Decompensated Chronic Liver Disease - Etiology and Complications

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Abstract

Background: To determine the aetiology and complications of decompensated chronic liver disease (DCLD)

Methods: In this cross-sectional descriptive study patients with DCLD were enrolled. Etiology, complications and other features were registered. Diagnosis was made on the basis of ultrasound and endoscopy findings. Lab investigation profile including serology for hepatitis, liver biopsy (to check for alcoholism and Wilson's disease) and serum & urinary copper and serum ceruloplasmin (to check for Wilson's disease) was taken into account. To determine complications, records of complete blood picture and liver function tests (for hepatic encephalopathy), renal function tests (for hepatorenal syndrome), chest X-ray, arterial blood gas, contrast-enhanced echocardiography and lung function tests (for hepatopulmonary syndrome), abdominal ultrasound (for portal hypertension and associated complications viz. ascites, splenomegaly, hepatomegaly, portosystemic shunts including esophageal varices) and peritoneocentesis (for SBP/sepsis) of each patient were studied.

Results: Hepatitis C caused 97% cases of DCLD. Other causes include Hepatitis B virus (1.5%), cryptogenic (1.5%), and alcoholic (0.5%). The complications found with DCLD were hepatic encephalopathy (33%), spontaneous bacterial peritonitis (SBP) or sepsis (24%), hepatorenal syndrome (13%) and hepatopulmonary syndrome (2%).

Conclusion: Hepatitis C is the current major cause of DCLD. Hepatic encephalopathy, variceal bleeding and sepsis or SBP were the common complications.

Key Words: Hepatitis C, Hepatitis B, Alcoholic Hepatitis, Hepatopulmonary Syndrome, Hepatorenal Sydrome, Hepatic Encephalopathy, Liver Cirrhosis, Peritonitis.

Introduction

Chronic liver disease (CLD) is the endpoint of continual liver damage by enticing factors. It is the most common route to hepatic failure and often ends in cirrhosis. Being of great importance as among the top 10 causes of death in the Western world, cirrhosis is defined as a ‘diffuse process characterized by fibrosis and the conversion of normal liver architecture into structurally abnormal nodules’. Studies that evaluate the causes of development of CLD have by far listed alcoholism as the most common cause in Western world, while globally viral causes are more common.

Regardless of the cause, 80-90% of the liver function must be lost before hepatic failure ensues. Conditions that tip the balance towards decompensation include heart failure, major surgery, electrolyte disturbances, systemic infections and gastrointestinal bleeding. Decompensation is marked by hepatic failure that includes coagulopathy, hepatic encephalopathy, and hyperammonemia. It also includes portal hypertension leading to ascites, splenomegaly, hepatomegaly and port-systemic shunts (variceal bleeds, caput medusa). Among the other complications are hepatorenal syndrome (leading to reversible renal failure), hyperestrenism in males (leading to gynecomastia, spider telangiectasia, erectile dysfunction).

Etiology of DCLD is bound to be different in our set up. Alcoholism, being the most common cause in the Western world, is not as much prevalent here because of the religious background. Likewise, the complications might also be different due to the local temperate environment, lack of health education and general trends in hygiene.

Patients and Method

In this cross-sectional descriptive study, performed in Department of Medicine Unit I Holy Family Hospital, patients with DCLD were enrolled. Etiology, complications and other features were registered. Diagnosis was made on the basis of ultrasound and endoscopy findings. Study period was from January 2013 to December 2013. Lab investigation profile including serology for hepatitis (to check for HCV or HBV), liver biopsy (to check for alcoholism and Wilson's disease) and serum & urinary copper and serum ceruloplasmin (to check for Wilson's disease) was taken into account for each patient. To determine complications, records of complete blood
picture and liver function tests (for hepatic encephalopathy), renal function tests (for hepatorenal syndrome), chest X-ray, arterial blood gas, contrast-enhanced echocardiography and lung function tests (for hepatopulmonary syndrome), abdominal ultrasound (for portal hypertension and associated complications viz. ascites, splenomegaly, hepatomegaly, portosystemic shunts including esophageal varices) and peritoneocentesis (for SBP/sepsis) of each patient were studied. All the variables of interest from the record were selected, and entered in Statistical Package of Social Sciences (version 17). All the data was categorical and frequencies along with percentages were computed for them.

**Results**

Out of 204 patients diagnosed with decompensated chronic liver disease majority of the patients were infected with Hepatitis C virus (97%). Other causes included Hepatitis B virus infection (1.5%), alcoholism (0.5%). 1.5% cases were cryptogenic. No case of Wilson’s Disease was documented (Table 1). Most patients with DCLD developed hepatic encephalopathy (33%). 28% developed variceal bleed, 24% developed spontaneous bacterial peritonitis or sepsis, 13% developed hepatorenal syndrome, while only 2% developed hepatopulmonary syndrome (table 2).

