Original Article

Hematological, Biochemical and Etiological factors of Chronic Liver Disease in a tertiary care Hospital of Lahore

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Abstract:

Chronic Liver Disease (CLD) progresses from hepatocyte inflammation to fibrosis, regeneration, cirrhosis and in some cases to Hepatocellular Carcinoma (HCC). In general, the main etiologies of Liver Cirrhosis (LC) are viral infections (hepatitis C and B viruses), chronic alcohol abuse and Non-Alcoholic Fatty Liver Disease (NAFLD), including Non-Alcoholic Steato Hepatitis (NASH). Major complications of CLD are ascites, upper gastrointestinal bleeding, jaundice (acute or chronic) and hepatic encephalopathy.

Objectives:

This study assesses the etiological factors and complications of CLD in a tertiary care hospital of Lahore, Pakistan.

Study Design:

Cross-sectional.

Methods:

Study was carried out in indoor and Accident & Emergency Departments of Mayo Hospital Lahore. 100 clinically diagnosed CLD cases were chosen through "Convenient Sampling" technique during 3 months.

Observations:

Most common complications of CLD were upper GI variceal Bleeding (48%) & hepatic encephalopathy (34%) and acute or chronic hepatitis (AVH) (33%). Other less common complications observed were hepatorenal syndrome (10%), Spontaneous bacterial peritonitis (15%), Ascites (5%) and HCC (10%).

Conclusions:

Hepatitis C was found as main etiological factor of CLD. Bleeding and hepatic encephalopathy are the common complications. Awareness programmes regarding CLD and its complications are mandatory in our society to improve human health.

Keywords:

Chronic liver disease, Etiological factors, complications, Hepatitis C, Variceal bleeding, Hepatic Encephalopathy

Introduction:

Chronic Liver Disease (CLD) develops as a result of inflammation of the liver, which lasts for six or more months[1]. 14th leading cause of mortality , globally, is CLD but in United States it is the 12th leading cause of mortality, in Central Europe and Mexico it is the 4th leading cause of mortality [2] and the 5th leading cause of morbidity and mortality in Pakistan where it may be termed as a

"cirrhotic state"[3]. The major problem in Pakistan is chronic hepatitis and mortality because of liver failure and hepatocellular carcinomas[4].

In general, the viral infection is the main etiologies of CLD (hepatitis C and B viruses)[5, 6], chronic alcohol abuse [7] and Non-Alcoholic Fatty Liver Disease (NAFLD) [2], including Non-Alcoholic SteatoHepatitis (NASH) [8]. NAFLD comprises only minority of CLD cases in Asia where viral infections are the major factor [9] whereas in US alcohol induced liver diseases makes major contribution [2]. According to a recent national survey in Pakistan, the general prevalence of HCV was 4.8% and HBV is 2.5% [3].

Causative agents vary in different geographical locations and may be affected by dietary habits of a population, obesity and life style etc [6]. The other causes which appear in lesser range in CLD are autoimmune hepatitis, obstructive cholestasis [10], diabetes [11], hereditary hemochromatosis[12], alpha-1-antitrypsin deficiency[13], Wilson's disease [14] and drug toxicity. Various noninvasive & invasive methods are used in diagnosis of CLD[11].

Major complications of CLD are ascites[12], upper gastrointestinal bleeding, jaundice (acute on chronic) and hepatic encephalopathy. The major complication of liver cirrhosis is Ascites, and most of the time it is obstinate to treat and spontaneous bacterial peritonitis and hepatorenal syndrome are its major complications [15]. The 15% patients with cirrhosis will finally develop HCC[12].

In Northern part of Pakistan at a tertiary care hospital the CLD is a major reason of mortality. HCV infection is the leading cause of chronic liver disease monitored by either HBV or a combination of these viruses. Major manifestations of CLD have been gastrointestinal bleeding, hepatic failure and portal hypertension[16]. The genotype 3a of HCV is most common in Pakistan. In only Baluchistan province of Pakistan the provincial difference in genotypes was detected. More than 70% of the cases have been received in hospitals by reusing of needles/syringes and surgical operation that is very common in Pakistan [17]. In this study, the major etiological factors of Chronic Liver Diseases (CLD), alterations in serum biomarker profiles and its possible complications in a tertiary care hospital of Lahore, Pakistan were evaluated.

