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Gastroenterology

A STUDY OF HEMATOLOGICAL ABNORMALITIES IN CHRONIC LIVER DISEASE

Dr. Viney Sambyal* Lecturer Medicine, Post Graduate Department Of Medicine, GMC, Jammu. *Corresponding Author

Dr. Deepak Bharti Registrar, Medicine, Post Graduate Department Of Medicine, GMC, Jammu.

ABSTRACT

Aim: To assess the hematological profile of patients with chronic liver disease and their correlation in patients with GI Bleed.

Materials and Methods: To assess the hematological abnormalities in chronic liver disease, a cross sectional analytical study was conducted, all patients taken up for the study were evaluated in detail. Oral consent was obtained for clinical examination and lab investigations. Written consent was obtained for procedures such paracentesis, Upper GI endoscopy and viral marker studies.

Observation & Data Analysis: A descriptive study to assess the hematological abnormalities in chronic liver disease was conducted in department of Medicine GMC Jammu from January 2016 to December 2016. 546 patients with chronic liver disease were taken for the study; this included 430 males (78.8%) and 116 females (21.2 %). The age range was from 20 to 80 yrs. The average age of the patients in the study was 48 yrs. 38.4 % of the patients were between 41 and 50 years. 54.7% of the patients had alcoholic cirrhosis. The aetiology of chronic liver disease could not be determined in 16.7 % of cases but all of them had clinical and radiological features of cirrhosis. 86(15.7%) patients had Hepatitis B and 56(10.3%) had Hepatitis C.

Results: 48.7 % of the patients had thrombocytopenia (<1.5 lakh). The average platelet count of patients who experienced an upper GI bleed was 92000 vs. 1.2 lakh in patients without a GI bleed. 26 patients (4.8%) had a prolonged INR more than 2.5.

Conclusion: Many conclusive results regarding the hematological abnormalities in chronic liver disease were obtained with this limited study involving 546 patients with cirrhosis ⇒ 48.7 % of patients had thrombocytopenia. ⇒ The average platelet count of patients with an upper GI bleed was 92000 compared to 1.2 lakh to those without an upper GI bleed; suggesting other factors such functional platelet defects may play a role as well. This need to be confirmed with platelet functional studies⇒ The PT-INR was elevated in 85.7 % of patients.

KEYWORDS : Liver cirrhosis, Hematological abnormalities, Platelets, PT/INR

Introduction

The liver is the largest organ in the body and one of the most complex functioning organs with a wide array of functions.Right from being a primary site of haematopoiesis in fetal life to maintenance of hematological parameters in postnatal life; the liver has an extremely important role in maintenance of blood homeostasis.It acts as a storage depot for Iron, Folic acid & Vitamin B12, secretes clotting factors and inhibitors. Hence it's not surprising to see a wide range of hematological abnormalities in liver diseases.In chronic liver disease the presence of jaundice, liver cell failure, portal hypertension and hypersplenism, reduced red cell half- life all influence peripheral blood picture. Both Liver cell failure & cholestasis can derange the coagulation system. Dietary deficiencies, bleeding, alcoholism and abnormalities in hepatic synthesis of proteins used for blood formation or coagulation add to the problem liver disease.This study was undertaken to describe the coagulation abnormalities in chronic liver disease so that measures could be taken to correct them and reduce morbidity(1-6).

Aim of the Study-

To assess the hematological profile of patients with chronic liver disease and their correlation in patients with GI bleed.

Materials and Methods

To assess the hematological abnormalities in chronic liver disease, a cross sectional analytical study was conducted .All patients taken up for the study were evaluated in detail. Oral consent was obtained for clinical examination and lab investigations. Written consent was obtained for procedures such paracentesis, Upper GI endoscopy and viral marker studies.

Inclusion Criteria

All patients with liver disease whose symptoms and signs persists for more than 6 months ,Alcoholic cirrhosis, Hepatitis B & C , metabolic causes of liver diseases were taken up for the study

Exclusion Criteria

Patients with underlying malignancy or known primary hepatocellular carcinoma were excluded, Patients with primary coagulation disorder or primary abnormalities of haemostatic function were excluded. Acute hepatic failure and Patients with preexisting anemia due to other causes were excluded. Patients suffering from end stage medical diseases like COPD, Coronary artery disease, cardiac failure, CKD were excluded

RESULTS

A descriptive study to assess the haematological abnormalities in chronic liver disease was conducted at Department of Medicine GMC Jammu, from January 2016 to December2016.

A total of 546 patients were taken up for study .Male (78.8%) outnumbered the females (21.2%)

The age range was from 20 to 80 yrs. The average age of the patients in the study was 48 yrs. 73.2 % of the patients were between 41 and 60 years of age.(as shown in Table 1 & 2).