**Table 1: Decompensated Chronic Liver Disease- Etiology (n=204)**

<table>
<thead>
<tr>
<th>Etiology</th>
<th>No(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic hepatitis C</td>
<td>197(97)</td>
</tr>
<tr>
<td>Chronic Hepatitis B</td>
<td>3(1.5)</td>
</tr>
<tr>
<td>Alcoholism</td>
<td>1(0.5)</td>
</tr>
<tr>
<td>Cryptogenic</td>
<td>3(1.5)</td>
</tr>
</tbody>
</table>

**Table 2: Decompensated Chronic Liver Disease-Complications**

<table>
<thead>
<tr>
<th>Complications</th>
<th>No(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hepatic encephalopathy</td>
<td>68(33)</td>
</tr>
<tr>
<td>Variceal bleeding</td>
<td>57(28)</td>
</tr>
<tr>
<td>Subacute bacterial peritonitis</td>
<td>49(24)</td>
</tr>
<tr>
<td>Hepatorenal syndrome</td>
<td>26(13)</td>
</tr>
<tr>
<td>Hepatopulmonary syndrome</td>
<td>4(2)</td>
</tr>
</tbody>
</table>

Discussion

DCLD is an end stage liver disease with irreversible damage and poor prognosis. Fattovich et al found that 5-year risk for decompensation in cirrhotic patients was 18%. Common complications that develop from DCLD include spontaneous bacterial peritonitis, portal hypertension, ascites, variceal bleeding, hepatic encephalopathy, and hepatorenal syndrome. Pulmonary complications include porto-pulmonary hypertension (POPH), hepatopulmonary syndrome (HPS) and hepatic hydrothorax.

In present study the major cause of DCLD is hepatatis C i.e. in 97% of patients. Studies done by Almani et al, Fahim et al and Khan et al in different cities of Pakistan are similar to our results, in which major etiology of DCLD is also infection by Hepatitis C Virus (HCV); i.e. 52%, 61.6% and 53.6% respectively.

The results of present study are in contrast to a study done in UK by Fleming et al in which alcoholism is the major cause of liver cirrhosis i.e. in 50.3% of patients. The major reason for that is the attitude of westerners towards alcohol consumption. Alcohol is a forbidden drink in Islam, the major religion in Pakistan. Our study shows 1.4% of patients of DCLD are due to HBV Infection as compared to 16% and 18.94% in studies of Almani et al and Fahim et al in Pakistan. This might be due to the high turnout of HCV infected patients in our area or at the time of the study.

Globally viral cause of liver cirrhosis is 57% as compared to our study in which viral causes constitutes 98.4% of total cases of liver cirrhosis. This difference from global value is due to high prevalence of Hepatitis B and C infections in Pakistan and also because medical care is sought later in the course of disease when complications are more likely to have developed. Wasley and Alter also suggest that it is because of the absence of control on needle stick injuries in underdeveloped countries that are responsible for increased transmission of HCV and HBV.

Our study shows alcohol is the cause of liver cirrhosis in only 1 patient i.e. 0.4%; Almani et al had 8% and Fahim et al found 3.2% where as Fleming et al in UK found alcohol to be cause of liver cirrhosis in 50.3% of DCLD patients. It is due to increase prevalence of alcoholism in the Western World, as compared to it being rare in the Pakistan. Among other minor causes, we found no patient of Wilson’s disease among our cirrhotic patients, while Almani et al found 2% and Fahim et al found 1% of his patients.

Hepatic encephalopathy is the most common (31.3%) complication observed by our study. About the same percentage is observed by Almani et al as 24%. Similarly the percentage of patients developing variceal bleed is also the same 28% in our study and 27% observed by Almani et al. 12.7% of patients of
cirrhosis developed Hepatorenal Syndrome. Almani et al reported 9% and Terra et al observed 21.1%. The difference in the occurrence of Hepatopulmonary Syndrome being 1.9% in our setup while observed as 15-30% by Kocher et al and 34% by Schnek et al is also unexplained.

Sepsis and Spontaneous Bacterial Peritonitis (SBP) developed in 23.5% patients of cirrhosis. Almani et al observed this in 29% and Puneeta et al observed this in 32-34% of the patients. These results are also similar and step towards establishing that every fourth patient with DCLD is prone to develop sepsis or SBP.

Conclusion
1. Hepatitis C is the major cause of DCLD
2. Minor causes observed are Hepatitis B and Alcoholism.
3. Hepatic encephalopathy, variceal bleeding, sepsis and spontaneous bacterial peritonitis are the common complications.

Acknowledgments
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References
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