37(27.8 )	25(19.7)
15 - 18	19(14.3 )	13(10.2)
Total	133 (100)	127(100)

**Table II:** prevalence of anti-HAV total antibody in relation to age of subjects N-260

Age (Year) Group	Anti- HAV total antibody	
	Positive n (%)	Negative n (%)
1-4	34 (23.6)	62 (53.4)
5-9	42 (29.2)	28 (24.1)
10-14	44 (30.5)	18 (15.5)
15-18	24 (16.7)	8 (7.0)
Total	144 (100)	116 (100)

**Table III:** gender distribution for anti-HAV antibody N-260

Sex	Anti -HAV total antibody	
	Positive n (%)	Negative n (%)
Female	79 (54.9)	54 (46.6)
Male	65 (45.1)	62 (53.4)
Total	144 (100)	116 (100)

## Seroprevalence of anti-HAV total antibodies

One hundred and forty four subjects tested positive for anti-HAV total antibody giving a prevalence rate of 55.4%. No subject had equivocal result. The median age for those positive was 9 years with an inter quartile range of 5 - 13 years. The median age for those without evidence of HAV infection was 4 years with an interquartile range of 2 - 9 years. Thus those positive for anti -HAV total antibody were older than those without anti - HAV total antibody. This is shown on the table II. Table III shows distribution of anti-HAV total antibody by gender. 65 (45.1%) males and 79 (54.9%) females were positive.

## Discussion

HAV infection usually in an acute, self-limiting illness conferring immunity and only rarely leads to fulminant hepatic failure. Fulminant hepatic failure more commonly in patients with underlying liver disease; particularly chronic hepatitis B and C infection, advanced age and addiction of intravenous drugs. Few cases of acute renal failure and nephritic syndrome have been reported in the literature in association with HAV infection. Acute tubular necrosis was the most common form of renal injury in such patients while in others renal biopsy was suggestive of interstitial nephritis, glomerulonephritis. This is a truly rare event in which a young patient multiorgan dysfunction secondary to hepatitis A virus infection comprising of fulminant liver failure, hepatic encephalopathy, acute renal failure, pleural effusion pericardial effusion and hematological dysfunction underlying liver disease. The higher prevalence reported in the Ayoola's<sup>6</sup> study of 42.5% in those aged 5-19 years in Kyrgyzstan.

This study was carried out in rural communities while Aoola's<sup>6</sup> study was in an urban hospital setting. This study positive for anti-HAV antibody was older than without the infection Ayoola's<sup>6</sup>, Jacobsen et al<sup>9</sup> and Cloak et al<sup>10</sup> also demonstrated. HAV infection is acquired early in life<sup>4</sup>. Mode of transmission of HAV faecal waste disposal, source of generally poor quality drinking water in the communities. Important source may be drinking water. Hepatitis A virus possibility of person to person transmission.

## Conclusion

This emphasizes the importance of focusing on common illnesses with their uncommon manifestations while searching for solution of various clinical diagnostic mysteries even in the absence of poor prognostic markers. Vaccination is a potential option.

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