Frequency of Hypersplenism in Chronic Liver Disease Patients Presenting with Pancytopenia

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Background: Chronic liver disease is a liver disease of slow process and persisting over a long period of time, resulting in a progressive destruction of the liver. This disease has many systemic features. It has hematological manifestations as bicytopenias and pancytopenia are frequently seen in these cases. Pancytoopenia in chronic liver disease can be due to hypersplenism, megaloblastic anemia and primary marrow suppression. Hypersplenism is most frequent cause of pancytopenia in chronic liver disease.

Materials and Methods: The study was conducted in Pathology Department, King Edward Medical University Lahore.150 patients of Chronic liver disease presented with pancytopenia. Bone marrow biopsy of these patients was done to look for etiology of pancytopenia.

Results: 68% Patients were found to have Hypersplenism.

Conclusions: This study suggests that Hypersplenism is quite frequent in patients of Chronic Liver Disease and most of the cases of Pancytopenia in CLD patients is because of Hypersplenism.

Background

Chronic liver disease is a liver disease of slow process and persisting over a long period of time, resulting in a progressive destruction of the liver. This disease has many systemic features and has also hematological manifestations as bicytopenias and pancytopenias are frequently seen in these cases. Due to these abnormalities, patients of chronic liver disease present with lethargy, fatigue, infections and bleeding tendencies. Pancytoopenia in chronic liver disease can be due to hypersplenism, megaloblastic anemia and primary marrow suppression. Hypersplenism is most common cause of pancytopenia in chronic liver disease. Hypersplenism is a clinical syndrome characterized by enlargement of spleen, reduction of at least one cell line in the blood in the presence of normal marrow function and evidence of increased release of premature cells such as reticulocytes or immature platelets from the bone marrow into the blood. Hypersplenism is a treatable cause of pancytopenia. The aim of my study is to see the frequency of Hypersplenism in chronic liver disease patients presenting with pancytopenia through bone marrow biopsy. Since hypersplenism is treatable cause of pancytopenia in chronic liver disease, timely intervention can reduce patient morbidity and mortality to great extent.

Material and Methods

Settings:
The study was conducted in Pathology Department, King Edward Medical University Lahore. It included all the cases of chronic liver disease from the Medical Wards, Emergency Department of Mayo Hospital.

Study Design:
It was a cross sectional survey.

Study Duration:
30th September 2008 to 30th September 2009.

Sample Size:
Sample size of 150 cases was calculated with 95% confidence level, 3% margin of error and taking expected percentage of hypersplenism in patients with chronic liver disease i.e 64%.

Data Collection Procedure:
150 patients fulfilling the inclusion criteria were selected from the medical wads and emergency wards of Mayo hospital. An informed consent was taken from all patients included in the study. All of these patients were evaluated by a bone marrow examination including an aspirate and trephine biopsy. Bone marrow examination was performed by the researcher and slides of aspirate were stained in the haematology section while slides of trephine biopsy were processed in the histopathology section of King Edward Medical University. Patients with normal to hypercellular marrow were labelled as having hypersplenism. Other causes of pancytopenia i.e megaloblastic anemia and aplastic anemia were also be noted.

Selection of Patients

Inclusion criteria

1. Patients of both genders and ages between 15-60 years.
2. Patients of chronic liver disease (as per operational definition).

Exclusion criteria:

1. Patients with primary haematological diseases leading to pancytopenia i.e leukemias, lymphomas, marrow

infiltration due to solid tumors and myelofibrosis determined through history and previous medical record.
2. Patients getting interferon therapy, radiotherapy and chemotherapy determined through history.

Data Analysis:
The data was analyzed for the frequency of hypersplenism in adult patients of Chronic liver disease presented with pancytopenia. Data was entered and analyzed on SPSS version 10 (a computer software and program for data analysis).

Results

150 patients of chronic liver disease were included in the study. These patients had presented with pancytopenia. Out of these 150 patients 93 (62%) patients were male and 57 (38%) patients were female. Bone marrow biopsy of these patients was performed to determine etiology of pancytopenia. Hypercellular marrow was seen in 81 (54%) patients. Normocellular marrow was seen in 21 (14%) patients while hypocellular marrow was present in 48 (32%) patients. Since in hypersplenism bone marrow morphology is either hypercellular or normocellular so frequency of hypersplenism in pancytopenia was found to be 68% (102 patients). In these patients 74 (72.5%) were male and 28 (27.5%) were female. In this study 6.6% patients had hypocellular marrow while 25.3% had megaloblastic anemia.

Table 1: *Gender distribution of CLD.*

Gender	Distribution
Male	93 (62%)
Female	57 (38%)

Table 2: *Bone Marrow Results In CLD Patients With Pancytopenia.*

Hypercellular marrow	81 (54%)
Normocellular marrow	21 (14%)
Hypocellular marrow	10 (6.7%)
Megaloblastic marrow	38 (25.3%)

Table 3: *Gender distribution of hypersplenism in CLD.*

Gender	Distribution
Male	74 (72.5%)
Female	28 (27.5%)

Discussion

Chronic liver disease is characterized by cirrhosis of liver and leads to many systemic manifestations. Causes of chronic liver disease include viral hepatitis, alcoholism, auto immune hepatitis, Gaucher s disease, Primary biliary cholangitis and Heptocellular carcinomas etc. Hypersplenism is one of the consequences of chronic liver disease. In hypersplenism there is peripheral destruction of cells resulting in cytopenias and if the condition is quite severe then it causes pancytopenia. Hypersplenism is also an independent risk facyor in the development of variceal bleed and SBP in chronic liver disease.

Table 4: *Age distribution of hypersplenism in CLD patients.*

Age groups	Distribution
15 – 24	8 (8%)
25 – 34	18 (18%)
35 – 44	38 (37.2%)
45 – 54	26 (25.8%)
55 – 65	12 (11%)
Total	102 (100%)

In our study 150 patients of chronic liver disease were taken who had presented with pancytopenia. In these patients 62% were male patients and 38% patients were females. Male dominance could be due to social taboos resulting in better availability of health facilities to males as compared to females.

According to results of bone marrow biopsy 102(68%) patients had hypersplenism. Our study showed hypersplenism to be quite frequent in the patients of Chronic liver disease. Liangpunsakul, Suthat MD et al conducted a similar study that showed hypersplenism in 64% of the patients presenting with Chronic Liver disease. The results of this study match the study conducted by them and the reason of higher number of hypersplenism might be late presentation in the course of the disease in our setup.

According to this study hypersplenism was found in 72% of the male patients and 28% of the female patients (M:F=2.6:1). Reason of male predominance can be that females have megaloblastic anemia as the common cause of pancytopenia rather than hypersplenism mussarat niazi , Fazal-i-raziq showed female to male ratio of 1.7:1 in megaloblastic anemia. Since in our society health care facilities are more readily available to males due to some social / cultural taboos this might also be the reason of increased male presentation at hospitals.

We divided our patients in 5 age groups of 10 years each and maximum number of patients were found in age group range of 35-44 years (37.2%) followed by age group 45-54(25.4%).

48 (32%) patients out of 150 had pancytopenia due to causes other than hypersplenism. Among these 10 (6.6%) had hypocellular marrow while 38 (25.4%) had megaloblastic anemia.

Conclusions

This study suggests that Hypersplenism is quite frequent in patients of Chronic Liver Disease and in most of the cases of Pancytopenia in CLD patients is because of Hypersplenism.

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