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Clinical Profile of Patients Admitted with Liver Cirrhosis and its Association with Portal Hypertension and Hematological Abnormalities

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Abstract

Background and Objectives: Portal hypertension (PHT) commonly accompanies cirrhosis of liver. Development of esophageal varices is one of the major complications of PHT. Present study was performed with objectives to study clinical profile of patients admitted with liver cirrhosis, to study endoscopic findings of patients having portal hypertension and liver cirrhosis and to study hematological abnormalities associated with liver cirrhosis and its correlation with endoscopic findings. *Material and Methods:* A retrospective study was conducted at tertiary care centre over the period of 7 months which includes 40 patients with liver cirrhosis and portal hypertension and who had undergone gastroduodenoscopy. Study variable were anemia, thrombocytopenia, leucopenia. Esophageal varices were grades according to Westaby and colleagues grading system proposed in 1984, based on the luminal occupancy of esophageal varices, which has been endorsed by the British Society of Gastroenterology in its guidelines. *Results:* The most common hematological abnormality was prolongation of prothrombin time followed by anemia. Leucopenia was the least common while thrombocytopenia was present in more than half of the patients. The age range was from 16 to 80 yrs. with mean age of 44.2 years. Most common finding on clinical examination was pallor followed by splenomegaly. *Conclusion:* The Cirrhotic patients with normal hemoglobin or only mild anemia can be closely followed up and wait for endoscopy being at a low risk for variceal bleeding, especially in financially deprived countries andresource limited setting.

Keywords: Hemoglobin; Portal hypertension; Prothrombin time; Splenomegaly.

Introduction

Portal hypertension (PHT) commonly accompanies cirrhosis of liver. Development of esophageal varices is one of the major complications of PHT. A major cause of PHT-related morbidity and mortality is the development of variceal hemorrhage, which occurs in 25-40% of patients. Portal hypertension is a known complication of liver cirrhosis. Splenomegaly is present in patients having portal hypertension. Bleeding esophageal varices is a life threatening complication for which screening endoscopy is indicated [1]. Both, liver and spleen are important organs of hemopoeitic system. Examining the trend of the disease over a time period becomes an important tool to observe the variation of its different aspect and provide the status of country's public health system [2,3]. Getting the knowledge of exact disease burden of the country assist in cost effective and optimal use of control measures taken by the government of that country and it also provide the disease scenario particularly in low resource country like India [3].

Hematologic abnormalities are commonly seen in liver disease. These include thrombocytopenia, anemia and leucopenia in isolation or in combination. There are multiple mechanisms by which hematological abnormalities occur in

liver cirrhosis [4]. Also liver is a site of synthesis of procoagulant proteins. So coaguloapathies are common in liver disease. The hematological abnormalities tend to increase the morbidity and mortality as well as cost burden of the patients with liver cirrhosis in the form prolonged stay and requirement of transfusion of blood products. Present study was performed with an objective to study clinical profile of patients admitted with liver cirrhosis, to study endoscopic findings of patients having portal hypertension and liver cirrhosis and tostudy hematological abnormalities associated with liver cirrhosis and its correlation with endoscopic findings.

Material and Methods

A retrospective study was conducted at tertiary care centre over the period of 7 months which includes 40 patients with liver cirrhosis and portal hypertension and who had undergone gastroduodenoscopy (upper GI endoscopy). Detail clinical profile in the form of presenting symptoms, physical examination findings and laboratory reports were studied. Special emphasis was given on hematological findings. Study variable were anemia (Hemoglobin less than 11 gm/dl), thrombocytopenia (platelet count less than 1 lac/cmm) leucopenia (total white blood cell count less than 4000/cmm). Further anemia was classified as mild if Hb 11 to 9 gm/dl., moderate if Hb between 7 to 9 gm/dl and severe if less than 7 gm/dl. Upper GI scopy was performed with Olympus video endoscope in the endoscopy unit. Correlation of hematological findings with severity of grades of esophageal varices was studied. Esophageal varices were grades according to Westaby and colleagues grading system proposed in 1984, based on the luminal occupancy of esophageal varices, which has been endorsed by the British Society of Gastroenterology in its guidelines. 3 *Grade 1:* Varices appearing as slight protrusion above mucosa, which can be depressed with insufflations. *Grade 2:* Varices occupying < 50% of the lumen. *Grade 3:* Varices occupying > 50% of the lumen and which are very close to each other with confluent appearance.