Patients and Methods:

This cross sectional study was carried out in indoor and Accident & Emergency Departments of Mayo Hospital Lahore. 100 clinically diagnosed CLD cases were chosen through "Convenient Sampling" technique during 3 months. Inclusion criteria for the sampling were age of patient that must be above 25 years and both gender. While the exclusion criteria was non-cirrhotic patients, children with CLDs and pregnant or lactating women. The patients were carefully examined at the time of presentation to find out the etiology of the disease and complications. Data was collected through pretested questionnaire. Different tests were performed for patients including serum electrolytes, renal function tests, blood sugar, serum albumin, coagulation profile, liver function tests, and serology for hepatitis. For liver and splenic size, parenchymal echogenicity, portal vein diameter, and ascites the abdominal ultrasound was also carried out. Spontaneous bacterial peritonitis activity the ascitic tap was conducted. Data were analyzed using IBM-SPSS version 23.0, categorical variables were presented in the form of percentages and continuous variables were presented in mean $\pm$SD.

Results:

In current research 100 patients were included and investigated. The patient's ages ranged from 25-85 years. Patients were divided into 3 age groups: 25-50 years, 51-60 years and 61 and above. There were 52 men and 48 women with mean age of men 51.44±11.815 and for women mean age was 54.58±11.533. (Table 1). Most common complications of CLD were upper GI variceal Bleeding (48%) & hepatic encephalopathy (34%) and acute or chronic hepatitis (AVH) (33%). Other less common complications observed were

hepatorenal syndrome (10%), Spontaneous bacterial peritonitis (15%), Ascites (5%) and HCC (10%)(Figure 1).

Gender		Mean + SD
Male	52(52.1%)	51.44±11.815
Female	48(48.0%)	54.58±11.533
Age Categories		**Mean + SD**
25-50	47(47.0%)	52.75+11.85
51-60	36(36.0%)	
61-85	17(17.0%)	

Table 1: Age and Gender of CLD Patients

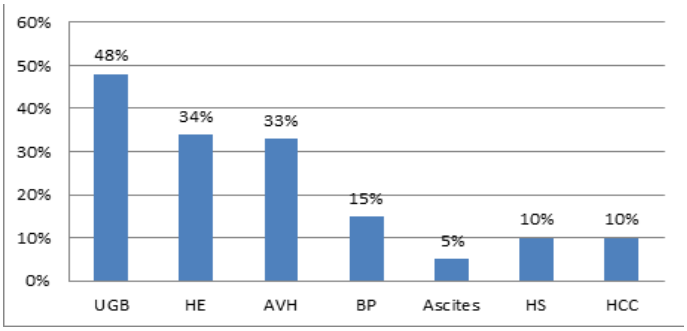

Figure 1: Major complications of CLD

Out of 100 patients, the utmost common reason of CLD noted, was chronic hepatitis C (85%). Other less common etiological factors were diabetes (69%), HBV (12%), smoking (7%), hypertension (38%) and Alcoholism (1%) (Figure 2). Urea was high in 63%, creatinine 42%, Bilirubin 52%, Alanine 52%, Aspartate 69%, Akaline 87% patients respectively. Urea, creatinine Bilirubin, Alanine, Asparate and Alkanine were high in CLD patients. K+ and total protein were normal in majority of patients 86% and 80% respectively. Na+, Bilirubin, Albumin were low in 35%, 43%, and 54% patients respectively (Figure 3).

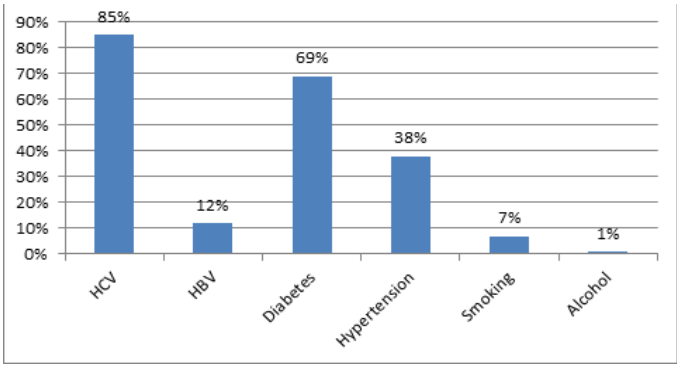

Figure 2: Major risk factors of CLD

Chronic liver disease is an increasing health issue worldwide, with HCV as the main etiological factor in sub-continent and bringing people at risk of developing advanced liver diseases such as cirrhosis and HCC [18]. Pakistan is considered as a high-HCV prevalence country [3]. The HCV patients from which at least 50% of them develop chronic liver disease and 10-20% patients within 5-30 years develops cirrhosis. HCV infections is the leading cause of CLD in Iran[18]. Similar findings were observed in current study where, HCV was the etiological factor in 85% of the CLD patients. Patients who inject drugs for any disease such as diabetics are the main individuals at risk for HCV in Pakistan. Other people at risk includes, patients who underwent surgeries, smokers, alcohol consumers, healthcare workers and pregnant women etc [18].

