Abstract:
Background - Jaundice may manifest from benign conditions like physiologic jaundice of new born to life threatening conditions like fulminant hepatitis and hepatocellular carcinoma. Acute viral hepatitis is one of the common causes of jaundice in India. Aim - The present study was done to find out the prevalence of acute viral hepatitis in jaundiced patients in a tertiary care hospital. Materials and methods - Serum samples from 360 patients with suspicion of acute viral hepatitis were tested for the following serological tests using commercial kits based on Enzyme linked immunosorbent assay (ELISA) - anti HAV IgM, HBsAg, anti HBC IgM, anti HCV IgM antibody, anti HEV IgM. The serum samples that were negative for the above serological tests were further processed for the detection of Dengue IgM by ELISA. Results - Hepatitis A was the commonest cause of acute viral hepatitis, seen in 39.4 percent (142 patients) as compared to Hepatitis B (1.39 percent). Hepatitis C (0.28 percent) and Hepatitis E (0.28 percent) were the least common. Most common group having acute viral hepatitis was less than 20 years (65 percent). Overall males were affected more than females with acute viral hepatitis (62 percent). Mixed infection with hepatitis viruses were seen in 2 cases. Dengue was identified as a cause of acute viral hepatitis in one case. Conclusion - Hepatitis A remains a major cause of acute viral hepatitis in persons less than 20 years in Coimbatore.

Keyword: Seroprevalence, Acute viral hepatitis.

Introduction:
Jaundice refers to the yellowish appearance of the skin, sclera and mucous membrane resulting from an increased bilirubin concentration in body fluids. It is usually detectable clinically when the plasma bilirubin exceeds 50 mol/ml (approximately 3 mg/dl). Usually jaundice is one of the sign of liver disease, but not always¹. Acute viral hepatitis is a systemic infection affecting the liver predominantly, usually presents with jaundice. Almost all
cases of acute viral hepatitis are caused by one of five viral agents: hepatitis A virus (HAV), hepatitis B virus (HBV), hepatitis C virus (HCV), hepatitis D virus (HDV), and hepatitis E virus (HEV). All are clinically indistinguishable, range from asymptomatic, inapparent infection to fulminant, fatal acute infections. Of these HBV and HCV can cause subclinical persistent infections to rapidly progressive chronic liver disease with cirrhosis and even hepatocellular carcinoma. Rise in serum aminotransferases (Aspartate aminotransferases (AST) and Alanine aminotransferases (ALT)) level usually precedes the rise in bilirubin level. When the patient clinically presents with jaundice, these enzymes attain its peak level (200-2000U/L or more) and diminish progressively during recovery phase. Upper limit of normal for AST and ALT was 45 U/L and for alkaline phosphatase was 50 U/L. The contribution of the epidemiology of hepatitis virus to acute hepatitis include age distribution of the population, immunisation coverage, parenteral drug use, screening strategies of blood donor supplies, carrier rates of Hepatitis B and C in population. Investigations for the serological markers of above viral infections help us to determine the accurate cause for infective etiology of jaundice. So this study was done to identify the precise cause of infective jaundice due to viral hepatitis.

Materials and methods:
This study was carried out for a period of 10 months from January 2013 to October 2013.

Study group:
A total of 365 cases of clinically diagnosed jaundice patients were seen during the period of study. These patients were subjected to liver function tests and ultrasonogram. Of these four persons showed ultrasonographic evidence of biliary obstruction and diagnosed to have obstructive jaundice. One patient was diagnosed to have Gilbert syndrome. These five persons were excluded from the study. The remaining 360 patients were enrolled into the study. Of these 216 were males and 144 were females. The mean AST, ALT and total bilirubin values of the study group were 176.2 IU/L, 256.9 IU/L and 7.62 mg/dl respectively. Serum samples from the study group were tested for the following serological tests using commercial kits based on enzyme linked immunosorbent assay (ELISA) - anti-HAV IgM (for Hepatitis A), anti HBC IgM and HBsAg (for Hepatitis B), anti-HCV IgM antibody (for Hepatitis C) and anti-HEV IgM (for Hepatitis E). The serum samples that were negative for the above serological tests were subjected to Dengue IgM serology. All analysis were performed using commercial kits based on Enzyme linked immunosorbent assay (ELISA) as per the manufacturer’s instructions.

