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THE ETIOLOGY OF ACUTE HEPATITIS IN ADULT PATIENTS OF LAHORE

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Abstract:
Objective: *To investigate the etiology of acute hepatitis in adult patients admitted in a hospital.*
Methods: *The study included all acute hepatitis patients admitted in the Infectious Diseases Unit of Services Hospital, Lahore from May, 2018 to June, 2019. Various viral markers were used to establish the diagnosis of acute hepatitis which included anti HAV IgM, HBsAg, Anti HBc IgM), anti HCV IgG and anti HEV IgM by ELISA. In hepatitis C positive cases HCV RNA was also done to confirm acute HCV. Liver function test were done by Hitachi 912 machine.*
Results: *A total of 165 cases with acute hepatitis were admitted in the hospital during the study period. The specific etiologic diagnosis could be made in 122(74%) patients and of these acute hepatitis E was found in 40%, HAV in 18.7%, HBV in 11.5%, HCV 1.2%, and combined infection 4.2%.Overall, HEV accounted for 54% of acute viral hepatitis. The mean age of the patients with HAV infection was significantly younger than patients with HEV and HBV, p value <.0001 and <.0002 respectively. Prothrombin time was longer in HAV infection than HBV and HEV, (p<.01 and <.02) respectively. However, there were no significant differences in serum bilirubin and transaminases concentration among different groups.*
Conclusion: *The present study showed that about 60% of the acute viral hepatitis is water borne and can be easily controlled with improving sewage and water distribution and personal hygiene.*

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INTRODUCTION:

Acute viral hepatitis is a serious infection characterized by inflammation of liver parenchyma and hepatocellular necrosis. Hepatitis A, B, C, D and E viruses can cause it [1]. Other viruses which can also cause acute hepatitis including Cytomegalovirus(CMV), Ebstein Bar Virus (EBV), Herpes simplex virus (HSV), Yellow fever and Adeno viruses. Hepatitis E virus is responsible for majority of sporadic and epidemic cases of acute viral hepatitis in developing countries [2]. With the availability of methods of detection of markers of hepatitis A and E in the Pakistan, we decided to study the frequency of HEV infection among patients with acute hepatitis admitted in services hospital, Lahore.

METHODOLOGY:

This was a hospital-based study conducted from May, 2018 to June, 2019 in the Infectious Diseases Unit, Services Hospital, Lahore. Services Hospital is a tertiary care center which provides medical services to the residents of Lahore and nearby areas. Information on patients included age, gender, nationality and history. The patients were questioned regarding past medical history of jaundice, operations, blood transfusions, medications, intravenous drug abuse, alcohol ingestion and recent travel abroad. Patients with history of chronic hepatitis B and C and immunodeficiency status (like HIV/immunosuppressive therapy) were excluded from the study.

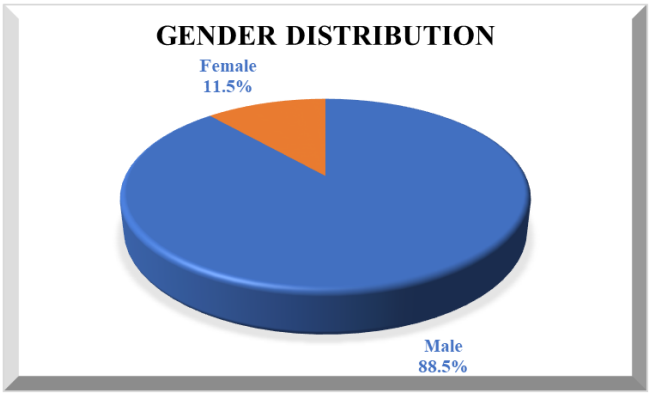
On admission, blood sample was taken from all patients for screening of hepatitis A, B, C and E virus. Liver function tests (LFT) were done by Hitachi Machine 912, coagulation profile, full blood count (FBC) and urea electrolytes were also done. Other tests including hepatitis D antibodies, EBV, septic screening, ultrasound scanning of abdomen, serum ammonia, malaria parasite and blood culture were performed when and where necessary. Clinical specimens were initially tested for hepatitis A IgM Ab, HBVs Ag and HBVc IgM Ab by utilizing commercially available enzyme-linked immunosorbent (ELISA) kits HAVAB-M, enzyme monoclonal HBsAg and corenzyme-M respectively. Specimens were additionally tested for HCV IgG Ab by second generation ELISA kit and confirmed by Western blot, HCV RNA was done for the positive patients. Furthermore, recombinant antigen ELISA was used for hepatitis E IgM and IgG Ab. The patients were treated according to current guide lines3 for the management of acute viral hepatitis and it was mainly supportive. Statistical package SAS Enterprise Guide 4.1 was used for analysis of data. A p value of <.05 was taken as significant for difference in all statistical analysis.

RESULTS:

A total of 165 patients fulfilled the inclusion criteria. The mean age of the patients was 29.2 ± 10.56 years (14-64 year) and males 146 (88.5%) outnumbered females 19 (11.5%). There was no significant age difference between male and females.