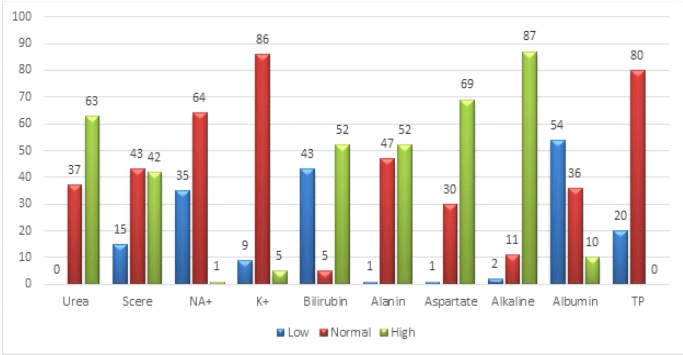

Figure 3: Biochemical Parameters

Discussion:

This study showed that the basic etiological factor for CLD was HCV infection which was the basic cause for 85% of the total cases presented with CLD. Shah, et al observed that maximum patients in their study with HCV infection, were presented with established cirrhosis. In current study it was observed 12% of cirrhotic patients with Chronic Hepatitis B, similar findings were reported by Bukhtiari, et al., [19]. Alcoholic liver disease and Wilson's disease have been rarely observed [14]. In 4% of patients in current research the etiological factor was not known and was labeled as cryptogenic cirrhosis. As far as the complications are concerned, with acute variceal hemorrhage 33% of patients were presented, these patients were referred to endoscopy

department for sclerotherapy or variceal band ligation. We observed hepatic encephalopathy in 33% of patients. Spontaneous bacterial peritonitis was found in almost 15% of patients with cirrhosis & the incidence of SBP in patients with cirrhosis is around 33% in Pakistan. The results of this study showed HCC in 3% of the patients, another important complication that usually occurs in the compensated disease. Cirrhosis of liver is generally enduring disease, and treatment emphases on preventing development and complications. Raised ALT levels are observed in CLD patients in this study which is in accordance with another recent study conducted in Pakistan. Regular monitoring of ALT levels and Pegylated interferon plus ribavirin therapy is suggested to reduce the levels of ALT and complications in CLD patients [20].

Pakistan is a developing country with less resources and high burden of all risk factors for CLD, hence, a great challenge. Most of the patients of CLD are diagnosed at late stage of disease. Apart from poor diagnosis, no proper treatment is available except for a few private centers where only wealthy people can get treated. So, liver diseases such as HCC is considered as an upcoming big threat for Pakistan3. Some limitations of this study should be considered. These results represent a cohort of population but not the whole population. Further studies should be planned and conducted to have a wider epidemiological scenario. Health care workers are at greater risk to acquire HCV through needle stick injuries and a very low awareness was found in all health care workers in a study reported from Liaquat National Hospital, Karachi, Pakistan [21].

Prevention strategies should be adopted by providing vaccination against HBV and HCV. A strict surveillance of these patients is very important. Regular surveillance can detect CLD at an early stage. The high burden of HCV in Sub-continent is a major challenge for the incorporation of national programs to prevent HCV complications leading to CLD within health care systems. Disease burden data should be updated at national level. Assessment of CLD related mortality and morbidity should be done in Pakistan. Prevention program should be devised to help in reduction of CLD. Future disease burden of CLD should be properly addressed by focusing on its main etiological factor, HCV, in Pakistan. It will pave way for the treatment and reduction of the disease burden. These results urge a need for a strategy of rigorous healthcare policy making.

Conclusions:

Hence this study concludes that HCV is the major cause of CLD. Under the current diagnosis and treatment levels, a growing trend of HCV related CLD is expected in Pakistan. On time diagnosis and treatment is required with the combination of improved treatment efficacy for the reduction of HCV burden, consequently, reducing CLD burden. Proper diagnosis and prevention strategies should be adopted.

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