Original Research Paper

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# TO STUDY THE SEROPREVALENCE OF HEPATITIS C IN CASES OF ACUTE VIRAL HEPATITIS AND CIRRHOSIS OF LIVER

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**ABSTRACT**

**Background:** Viral hepatitis is a global public health problem affecting millions of people worldwide. The main objective was to study the seroprevalence of hepatitis C in patients with acute viral hepatitis and cirrhosis of liver.

**Method:** The study was carried out in the department of Medicine, Pt. J.N.M medical college and associated Dr B.R Ambedkar Memorial Hospital Raipur, Chhattisgarh from April 2002 to February 2003.

**Result:** Maximum number of acute viral hepatitis cases were observed in the age group >24-34 years. Maximum numbers of cirrhosis of liver cases were observed in the age group > 44-54 years. There were 2 cases of acute viral hepatitis that tested positive for anti- HCV and both were males. There were 5 cases of cirrhosis of liver who were HBsAg Positive.

**Conclusion:** HCV infection is quite prevalent in Raipur, Chhattisgarh and therefore, stresses the need for early detection so that further transmission could be prevented.

**KEYWORDS :** Hepatitis C, Acute Viral Hepatitis, Cirrhosis of Liver, Seroprevalence.

## INTRODUCTION:

About 90% of transfusion associated hepatitis cases worldwide are attributed to non – A non-B hepatitis virus and an estimated 10% of transfusions are thought to result in a non-A non- B hepatitis.[1]

The importance of the discovery of HCV is best appreciated when one looks at the role of this virus in causing liver injury.Hepatitiis C virus(HCV) is the major etiologic agent of post transfusion and sporadic community acquired non- A non- B hepatitis.[2]

HCV infection frequently runs a chronic course with viral persistence and continued liver cell injury. Patients chronically infected with HCV have a considerable risk of developing terminal liver cirrhosis or hepatic carcinoma.[3]

RNA viruses exhibit enormous genomic diversity. The replicates of RNA viruses appear to be prone to error during replication. Therefore, it has become necessary to consider every genome unique, and consequently to consider virus isolates in terms of population of closely related genomes referred to as quasispecies.[4]

Patents infected with HCV develop antibodies to various structural and non structural viral proteins. Detection of antibodies of HCV is the easiest method to know whether an anti-HCV positive patient is a virus carrier or has recovered from a past infection.[5]

Development of more specific antibody assays and methods to detect the HCV genome has deepened our understanding of the epidemiology and natural history of HCV infection.[6]

In developed countries, stringent screening for HBsAg by sensitive assays and vaccination against HBV to high risk groups have resulted in a sharp decline in the incidence of HBV and Hepatitis C has emerged as the major cause of post transfusion hepatitis. The same trends may appear in countries like india.[7]

## METHOD:

The present study was carried out in the department of Medicine, Pt. J.N.M. Medical College and associated Dr. B.R.Ambedkar Memorial Hospital, Raipur, Chattisgarh.The study was carried out from April 2002 to February 2003. 52 cases of acute viral hepatitis and 42 cases of cirrhosis of liver were identified consecutively.52 cases of acute viral hepatitis included 42 males and 10 females ranging in age from 14 to 65 years and 42 cases of cirrhosis of liver included 25 males and 17 females, ranging in age from 15 to 70 years. Selection of cases was based mainly on clinical identification. Constitutional symptoms such as anorexia, nausea, vomiting, abdominal pain, fever, yellow discoloration of urine and sclera of less than one month duration were looked for acute viral hepatitis. Relevant past history was recorded. All the patients were subjected to detailed physical examination to note the clinical signs. The patients enrolled for the study were subjected to routine investigations which included hemogram, urine examination and blood biochemistry. A complete liver function test was obtained. Tests of biosynthetic functions of the liver were carried out in cirrhotic that included estimation of cholesterol, albumin and globulin. Liver biopsy have been the most appropriate method to determine whether the patients had hepatitis/ cirrhosis or not but given the practical consideration ultra sonographic study was made use of to clinch the diagnosis. Serum samples were obtained from all the patients by venepuncture taking into account the strict aseptic precaution. The test device is meant for in vitro diagnostic use and is a qualitative, lateral flow immunoassay for the detection of antibody to HCV in serum or plasma. The recombinant HCV polyprotein used in the kit is encoded by the genes for both structural and non structural proteins including core, NS3, NS4 and NS5 regions, so it is a third generation immunoassay.