TABLE 1-SEX DISTRIBUTION OF PATIENTS

SEX	NUMBER OF PATIENTS (N)	PERCENTAGE (%)
MALE	430	78.8
FEMALE	116	21.2
TOTAL	546	100

TABLE 2-AGE DISTRIBUTION OF PATIENTS

AGE(IN YRS)	NUMBER OF PATIENTS (N)	PERCENTAGE (%)
20-30	28	5.1
31-40	56	10.3
41-50	210	38.4
51-60	190	34.8
>60	62	11.4
TOTAL	546	100

TABLE 3-ETIOLOGY OF CHRONIC LIVER DISEASE AMONG THE PATIENTS

Etiology	Number Of Patients (n)			Percentage (%)
	Male	Female	Total	
Alcoholic Liver Disease	297	2	299	54.7
Hepatitis B	43	43	86	15.7
Hepatitis C	50	6	56	10.3
Autoimmune	3	9	12	2.2
Cryptogenic	36	55	91	16.7
Wilson Disease	1	1	2	0.4
Total	430	116	546	100

54.7% of the patients had alcoholic cirrhosis. The aetiology of chronic liver disease could not be determined in 16.7 % of cases but all of them had clinical and radiological features of cirrhosis.86 patients had Hepatitis B and 56 had Hepatitis C; autoimmune hepatitis etiology was present in 12 patients with female male ratio of 3:1. (Shown in table 3)

TABLE 4- COAGULATION PROFILE OF PATIENTS (INR VALUES).

INR VALUES	NUMBER OF PATIENTS(N)	PERCENTAGE (%)
<1.1	78	14.3
1.2-1.5	196	35.9
1.6-2	170	31.1
2.1-2.5	76	13.9
>2.5	26	4.8
TOTAL	546	100

The liver secretes all clotting factors except VIII &VWBf. Coagulation profile was assessed using PT-INR. 85.7% patients had a prolonged INR (Table 4).

13.9% patients were having haemoglobin less than 7gm% rest depicted in Table 5.

The total WBC count in 42 patients was less than 4000 cells / cumm and normal counts (4000 – 11000 cells / cumm) were present in 89% patients. Leucocytosis was observed in 3.3% patients. There was no relationship between the total Leucocyte counts and the presence of splenomegaly or bleeding time. Since leucopenia and Leucocytosis occurred with greater frequency among patients with infection like spontaneous Bacterial peritonitis and urinary tract infection (Table 6)

48.7 % of the patients had thrombocytopenia (<1.5 lakh). The average platelet count of patients who experienced an upper GI bleed was 92000 vs. 1.2 lakh in patients without a GI bleed. (Table 7)

TABLE 5-HEMOGLOBIN VALUES OF PATIENTS

HEMOGLOBIN (%)	NUMBER OF PATIENTS(N)	PERCENTAGE (%)
<7	76	13.9
7-9	160	29.3
10-12	240	43.9
13-14	40	7.3
>14	30	5.6
TOTAL	546	100

TABLE 6-TOTAL LEUCOCYTE COUNT VALUES

TOTAL COUNT CELLS/CUMM	NUMBER OF PATIENTS (N)	PERCENTAGE (%)
<4000	42	7.7
4000-6000	140	25.6
6001-8000	166	30.4
8001-11000	180	33
>11000	18	3.3
TOTAL	546	100

TABLE 7-PLATELET COUNT VALUES

PLATELET COUNT CELLS/CUMM	NUMBER OF PATIENTS(N)	PERCENTAGE (%)
< 1,00,000	36	6.6
100,000-150,000	230	42.1
150,000-200,000	246	45.1
>200,000	34	6.2
TOTAL	546	100

DISCUSSION

This study conducted at Department of Medicine GMC Jammu involving 546 patients has thrown light on many of the hematological abnormalities that is seen in chronic liver disease. Several studies on platelet defects in CLD have been done before.

In this study, it has been observed that as the severity of the disease increases, the hemoglobin level reduces. 87.1% patients were found to be anaemic, The study done by Shivam Khare, et al [7] over 100 CLD patients also showed same result. Similar result was with the study conducted by Qamar[8] et al wherein, among 213 subjects, anemia was present in 126 subjects during the study, among which 37% had it at baseline, whereas 63% developed it during the course of the study. The most common anemia seen in cirrhotic patients is normochromic and normocytic anemia which is due to variceal bleeding, bone marrow suppression, hypersplenism etc and macrocytic anemia in alcoholic CLD patients due to folic acid and vitamin B12 deficiency.

The platelet count was normal in early stages but decreasing trend of platelet count was observed as the severity of CLD increases. 48.7% patients were having thrombocytopeniaThe result is similar to the study conducted by Qamar et al[8], which studied that most subjects had thrombocytopenia at baseline. One hundred ninety-seven subjects had thrombocytopenia, of which 84% had it present at baseline, and 16%developed it during the course of the study. The study conducted by Fredrerick[9] et al on CLD patients showed similar results.

In our particular study 48.7 % of patients had thrombocytopenia (< 1.5 lakh) of which 6.6% had mild to moderate thrombocytopenia (< 1 lac). This confirms to the article by Jody L Kujovich mentioned earlier (10-13).

Conclusion

Many conclusive results regarding the haematological abnormalities in decompensated chronic liver disease were obtained with this limited study involving 546 patients with decompensated cirrhosis *48.7 % of patients had thrombocytopenia.

- The average platelet count of patients with an upper GI bleed was 92000 compared to 1.2 lakh to those without an upper GI bleed; suggesting other factors such functional platelet defects may play a role as well. These need to be confirmed with platelet functional studies.
- The PT-INR was elevated in 85.7 % of patients. This result underlines the fact that clinical status of the patient and not lab values have to be treated, when correcting coagulopathy in a patient with cirrhosis.

From this study we can conclude that various hematological alterations are very common in cirrhosis a patient that needs to be identified and corrected early to reduce morbidity and mortality.

Conflict of interest-Nil

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