Research Article

Colonic Mucosal Changes in Egyptian Patients with Liver Cirrhosis and Portal Hypertension

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Abstract

Background and Aims: In liver cirrhosis with portal hypertension, Portal Hypertensive Colopathy (PHC) is thought to be an important cause of lower gastrointestinal bleeding. This study aimed at evaluating the prevalence and clinical significance of colonic mucosal changes in Egyptian patients with cirrhotic and Portal Hypertension (PHT).

Patients and Methods: A prospective study done on 35 patients with liver cirrhosis and portal hypertension (proved by upper endoscopy and/or abdominal US). They were evaluated using full colonoscopy to detect changes in colonic mucosa and gastroscopy for presence of gastro-esophageal varices, and Portal Hypertensive Gastropathy (PHG) as well.

Results: Colonic lesions were found in 27 patients (77.1%), including hemorrhoids in 20 patients (57.1%), diffuse hyperaemic mucosa in 16 patients (45.7%), angiodysplastic lesions in 12 patients (34.3%) and rectal varices in 5 (14.3%). Bleeding per rectum was detected in 7 patients (20%), and it significantly correlated with the presence of hemorrhoids (P: 0.02). The prevalence of PHC and the presence of hemorrhoids increased with worsening Child-Pugh class (P: 0.01 and 0.02 successively). Conclusion: The prevalence of PHC and haemorrhoids increases with progression of liver disease and worsening of Child-Pugh in cirrhotic patients.

Keywords:
Colopathy; Liver cirrhosis; Portal hypertension

Abbreviations

PHC: Portal Hypertensive Colopathy
PHG: Portal Hypertensive Gastropathy
GI: Gastrointestinal
OV: Oesophageal Varices
PHT: Portal Hypertension.

Introduction

Cirrhosis is the most common cause of portal hypertension. Various vascular abnormalities have been observed in the mucosa of upper gastrointestinal tract of cirrhotic patients, including gastro-esophageal varices and gastric antral vascular ectasia. These vascular lesions account for most of the upper gastrointestinal bleeding in cirrhotic patients [1].

Similarly, vascular ectasia and varices may occur in the colonic mucosa of cirrhotic patients, a condition named portal hypertensive colopathy. The diagnostic criteria and clinical significance of this condition are confusing; this may be due to imprecise terminology, lack of uniform endoscopic descriptions, inter-observer variability and the absence of distinctive histopathologic features [2].

Outcome of the study

The primary outcome of the study was the evaluation of the prevalence and clinical significance of various forms of colonic mucosal changes in Egyptian patients with liver cirrhosis and portal hypertension; the secondary outcome was correlating...
After an informed consent, all the patients were subjected to: (A) CBC and stools occult blood (B) Liver biochemical profile (total and conjugated bilirubin, serum total proteins and albumin, PT and PC, AST, ALTand ALP) (C) Kidney function tests (blood urea and serum creatinine) (D) Abdominal ultrasonography (done in the ultrasonography unit, Tropical Medicine and Hepatology Department, Kasr-El-Aini Hospital, Cairo University using a Toshiba ECOSEE instrument with a 3.5 MHz curved linear transducer). The hepatic functional reserve was assessed using the Pugh modification of the Child’s criteria. (E) Upper GI endoscopy: Done in the Gastrointestinal Endoscopy Unit, Kasr El-Aini, Cairo University using a Olympus GF-240 videoscope or a Pentax EC3440F videoscope, commenting on: (i) Oesophageal varices (OV): number and grade according to Biniet al. [4] into: 1st degree: small-sized straight or infrequently tortuous varices; Grade II: moderate-sized tortuous varices; and Grade III: large-sized tortuous or saccular varices. When viewed endoscopically, rectal varices occur in the rectum and hemorrhoids are located in the anal canal. (c) Angiodysplastic lesions; and finally (d) Hyperemic colonic mucosa. (G) Endoscopic biopsies from areas with lesions (ulcer, polyp, or mass) were taken and sent to the pathology department, Kasr El-Aini, Cairo University, for histopathologic study. According to Biniet al. [6] portal hypertensive colopathy (PHC) is classified into three grades: Grade I: erythema of the colonic mucosa, Grade 2: presence of vascular ectasia, Grade 3: presence of rectal varices.