## RESULT:

**Table 1: Age And Sex Distribution Of Acute Viral Hepatitis**

| AGE | MALE | FEMALE | TOTAL |
|---|---|---|---|
| 14 -24 | 16 | 02 | 18 |
| >24 -34 | 12 | 03 | 15 |
| >34 -44 | 08 | 02 | 10 |
| >44 -54 | 05 | 03 | 08 |
| >54 -64 | - | - | - |
| >64 | 01 | - | 01 |
| TOTAL | 42 | 10 | 52 |

The table depicts 52 cases of acute viral hepatitis including 42 males and 10 females. There were 16 males and 2 females, 12 males and 3 females,8 males and 2 females, 5males and 3 females in the age groups of 14- 24 years,>24-34,>34-44 and >44-54 years respectively. While no case was recorded in the age group>54-64 years, only one male was there in the age group>64 years. There was a much higher incidence in males as compared to females. Maximum number of cases were observed in the age group >24-34 years.

**Table 2: Age And Sex Distribution Of Cirrhosis Of Liver**

| AGE | MALE | FEMALE | TOTAL |
|---|---|---|---|
| 14 -24 | - | 03 | 03 |
| >24 -34 | 03 | 03 | 06 |
| >34 -44 | 08 | 02 | 10 |
| >44 -54 | 08 | 04 | 12 |
| >54 -64 | 03 | 03 | 06 |
| >64 | 03 | 02 | 05 |
| TOTAL | 25 | 17 | 42 |

There were 42 cases of cirrhosis of liver including 25 males and 17 females. There were no male and 3 females, 3 males and 3 females,8

males and 2 females, 8 males and 4 females,3 males and 3 females, 3 males and 2 females in the age groups of 14-24, >24-34,>34-44,>44-54,>54-64 and >64 years respectively. Maximum number of cases was observed in the age group> 44-54 years.

**Table 3: Age And Sex Distribution In Anti- HCV Positive Acute Viral Hepatitis**

| Age | Male | Female | Total |
|---|---|---|---|
| 14 -24 | - | - | - |
| >24 -34 | 01 | - | 01 |
| >34 -44 | 01 | - | 01 |
| >44 -54 | - | - | - |
| >54 -64 | - | - | - |
| >64 | - | - | - |
| TOTAL | 02 | - | 02 |

There were 2 cases of acute viral hepatitis that tested positive for anti-HCV and both were males. One in the age group > 24- 34 years and other in the age group > 34- 44 years. No female was observed to be positive for anti- HCV.

**Table 4: Age And Sex Distribution In Anti- HCV Positive Cirrhosis Of Liver**

| Age | Male | Female | Total |
|---|---|---|---|
| 14 -24 | - | - | - |
| >24 -34 | - | 01 | 01 |
| >34 -44 | - | - | - |
| >44 -54 | 01 | 03 | 04 |
| >54 -64 | 01 | - | 01 |
| >64 | 01 | - | 01 |
| TOTAL | 03 | 04 | 07 |

There were 7 anti- HCV positive cases of cirrhosis of liver out of which, 1 female was in the age group > 24- 34 years,1 male and 3 females in the age group > 44 -54 years and 2 males one each in the age groups> 54 -64 and > 64 years respectively. No cases were recorded in the age groups of 14 – 24 and > 34 – 44 years. Maximum number of cases were observed in the age group >44- 54 years. Males accounted for 42.9% and Females 57.1% of the total cases who tested positive for anti- HCV.

**Table 5: Age And Sex Distribution In HBsAg Positive Acute Viral Hepatitis**

| Age | Male | Female | Total |
|---|---|---|---|
| 14 -24 | 03 | - | 03 |
| >24 -34 | 04 | 01 | 05 |
| >34 -44 | 03 | 01 | 04 |
| >44 -54 | 01 | 02 | 03 |
| >54 -64 | - | - | - |
| >64 | - | - | - |
| TOTAL | 11 | 04 | 15 |

This table depicts there were 15 cases of acute viral hepatitis who were HBsAg positive. Out of these, there were 3 males and no females in the age group 14 -24 years, 4 males and 1 female, 3 males and 1 female, 1 male and 2 females in the age groups of > 24- 34, > 34 -44 and > 44- 54 years respectively. Age groups >54-64 and >64 years recorded no cases. Males contributed to 73.3% and Females to 26.7% of the total number of cases. Maximum number of cases were observed in the age group > 24 -34 years.