RESULTS:
The viral etiology was confirmed in 148 cases. Most common group having infective jaundice due to viral hepatitis was less than 20 years (n=116, 76.8 percent). Overall males were affected more than females with acute viral hepatitis (n=93, 61.5 percent). Overall 147 patients showed positive serological markers for viral infections due to hepatitis viruses. Of these mixed infection with hepatitis viruses was seen in 2 cases. One case showed positive serological marker for both anti HAV IgM and anti HEV IgM. Another case showed positive serological marker for both HBsAg and anti HAV IgM, but it was negative for anti HBC IgM. Of these 360 cases tested, Hepatitis A was identified as the commonest cause of acute viral hepatitis.
seen in 39.4 percent (n=142) as compared to Hepatitis B (1.39 percent, n=5). Hepatitis C (0.28 percent, n=1) and Hepatitis E (0.28 percent, n=1) were the least common. Dengue was identified as a cause of acute viral hepatitis in one case (0.47 percent). Most common group having infective jaundice due to viral hepatitis was less than 20 years (n=116, 76.8 percent). Overall males were affected more than females with infective jaundice (93 cases, 61.5 percent).

Table: Age wise distribution of jaundiced patients that showed positive serology for acute viral hepatitis:

<table>
<thead>
<tr>
<th>Age in years</th>
<th>Hepatitis A</th>
<th>Hepatitis B</th>
<th>Hepatitis C</th>
<th>Hepatitis E</th>
<th>Mixed</th>
<th>Dengue</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-10</td>
<td>61</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>61</td>
</tr>
<tr>
<td>11-30</td>
<td>51</td>
<td>2</td>
<td>-</td>
<td>-</td>
<td>1</td>
<td>1</td>
<td>55</td>
</tr>
<tr>
<td>21-30</td>
<td>25</td>
<td>2</td>
<td>1</td>
<td>-</td>
<td>1</td>
<td>-</td>
<td>29</td>
</tr>
<tr>
<td>31-40</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3</td>
</tr>
<tr>
<td>&gt;40</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Total</td>
<td>140</td>
<td>4</td>
<td>1</td>
<td>-</td>
<td>2</td>
<td>1</td>
<td>148</td>
</tr>
</tbody>
</table>

Discussion:
Of 360 cases enrolled in the study, 216 (60 percent) were males and 144 (40 percent) were females. The viral etiology was confirmed in 148 cases (41.1 percent) while 212 cases (58.8 percent) showed negative serological markers for viral infections. In the present study, HAV (39.4 percent) was identified as the most common cause of acute viral hepatitis due to hepatitis viruses followed by HBV (1.39 percent), HCV (0.28 percent) and HEV (0.28 percent). Among the samples that were negative for serological markers for hepatitis viruses, one sample gave positive result for Dengue IgM. The prevalence of HAV in this study was approximately equal to the 2 year study by Vilubic-Cavlek T et al from Crotia (41.6 percent). A 6 month study (Jan 2010 – July 2010) by Manmohan G et al from Salem, Tamilnadu reported the prevalence is around 32 percent. On the other hand, a study by Syed R et al, on ‘Seroepidemiology of hepatitis virus’ showed much lower prevalence (6.87 percent). In the present study, younger cases (0-20 years) were more likely to have HAV infections (78.9 percent, n=112) and males were commonly affected (62.7 percent, n=89). Both findings were comparable to the study by Syed R et al at Hyderabad from January 2002 to December 2011. In contrast to this a study by Vilubic-Cavlek T et al from Crotia, showed the prevalence was common in males belong to 30-39 years age group. The prevalence of HBV in our study was much lower (1.39 percent) when compared to the studies by Jain et al at Lucknow, India (17.97 percent) and Nandi et al at Bangalore, India (12.5 percent). In the present study there is slight decrease in prevalence of HCV when compared to the 6 month study (Jan 2010 – July 2010) by Manmohan G et al from Salem, Tamilnadu (1 percent). A study by Jiang Y et al from China during 1995 to 2000 showed slightly higher prevalence (3.9 percent). A study by Bashir K et al during June 2007 to August 2007 from Pakistan showed...
the prevalence of HEV was 5.4 percent. Another two studies by Mishra B et al between April 1997 and March 2000 from Karnataka, India and by Jiang Y et al from China during 1995 to 2000 showed higher prevalence (18.8 percent and 49 percent respectively) of HEV. Compared to above studies the prevalence of HEV was much lower in our study (0.28 percent).

One case that showed mixed infection with Hepatitis A and Hepatitis E in this study was may be due to co-infection with both the virus. Another case with mixed infection showed positive serological marker for HBsAg and anti HAV IgM antibody and negative for anti HBC Ag IgM. The cause of acute hepatitis for this patient could be due to co-infection of Hepatitis A along with Hepatitis B infection.

Conclusion:
Acute viral hepatitis that presents with jaundice remains one of the public health problem in India despite improving sanitation, health awareness and socio-economic conditions. The diagnosis of acute hepatitis should not be narrowed for single virological marker. So all the patients with acute hepatitis should be subjected for serological markers for all the heterogenous group of hepatitis viruses.

Bibliography:
