



## HEPATITIS A: CLINICOBIOCHEMICAL SPECTRUM OF THE DISEASE IN PATIENTS ADMITTED IN A TERTIARY CARE HOSPITAL

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### ABSTRACT

**Introduction**–Worldwide, Hepatitis A virus is a major cause of water borne hepatitis particularly in tropical and subtropical region. India being developing country faces problems like irregular water supply leading to increase in water storage that may give rise to infections when proper hygiene is not taken into consideration.

**Materials And Methods**– Serologically positive patients for IgG and/or IgM Anti Hepatitis A virus showing clinical signs /symptoms admitted to our tertiary care center between Jan 2019 and Jan 2020 are included in this study. Distribution of the patients is done according to age, sex, various clinical and biochemical parameters, and is represented using tables and MS Excel spreadsheet.

**Results** – Total 74 patients is our sample size. Out of them maximum i.e. 72.97% are between the age group of 0-20 years, followed by 21-40 yr. (17.56%). Number of female patients is 38 and of males are 36 in our study. Most common clinical presentations are yellow colored urine and jaundice in 50% & 49% patients respectively. Least common is abdominal pain in 15% patients. Laboratory investigations reveal elevated levels of SGOT, SGPT, ALP and PT in most of the patients.

**Conclusion**–HAV infection presented with common features like dark colored urine, jaundice, nausea/ vomiting, pain in abdomen, hepatomegaly, etc. Along with this biochemical findings were raised LFT, particularly raised SGOT and SGPT 200 times raised than the normal. Similar findings are seen in the present study conducted in our tertiary care hospital, Aurangabad, Maharashtra.

### KEYWORDS : Hepatitis A, jaundice, hepatomegaly

#### INTRODUCTION

Worldwide, Hepatitis A virus is a major cause of water borne hepatitis, particularly in the tropical and subtropical regions<sup>(1)</sup>. HAV resides in the stools of HAV infected patients and it transmits through contaminated water and food from person to person. Hepatitis A virus is a non-enveloped RNA virus of the genus Hepatovirus belonging to family Picornaviridae<sup>(2)</sup>. The burden of Hepatitis A virus is more than 1.5 million cases worldwide annually, though it is acute and self-limiting disease of liver<sup>(3)</sup>.

The clinical spectrum of HAV infected patients varies from person to person. This ranges from asymptomatic to wide range of clinical manifestations including atypical presentation like relapsing hepatitis, cholestatic hepatitis and extra hepatic manifestation<sup>(4)</sup>. 90% of people particularly the adolescents, adults and children acquire immunity to HAV in their preschool years in India. This is probably because India is the endemic country for HAV infection. As we know both HAV and HEV infections are causes of water borne hepatitis and India being developing country, it faces problems like irregular supply of potable water leading to increase in water storage that may give rise to infection if proper hygiene is not taken into consideration.

Marathawada region of Maharashtra suffers from rainfall problems leading to increase in his problem and makes the population more vulnerable for these water-borne infection. Therefore, we carried out a study regarding the clinic-biochemical spectrum of HAV infected patients.

#### Sample Size

The patients who were admitted to our tertiary care hospital in

Aurangabad, Maharashtra were included in our study. All the patients included were seropositive for HAV and were having signs/ symptoms clinically.

#### MATERIALS AND METHODS

The study is an observational study performed by extracting data from the Hospital Management Information System(HMIS), in Central Pathology Laboratory of MGM Medical College Aurangabad, Maharashtra, India.

The study I conducted between January 2019 and January 2020 and all the seropositive patients for IgG and/or IgM Anti HAV were included in the study. Patients were distributed according to age and sex. Different clinical presentations like anorexia, vomiting, etc. and biochemical findings like LFT, RFT, etc. were also noted and tabulated.

MS-Excel spread sheet programmer is used for summarizing and analyzing the data.

#### RESULTS

A total of 74 HAV positive patients were admitted to our tertiary care hospital, MGM Medical College and Hospital, Aurangabad between January 2019 and January 202. Majority of the patients i.e. 73% were found below the age of 20 years.