**Table 6: Age And Sex Distribution In HBsAg Positive Cirrhosis Of Liver**

| Age | Male | Female | Total |
|---|---|---|---|
| 14 -24 | - | - | - |
| >24 -34 | 01 | - | 01 |
| >34 -44 | 01 | - | 01 |
| >44 -54 | 01 | - | 01 |
| >54 -64 | - | 01 | 01 |
| >64 | 01 | - | 01 |
| TOTAL | 04 | 01 | 05 |

There were 5 cases of cirrhosis of liver who were HBsAg Positive. There were 4 males, one in each group of the age groups of >24-34, >34-44,>44-54 and >64 years respectively. No females were observed in the respective age groups. There was 1 female in the age group >54-64 years while the age group 14- 24 recorded no case. Males contributed to 80% and females to 20% of the total cases.

**Table 7: Relative Prevalence Of HBsAg And Anti HCV In Acute Viral Hepatitis**

| Category | No. Of Cases | Percentage |
|---|---|---|
| HBV+ | 15/52 | 28.85% |
| HCV+ | 02/52 | 3.85% |
| HBV+/HCV+ | - | - |

This table depicts there were 52 cases of acute viral hepatitis out of which 15 tested positive for HBsAg and 2 were positive for anti-HCV.Percentge wise HBsAg positive cases accounted for 28.85% and anti- HCV positive cases for 3.85% of the total number of cases. There was no case positive for both HBsAg and anti- HCV.

**Table 8: Relative Prevalence Of HBsAg And Anti HCV In Cirrhosis Of Liver**

| Category | No. Of Cases | Percentage |
|---|---|---|
| HBV+ | 5/42 | 28.85% |
| HCV+ | 07/42 | 3.85% |
| HBV+/HCV+ | 01/42 | 2.38% |

This table depicts there were 42 cases of cirrhosis of liver of which 5 cases tested positive for HBsAg and 7 cases were positive for anti-HCV. Only 1 out of 42 cases was seen positive for both of HBsAg and anti- HCV making 2.38%.

## DISCUSSION:

Noda K et al have reported that HCV infection in the older age leads to a rapid progression to cirrhosis of liver, subsequently to a development of HCC. The young seems to have intense immunological response to HCV infected liver cell, compared with the elderly, which may result in less rapid C- type hepatitis induced liver cell injury.[8]

Murphy et al have suggested that social or environmental factors rather than biological factors are more involved in HCV seropositivity.HCV seropositivity was inversely associated with educational attainment in their study.6 of the 9 anti HCV positive cases in this study were also from low socioeconomic group and educational attainment in them was also low.[9]

Tobias W Jr reported that HCV is generally transmitted by the parenteral route. Well known and common modes of transmission involve transfusions and/or parenteral contact with blood products. However, upto 50% of individuals deny exposure to any of these known risk factors and infection is often designated as “community acquired”.[10]

Sheila Sherlock et al have explained the equal HBsAg positivity observed in infect different age groups (1 case in each age group). It is possible that this may have been unexplainably confounded by the fact that HBsAg is not a stable marker and usually disappears by 3 months after the clinical illness.[11]

Baheti et al reported that HBsAg positivity in acute viral hepatitis was 8.8% and 8.9% in cirrhosis of liver.7.7% cases of cirrhosis of liver were positive for both HBsA g and anti HCV.[12]

Gretch D et al in their study found that the percentage of specimens for which HCV RNA could be detected by PCR was associated with the level of reactivity as determined by the RIBA but not that determined by transaminase testing. They concluded that serum trasaminase testing did not correlate with the RNA PCR assay for HCV.Thus, it is quite possible that cases which were positive by dip stix method could have contained circulating virus particles in their blood and would have tested positive if PCR assay was done on them.[13]

Kalkov WNR et al in their study reported that obesity and daily alcohol use, known causes of elevated ALT levels were associated frequently with ALT elevations in blood donors. This could have been the possibility in 31 B/C negative cases, where raised ALT level was observed in 32.2% cases.[14]

## CONCLUSION:

Viral hepatitis is a major healthcare burden in India. Chronic hepatitis can lead to complications like development of cirrhosis of liver and hepatocellular carcinoma (HCC).Presence of anti-HCV is one of the indicators of HCV infection. The study shows that HCV infection is quite prevalent in our area also and therefore, stresses the need for early detection so that further transmission could be prevented.HCV test kit

is rapid, simple equipment and will be very useful in situations like emergency blood transfusion during mass disasters.

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