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Original Research Article

A Retrospective Study to Evaluate Upper Gastrointestinal Endoscopy in Patients with Liver Cirrhosis

Dheeraj Kumar[1], Sonal[2], Vishwamohan Dayal[3]

[1]Senior Resident, Department of Gastroenterology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

[2]Senior Resident, Department of Obstetrics and Gynaecology, AIIMS,Patna, Bihar, India

[3]Professor and HOD, Department of Gastroenterology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India

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Corresponding author: Dr. Sonal
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Abstract

Aim: The aim of the present study was to describe the different types of lesions that can be found in patients with liver cirrhosis during upper gastrointestinal endoscopy.

Methods: This retrospective study was conducted at the endoscopy in the Department of Gastroenterology. Consecutive patients with liver cirrhosis who gave their consent to participate in the study were recruited. The diagnosis of liver cirrhosis was made by clinical and radiological features, and a total of 50 patients were recruited.

Results: A total of 50 patients comprising 37 (74%) males and 13 (26%) females participated in the study. The mean age was 46.4 ± 12.8 years with a range of 20-77 years. Analysis of the age groups showed that 19 (38%) patients were less than 40 years of age, 14 (28%) were between 40 years and 49 years, and 17 (34%) were 50 years and above. The most common symptom presented by the patients was abdominal swelling in 42 (84%) of them. This was followed by leg swelling in 26 (52%) patients. Clinical examination revealed that 27 (54%) patients had ascites, 21 (42%) had hepatomegaly, and 17 (34%) had prominent anterior abdominal wall veins. Stigmata of chronic liver disease observed in the patients were Dupuytren's contracture in 19 (38%) patients, palmar erythema in 11 (22%) patients and sparse axillary hair in 11 (22%) patients. In terms of the number of columns, the most frequently observed was three columns, which were seen in 18 (36%) patients followed by a single column observed in 14 (28%) patients. Analysis of the color of the varices showed that blue varices were observed in 32 (64%) patients while white varices were seen in 12 (24%) patients. The most frequent form of the varices was f0, which was observed in 18 (36%) patients followed by f1 in 14 (28%) patients. A combination of various forms of the varices was observed in the patients with the most frequent combination being f2 and f3.

Conclusion: Upper gastrointestinal endoscopy has revealed a different pattern of lesions in patients with liver cirrhosis, apart from varices. This underscores the importance of this procedure in the diagnosis of these additional lesions so as to prevent the complications that can arise from these lesions if not diagnosed and treated appropriately.

Keywords: Endoscopy, liver cirrhosis, esophageal candidiasis, ulcers, varices

Introduction

Upper gastrointestinal bleeding (UGIB) is a very common and serious medical problem encountered in the Accident and Emergency Department of hospitals around the world. This condition has a high mortality of around 5-15% [1,2] and therefore requires immediate resuscitation and intervention. It is more common in males as compared to females. However, the mortality rate is equal in both genders. [3] UGIB occurs when the bleeding site is proximal to ligament of Treitz. Hematemesis or blood in vomitus is the presenting complaint in 40-50% cases of UGIB. [4] In approximately 80% of patients bleeding stops spontaneously without any intervention.

In the rest of patients who continue to bleed, they have a high rate of mortality and require intervention to stop the bleeding. There is a long list of causes that result in upper gastrointestinal bleeding. Prominent causes include peptic ulcer disease (PUD), bleeding esophageal varices, esophagitis and gastric and duodenal erosions. There are some less common causes of UGIB as well. These include Dieulafoy's lesions, angiodysplasia, aorto-enteric fistula and hemobilia. Bleeding from esophageal

varices is a very important cause of UGIB which has a high morbidity and mortality. Esophageal varices are found in lower one-third of esophagus as abnormally dilated submucosal veins. These usually occur as a result of cirrhosis-related complication of portal hypertension. [5] In this region of the world, bleeding from the esophageal varices is the commonest cause of UGIB. [6] This contrasts to the western world where peptic ulcer disease is more common.

Liver cirrhosis is a clinico-pathologic condition that is characterized by hepatic fibrosis, nodular regeneration, and distortion of hepatic architecture. [7] Liver cirrhosis is a major cause of mortality and morbidity worldwide. Esophageal varices and portal hypertensive gastropathy are most common lesions found in patients with liver cirrhosis although a variation in frequency have been reported in literature. The prevalence of portal hypertensive gastropathy (PHG) in cirrhotic patients has been reported to be variable, ranging between 11% and 98%, while the incidence varies from 25% to 50%. [8,9] A study in Pakistan at People's Medical University, Shaheed Benazeerabad concluded that the portal hypertensive gastropathy was present in 60% of patients. [10] Another study showed that esophageal varices were present in 92.9% patients with upper GI bleed and liver cirrhosis while portal hypertensive gastropathy was present in 38.9% of patients. [6] However other endoscopic lesions have been reported in literature in patients with liver cirrhosis. One study showed lesions associated with non-variceal upper gastrointestinal bleeding in patients with liver cirrhosis include gastric ulcers, duodenal ulcers, gastroduodenal ulcers, gastroduodenal erosions, esophageal ulcers and others. [11]

The aim of the present study was to describe the different types of lesions that can be found in patients with liver cirrhosis during upper gastrointestinal endoscopy.