Table No 01: Gender distribution

Gender	n=	%age
Male	146	88.5%
Female	19	11.5%

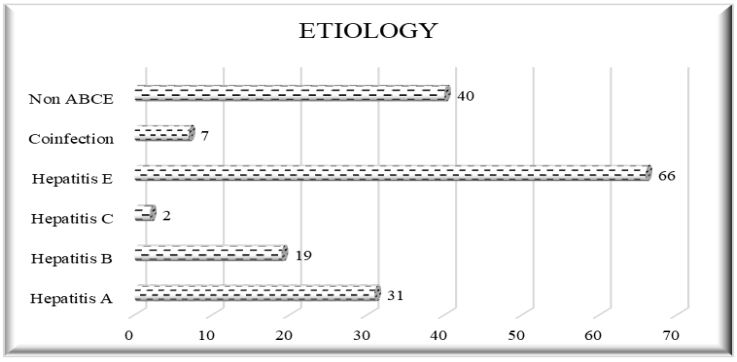


Nausea, vomiting, loss of appetite, generalized weakness, pain in abdomen especially right hypochondrium and yellowish discoloration of eyes and dark urine were the most common symptoms. Only 12 (7.2%) patients had fever at the time of presentation which subsided within 2-3 days. Jaundice was present in all patients while mild tender hepatosplenomegaly was also in some patients.

Out of the 165 patients, 66 (40%) had acute hepatitis E, 31 (18.7%) hepatitis A, 19 (11.5%) hepatitis B, 7 (4.2%) Co-infections, 2 (1.2%) hepatitis C. Among acute viral hepatitis, HEV accounted was present in 66. All markers for A, B, C and E were negative in 40 (24.24%) patients (Table 2).

Table No 02: Etiology of 165 patients with acute hepatitis

Etiology	Quantity	Percentage
Hepatitis A	31	18.79%
Hepatitis B	19	11.52%
Hepatitis C	02	1.21%
Hepatitis E	66	40%
Coinfection	07	4.24%
Non ABCE	40	24.24%
Total	165	100%



The mean age of patients with HAV infection was significantly younger than those with HEV and HBV (p value <.0001 and <.0002 respectively Table 3), For hepatitis B and E patients there was no significant age difference.

Table No 03: Age and Biochemical data of 165 acute hepatitis patients according to infection

Etiology	*Age (Years)*	*T.Bil (Mg/dl)*	*ALT (U/dl)*	*AST (U/dl)*	*PT (Sec)*
Hep A	21.2±7.9	9.66±5.85	196.4±155.6	113.8±149.1	16.9±5.5
Hep B	34.6±12	10.5±4.7	185±102.7	130.3±85	13.3±4.59
Hep C	45±7	9.4±7	85±103.9	68.5±88	13.8±2.7
Hep E	29.2±6.6	11.4±5.7	159.2±116.3	112.9±87.4	14.2±4.4
Coinfection	41±20.6	18.6±13.9	95.8±78.5	66.7±44.4	14.9±.78
Non ABCE	29.7±10.2	12.3±8.2	161.7±124	103.4±99.7	14.5±4.8
Ref. range: ALT 0-4.1U/dl, AST 0-3.8U/dl, T.Bil 0-1mg/dl, PT 11-14 sec.					

Liver function test (LFT) showed no significant difference in serum Bilirubin, ALT and AST level among acute hepatitis A, B, C, E and Non ABCE groups. However significant difference was seen in prothrombin time (PT) in acute hepatitis A and E patients with mean PT 16.07 ± 4.59 vs 14.17 ± 4.44 sec (p <.02) .The difference in prothrombin

time was also noted between acute hepatitis A and B patients with mean PT 16.91 ± 5.59 vs 13.19 ± 4.59 sec (p <.01). No of statistical difference was seen in prothrombin time between acute hepatitis B, E and Non ABCE groups. All the patients were discharged while 2 patients with acute hepatitis E had mild acute fulminant hepatic failure but eventually recovered.

DISCUSSION:

Several studies have reported that hepatitis E is responsible for major outbreaks as well as sporadic cases of acute hepatitis in India, Pakistan, Bangladesh, Nepal, Burma Algeria, Somalia, Sudan, Ivory coast and Mexico [4,5]. Hepatitis E Virus (HEV) is transmitted from person to person via the faecal oral route [6]. There is possibility of zoonotic spread of the virus especially in pigs, swine and boars; as several animals are susceptible to infection [7-11]. Akbul A et al [12] have reported that HEV usually affects young and middle aged individuals but rarely children and old people, in this study we had the same observation and mean age of our patients was 29.26 ± 6.66 years (19-48 years) In this study more than 40% of acute hepatitis were caused by hepatitis E (HEV) which is similar to earlier studies while some investigators have reported more than 50% of acute hepatitis being caused by HEV [2]. The incidence of acute hepatitis E varies considerably with high prevalence being reported from developing countries [4,5] as compared to industrial countries [13]. The seroprevalence (HEV IgG +ve) also reported higher in under developed countries, where low standard of sanitation promotes the transmission of the virus. Ghabrah reported a seroprevalence up to 60% in Egypt [11] while Lau JY reported 1.5% in Europe [12].

The clinical and biochemical presentation of hepatitis E are of acute viral hepatitis and the infection follows a natural history that is like that of hepatitis A. However, HEV primarily affects adults whereas HAV affects the younger age group [13,14]. In this study, the findings are consistent with the above studies and statistical analysis did not show any significant difference in the biochemical markers among the different groups of acute hepatitis but there was significant age difference between hepatitis E and hepatitis A group,(p <.0001). In hepatitis E overall mortality is less than 1% but in pregnancy it may go up to 1-2% in 1st trimester, [8-10] in 2nd trimester and 20% in 3rd trimester [15]. Patients with chronic liver disease have very high mortality (up to 67%) [16]. In general, hepatitis E is a self-limiting viral infection, requiring no specific treatment and chronic hepatitis has not been reported in immunocompetent persons [17].

CONCLUSION:

The current study exposed that about 60% of the acute viral hepatitis is water borne and can be easily controlled with improving sewage and water distribution and personal hygiene.

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