Statistical analysis

Qualitative data will be expressed as percentages and proportions. Quantitative data will be expressed as mean and standard deviation. All the statistical tests was performed in SPSS version 15 software.

Results

The most common hematological abnormality was prolongation of prothrombin time followed by anemia. Leucopenia was the least common while thrombocytopenia was present in more than half of the patients. Severity of anemia had a different distribution in males and females. Maximum males tend to have mild anemia while maximum females had moderate anemia. 20% of the males and 12% of the females had severe anemia i.e. hemoglobin less than 7 gm/ dl and required transfusion of packed cells during hospitalization (Table 1).

Total 40 patients were. The age range was from 16 to 80 yrs. with mean age of 44.2 years. Most common finding on clinical examination was pallor followed by splenomegaly (Table 2).

Table 1: Hematological abnormalities among study participants

Gender	Anemia	Thrombocytopenia	Leucopenia	Prolonged PT
Male	28	14	8	28
Female	8	8	5	10
Total	36	22	13	38

Table 2: Physical findings among study participants

Findings	Number (percentage)
Pallor	38 (95)
Splenomegaly	36 (90)
Icterus	31 (77.5)
Ascites	27 (67.5)
Encephalopathy	11 (27.5)

Discussion

Male predominance was observed in present study and most of the patients were of middle age group, which is similar to the study done by Pal et al. at Kolkata where 79% of patients were male and 54% of patients belonged to age group 31 to 50 years indicating that CLD is more common in male suggesting high risk of exposure to causative factors [5].

The liver plays a key role in both protein biosynthesis and lipid metabolism. As a result, hepatic synthetic dysfunction can have adverse effects on both cellular and soluble components of blood [6]. Anemia in liver cirrhosis may occur due to variety of causes, [7] the common cause being anemia due to blood loss. It Results from bleeding from the upper gastrointestinal tract in the form of variceal bleed. Esophageal and gastric fundic varices bleed and give rise to anemia. Anemia also can result due to bleeding from portal gastropathy.

In our study the severity of anemia correlated with grading of esophageal varices. Severe anemia was seen in advanced grades of esophageal varices. This association was statistically significant with P value less than 0.05. Another type of anemia is spur cell anemia which is a basically a hemolytic anemia [8]. It occurs due to abnormal lipid composition of the red blood cell membrane. Anemia can result from Hypersplenism as well due to portal hypertension. Nutrional deficiency of vitamins arising out of anorexia and anemia of chronic disease can both add to occurrence of anemia in liver cirrhosis.

Mode of presentation of patients with chronic liver disease was an important consideration taken in our study. Pal et al. has reported ascites in 52% of patients followed by jaundice in 40% and GI bleeding in 24%, which is almost similar to the findings of present study [2].

Thrombocytopenia may result from several different mechanisms. Hypersplenism and reduced synthesis of thrombpoeitin are being the important mechanisms [9,10]. In our study, 28 patients (56%) patient had thrombocytopenia. Leucopenia was the least common hematological abnormality fond in our study. 23 out of 50 patients (46%) had leucopenia. Leucopenia is caused by hypersplenism in liver cirrhosis and it is usually seen with other cytopenias [11].

The liver is the primary site for synthesis of most procoagulant and anticoagulant proteins [10]. The coaguloapathies of liver disease is therefore mixed and complex. Early stage of liver disease, thrombocytopenia is there coaguloapathies associated with a prothrombotic state may be seen, whereas with more advanced disease hemorrhagic coagulopathy becomes manifest. A study done by Kaji, B.C et al., showed that hematological markers can be non invasive markers for portal hypertension [12]. Thus we can see the correlation of hematological markers with severity of portal hypertension. Thus we could also correlate severity of anemia with degree of esophageal varices.

Conclusion

The Cirrhotic patients with normal hemoglobin or only mild anemia can be closely followed up and wait for endoscopy being at a low risk for variceal bleeding, especially in financially deprived countries andresource limited setting. Patients with moderate and severe anemia are likely to have large varices, requiring urgent endoscopy and possibly ligation.

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