Materials and Methods

This retrospective study was conducted at the endoscopy in the Department of Gastroenterology, Indira Gandhi Institute of Medical Sciences, Patna, Bihar, India for January 2021 to December 2021. Consecutive patients with liver cirrhosis who gave their consent to participate in the study were recruited. The diagnosis of liver cirrhosis was made by clinical and radiological features, and a total of 50 patients were recruited.

After taking informed consent, upper gastrointestinal endoscopy was performed on all the patients. The oropharynx was sprayed with 2% xylocaine and the patients were placed in the left lateral position, and a mouth gag was then placed between the incisor teeth. The gastroscope was then introduced under direct vision into the oropharynx, the esophagus, stomach, and duodenum. The general rules for study of portal hypertension (2nd edition) as proposed by the Japan Society for portal hypertension were used to describe the varices. [12]

Esophageal varices were described based on form (F), location (L), color (C), presence of red color signs (RC), bleeding signs, and mucosal findings. In terms of location, locus superior (Ls) is for varices located in the upper esophagus, locus medialis (Lm) for those in the middle, and locus inferior (Li) for the varices in the lower part of the esophagus.

In relation to the form, F0 stands for varices with no varicose appearance, F1 for straight, small caliber varices, F2 for moderately enlarged beady varices, and F3 for markedly enlarged, nodular, or tumor-shaped varices. In terms of color, the varices are classified as either white, when they look whitish like large folds of the esophageal mucosa or blue, when they are bluish white or cyanotic and distended by blood. The red color signs are classified into red wale markings (RWMs), which are dilated venules on the mucosal surface, cherry-red spots (CRSs), which are red spots on the mucosal surface, and hematocystic spots (HCSs), which are large, round, crimson-red projections like blood blisters.

Bleeding signs are classified into those present during bleeding, which are gushing, spurting, or oozing, and those that occur after hemostasis, which are either red or white plug. Mucosal findings were recorded as either erosions, ulcers, scars, or any other findings. Gastric varices were described as gastroesophageal varices type 1 (GOV 1) if esophageal varices extended into the stomach along the lesser curve and GOV 2 if the extension was along the greater curve. Isolated gastric varices type 1 (IGV 1) were those located in the fundus while IGV 2 were those located in other parts of the stomach or duodenal bulb. Gastric mucosal findings were recorded as portal hypertensive gastropathy (PHG), erosions, ulcers, or any other mucosal findings.

Duodenal varices were recorded as present if found in the second or distal portions of the duodenum, and the mucosal findings were recorded as erosions, ulcers, or any other findings.

Results

Table 1: Patient characteristics

Gender	**N**	**%**
Male	37	74
Female	13	26
Age groups in years		
Less than 40	19	38
40-49 years	14	28
>50 years	17	34
Symptoms		
Abdominal swelling	42	84
Leg swelling	26	52
Clinical examination		
Ascites	27	54
Hepatomegaly	21	42
Prominent anterior abdominal wall veins	17	34
Stigmata of chronic liver disease		
Dupuytren's contracture	19	38
Palmar erythema	11	22
Sparse axillary hair	11	22

A total of 50 patients comprising 37 (74%) males and 13 (26%) females participated in the study. The mean age was 46.4 ± 12.8 years with a range of 20-77 years. Analysis of the age groups showed that 19 (38%) patients were less than 40 years of age, 14 (28%) were between 40 years and 49 years, and 17 (34%) were 50 years and above. The most common symptom presented by the patients was abdominal swelling in 42 (84%) of them. This was followed by leg swelling in 26 (52%) patients. Clinical examination revealed that 27 (54%) patients had ascites, 21 (42%) had hepatomegaly, and 17 (34%) had prominent anterior abdominal wall veins. Stigmata of chronic liver disease observed in the patients were Dupuytren's contracture in 19 (38%) patients, palmar erythema in 11 (22%) patients and sparse axillary hair in 11 (22%) patients.