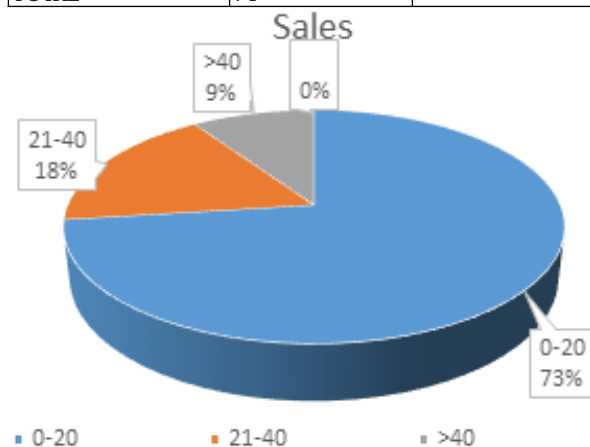
Minimum age recorded is 2 years.

Maximum age recorded is 63 years.

**Table 1: Male To Female Ratio**

	Number Of HAV Positive Patients	% Of HAV Positive Patients
MALE	36	48.64%

FEMALE	38	51.35%
TOTAL	74	



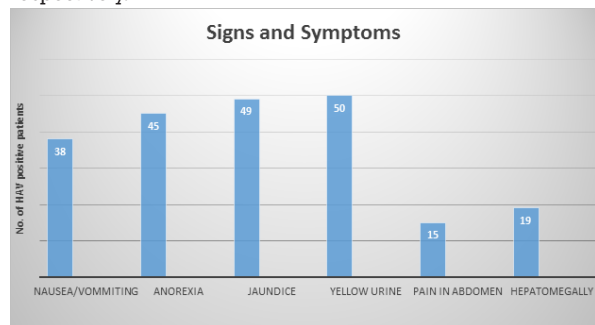
**Figure 1:** Age Wise Distribution Of HAV Positive  
Male to female ratio was almost equal.

As HAV and HEV both are water borne infections 12 cases (16.21%) out of total 74 were having co-infection of HEV along with HAV infection.

Other than HEV infection, 7 cases (9.45%) showed other complications like-

- I. Bleeding in 3 patients
- II. Pneumonitis in 2 patients
- III. Renal Calculus in 1 patient
- IV. Cholelithiasis in 1 patient

The clinical presentations varied from simple nausea / vomiting to hepatomegaly. The most common clinical presentation was yellow colored urine and jaundice in about 67% of cases followed by anorexia in 60% cases. Nausea/ vomiting was seen in 52% cases while pain in abdomen and hepatomegaly were found in only 20% and 25% cases respectively.



**Figure 2:** Signs And Symptoms Of Patients

Biochemical testing - Along with confirmation of HAV IgG and/or IgM testing patients had undergone other biochemical investigations like LFT, RFT, PT, proteins.

The total bilirubin was found to be between 1.1 mg/dl-18.6 mg/dl with mean of 5.69mg/dl.

In this, direct bilirubin was majority elevated ranging between 0.4 mg/dl-1.7 mg/dl with mean of 4.81 mg/dl.

SGOT and SGPT were markedly raised in almost all patients with maximum value as 8397 U/l and 13308 U/l respectively and minimum value as 17 U/l and 19 U/l respectively. Their mean were 746.44 U/l and 1138.34 U/l respectively.

ALP was found in range of 15 U/l and 885 U/l with mean of 310.51U/l.

Proteins in total and individual albumin and globulin were normal in almost all patients.

PT was found to be raised in 78.34% cases with range between 11.5 sec. & 28.8 sec. and mean as 13.98 sec.

Renal function tests were also performed and were found to be normal in almost all patients. Only in 12 patients Sr. Urea was found to be elevated and in 3 patients Sr. Creatinine was elevated. The mean of Sr. Urea and Sr. Creatinine were 13.41 mg/dl and 0.9 mg/dl respectively.

The recovery was good in our study with mortality of zero.

**Table 2: Various Biochemical Parameters**

SR.NO	INVESTIGATONS	MEAN	MAXIMUM VALUE	MINIMUM VALUE
1	TOTAL BILIRUBIN	5.69	18.6	1.1
2	DIRECT BLIRUBIN	4.81	17.1	0.4
3	SGOT	746.44	8397	17
4	SGPT	1138.34	13308	19
5	ALP	310.51	885	15
6	PROTEIN	6.05	10.9	4.3
7	ALBUMIN	3.14	5.5	2.3
8	GLOBULIN	2.90	5.4	2
9	PT	13.98	28.8	11
10	UREA	13.41	54	0.4
11	CREATININE	0.91	10.6	0.2

**DISCUSSION:-**

Hepatitis A infection presents as a self-limiting infection and even can lead to fulminant Hepatitis. It mainly depends upon the person's immunity and the viral load, whenever viral load increases of immunity weakens this leads to symptomatic form of the disease.

In our study, maximum cases were seen in the age group of 0-20 years. Similar findings were seen in the study of Arankalle V et. al. where they found maximum cases in the age group of 6-10 years<sup>(3)</sup>. Similar findings were seen in studies of Shikha Handa et. al. and Manjunatha Sarthi et. al. were maximum cases were under 5 years and 10 years respectively<sup>(3,5)</sup>.

Our study showed equally affected men and women, with no sex predominance which was correlating with the studies of Arankalle V et. al., Rashed ARS and Mall LL et.al.<sup>(3, 6, 7)</sup>. Manjunatha Sarthi et. al. in their study found female predominance<sup>(5)</sup> while Joon A et.al., Syed R et. al. and Naaimi AS et. al. found male predominance which were not correlating with our study<sup>(8,9,10)</sup>.

Out of total 74 patients, 12 patients i.e. 16.21% had a co-infection with HEV in our study, that too without any adverse outcome, similar results were seen in study of Shikha Handa et. al. (10.4%). Arora D et. al. and Monica A et. al. had found 7.5% and 5.2% co-infection of HEV in their studies<sup>(2,11,12)</sup>.

The present study showed complications in 7 patients such as, bleeding due to derranged PT levels, pneumonia, renal calculus and cholecystitis. Anshul Bhargava et. al. in their study found dengue as a complication in 2 cases and chronic liver disease in 1 case all the 3 cases landed up in death<sup>(4)</sup>. Like our study Shikha Handa et. al. had bleeding as a complication in 3 patients which were managed without ending into any casualty<sup>(2)</sup>.

The most common clinical presentations in our study are dark colored urine, jaundice with least common being abdominal pain. Similar findings were seen in the studies of Anshul Bhargava et. al. and Shikha Handa et. al. were they found jaundice, fever, dark colored urine and vomiting as common clinical presentations<sup>(4,2)</sup>.

Out of the laboratory investigations, the most frequently derranged values were Sr. Bilirubin, SGOT, SGPT and PT. Maximum bilirubin recorded in our study is 18.6 mg/dl. While a study by Anshul Bhargava et. al. also showed raised bilirubin in all patients<sup>(4)</sup>. Shikha Handa et. al. found maximum bilirubin to be 30.15 mg/dl in their study<sup>(2)</sup>.

Maximum SGOT and SGPT were 8397 U/l and 13308 U/l respectively in our study which is correlating with the study of Anshul Bhargava et. al. where maximum values of both SGOT and SGPT were raised up to 4 times the normal<sup>(4)</sup>. While a study by Shikha Handa et. al. showed maximum SGOT and SGPT to be 56571 U/l and 55921 U/l respectively, which is far more than what was seen in our study<sup>(2)</sup>.

Elevated PT was found in 78.34% of patients in our study while Anshul Bhargava et. al. had elevated PT in 12 cases out of total 27 cases<sup>(4)</sup>. Maximum recorded PT in our study is 28.8 sec while in the study conducted by Shikha Handa et. al. maximum PT was 33.5 sec<sup>(2)</sup>.

Despite of all this our study had a good outcome with no mortality, similar results were seen in study conducted by Shikha Handa<sup>(2)</sup>. This may be due to small sample size or in other words being a hospital based study and also because it is a time bound study.

#### CONCLUSION:-

HAV infection presented with common features like dark colored urine, jaundice, nausea/ vomiting, pain in abdomen, hepatomegaly, etc. along with this biochemical findings were raised LFT, particularly raised SGOT and SGPT 200 times raised than the normal. Similar findings are seen in the present study conducted in our tertiary care hospital, Aurangabad, Maharashtra. In our study, majority of the patients were found below the age of 20 years. This study may help decision making on public health policies and vaccination strategies for the control of hepatitis A in India. In conclusion, more studies on hepatitis A virus are required to evaluate the most appropriate age of HAV vaccination in developing countries.

#### ACKNOWLEDGMENT-

Authors declare and acknowledge that we have no conflict of interest.

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