Table 2: Characteristics of esophageal varices in the patients

Parameters	**N%**
Location	
L_S	3 (6)
L_M	6 (12)
L_I	30 (60)
L_S, L_M, L_I	2 (1%)
L_S, L_M	2 (1%)
L_M, L_I	7 (14)
Number of columns	
1	14 (28)
2	3 (6)
3	18 (36)
4	10 (20)
5	2 (4)
6	3 (6)
Form	
F0	18 (36)
F1	14 (28)
F2	5 (10)
F3	1 (2)
F1, F3	1 (2)
F1, F2, F3	1 (2)
F0, F1	2 (4)
F1, F2	2 (4)
F2, F3	6 (12)
Red color sign	
RWM†	13 (26)

CRS‡	0 (0)
HCS	1 (2)
Color of varices	
Blue	32 (64)
White	12 (24)

In terms of the number of columns, the most frequently observed was three columns, which were seen in 18 (36%) patients followed by a single column observed in 14 (28%) patients. Analysis of the color of the varices showed that blue varices were observed in 32 (64%) patients while white varices were seen in 12 (24%) patients. The most frequent form of the varices was f0, which was observed in 18 (36%) patients followed by f1 in 14 (28%) patients. A combination of various forms of the varices was observed in the patients with the most frequent combination being f2 and f3.

Discussion

Liver cirrhosis is a clinicopathologic condition that is characterized by hepatic fibrosis, nodular regeneration, and distortion of hepatic architecture. [13] It presents with an array of clinical manifestations as well as complications with a high mortality and is common worldwide. The distortion of hepatic architecture seen in liver cirrhosis disrupts the hepatic blood flow and functions. The major complications seen in liver cirrhosis are portal hypertension, ascites, coagulopathy, hepatic encephalopathy, and hepatocellular carcinoma. [14] Upper gastrointestinal endoscopy (UGIE) has been found to be of specific use in patients with chronic liver disease, especially when there is gastrointestinal hemorrhage, [15] which is one of the most important complications of liver cirrhosis and is mostly variceal. However, there are other causes such as gastritis and gastric ulcers and duodenal ulcers, which may be unrelated to the underlying cirrhosis. [16]

A total of 50 patients comprising 37 (74%) males and 13 (26%) females participated in the study. The mean age was 46.4 ± 12.8 years with a range of 20-77 years. Analysis of the age groups showed that 19 (38%) patients were less than 40 years of age, 14 (28%) were between 40 years and 49 years, and 17 (34%) were 50 years and above. The most common symptom presented by the patients was abdominal swelling in 42 (84%) of them. This was followed by leg swelling in 26 (52%) patients. Clinical examination revealed that 27 (54%) patients had ascites, 21 (42%) had hepatomegaly, and 17 (34%) had prominent anterior abdominal wall veins. Stigmata of chronic liver disease observed in the patients were Dupuytren's contracture in 19 (38%) patients, palmar erythema in 11 (22%) patients and sparse axillary hair in 11 (22%) patients. This prevalence is also much higher than that reported in other parts of the world. In a study by Giannini et al [17] in Italy, the prevalence of esophageal varices was 61%. This study was retrospective compared to our own, which was prospective but their sample size was higher. The lower prevalence in their study could be explained by the stringent inclusion criteria employed because patients with active gastrointestinal bleeding at admission, those who had previously undergone one form of treatment for esophageal varices, and those who were on primary prophylaxis for variceal bleeding were excluded from their study. Also, Ullah et al [18] and Sarangapani et al [1] reported a lower prevalence of 65% and 72.6%, respectively. Again in these particular studies, many patients with cirrhosis who were presumed to have esophageal varices were excluded from the studies, and this could explain the lower prevalences recorded.

In terms of the number of columns, the most frequently observed was three columns, which were seen in 18 (36%) patients followed by a single column observed in 14 (28%) patients. Analysis of the color of the varices showed that blue varices were observed in 32 (64%) patients while white varices were seen in 12 (24%) patients. The most frequent form of the varices was f0, which was observed in 18 (36%) patients followed by f1 in 14 (28%) patients. A combination of various forms of the varices was observed in the patients with the most frequent combination being f2 and f3. [19] It has been observed that cirrhotic patients with esophageal varices are prone to developing esophageal motor disorders, a delay in esophageal clearance time, and abnormal gastroesophageal reflux compared to those without esophageal varices. [20-23] In our study, almost all the patients had esophageal varices and this could explain the high prevalence of esophageal erosions observed. The presence of ascites in the majority of our patients also could have predisposed to erosive esophagitis. It has been observed that ascites through increase in intragastric and intraabdominal pressure could predispose to gastroesophageal reflux with resultant esophageal erosions. [21,24]

Esophageal candidiasis was observed in 8.9% of our patients and this is much higher than the 0.8% recorded by Ou et al [25] in a retrospective study. Although their sample was higher, the category of patients studied might have contributed to the wide difference in the prevalence. While they studied non-human immunodeficiency virus (HIV)-infected subjects among whom 3,017 had liver cirrhosis, we prospectively studied only patients with liver cirrhosis. However, it is possible that some of our

patients had underlying HIV or other immunosuppressive conditions, which could have been responsible for the high prevalence. However, none of our patients was screened for these conditions.

Conclusion

Upper gastrointestinal endoscopy has revealed a different pattern of lesions in patients with liver cirrhosis, apart from varices. This underscores the importance of this procedure in the diagnosis of these additional lesions so as to prevent the complications that can arise from these lesions if not diagnosed and treated appropriately.

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