**Results**

The present study included 35 patients with liver cirrhosis and portal hypertension; they included 23 (65.7%) males and 12 (34.3%) females, their ages ranged from 18 to 80 years (51.5±11.8 years). Seventeen patients (48.6%) came from rural areas, and 18 patients (51.4%) from urban areas.

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<tr>
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Table 1: Abdominal ultrasonographic data of the studied patients (number = 35).
19 patients (54.3%) had history of contact with canal water, 8 of them received parenteral anti-Schistosomal treatment, while 5 patients received oral anti-Schistosomal tablets, 3 patients received both treatments and 3 patients did not record any history of anti-Schistosomal treatment. Abdominal ultrasonographic data of the studied patients are showed in Table 1.

The studied patients were divided according to the Child-Pugh score into: 1 (2.9%) had Child A, 14 (40%) had Child B and 20 (57.1%) had Child C. Bleeding tendency (e.g. epistaxis, echymosis or bleeding gums) was detected in 10 patients (33.3%), 18 patients (51.4%) had haematemesis, 13 patients (37.1%) had melena, and 7 patients (20%) had frank bleeding per rectum. Tables 2 and 3 showed upper and lower endoscopic data of the studied patients respectively.

By studying the relation between colonoscopic lesions and oesophageal varices (OV), we found statistically significant relation (P value 0.02) between colonic hyperemia and OV (Figure 1), as in 16 patients (45.7%) with hyperemia, OV were detected in all of them and in 19 patients (54.3%) with no hyperemia, OV were detected in 14 of them. However, non-significant correlation was found between haemorrhoids and OV, as in 20 patients (57.1%) with haemorrhoids, OV were detected in 19 of them, and in 15 patients (42.9%) with no haemorrhoids, OV were detected in 11 of them (P value 0.14).

Also, in 5 patients (14.3%) with rectal varices, OV were detected in all of them, and in 30 patients (85.7%) with no rectal varices, OV were detected in 25 of them; this correlation was statistically not significant (P value 1.0). Moreover, in 12 patients (34.3%) with angiodysplasia, OV were detected in 11 of them, and in 23 patients (65.7%) with no angiodysplasia, OV were detected in 19 of them; this correlation was statistically not significant (P value 0.64).

By studying the relation between colonoscopic lesions and PHG, it was detected that the relation between colonic angiodysplasia and PHG was statistically significant (P value 0.02) as in 12 patients (34.3%) with angiodysplasia, PHG was detected in 7 of them, and in 23 patients (65.7%) with no angiodysplasia, PHG was detected in 19 of them (Figure 2).

But, in 20 patients (57.1%) with haemorrhoids, PHG was detected in 14 of them, and in 15 patients (42.9%) with no haemorrhoids, PHG was detected in 12 of them; this correlation was statistically not significant (P value 0.31).

Also, in 5 patients (14.3%) with rectal varices, PHG was detected in 4 of them, and in 30 patients (85.7%) with no rectal varices, PHG was detected in 22 of them; this correlation was statistically not significant (P value 1.0). Similarly, in 16 patients (54.3%) with hyperemia, PHG was detected in 10 of them, and in 19 patients (45.7%) with no hyperemia, PHG was detected in 13 of them; this correlation was statistically not significant (P value 0.25).
The spectrum of lower GI bleeding (bleeding per rectum, melena and occult bleeding) was studied in relation to different colonic mucosal changes and it was found that in the 7 (20%) patients with history of bleeding per rectum, haemorrhoids were found in 6 of them (85.7%) and in the 28 (80%) patients with no history of bleeding per rectum, haemorrhoids were detected in 14 of them (50%); this correlation was statistically significant (P value 0.02).

But in the 7 patients with history of bleeding per rectum, rectal varices were detected in 2 (28.6%), hyperemia detected in 2 (28.6%) and angiodysplasia detected in none of them (0%). In 28 patients without history of bleeding per rectum, rectal varices were detected in 3 (10.7%), hyperemia detected in 14 (50%) and angiodysplasia detected in 12 (42.9%); these correlations were statistically not significant (P values 0.26, 0.42 and 0.07 respectively).

Also, in the 13 (37.1%) patients with melena, hemorrhoids were detected in 6 (46.2%) of them, rectal varices in 2 (15.4%), hyperemia in 7 (53.8%) and angiodysplasia in 4 (30.8%). And in the 22 (62.9%) patients without history of melena, hemorrhoids were detected in 14 (63.6%) of them, rectal varices in 3 (13.6%), hyperemia in 9 (40.9%) and angiodysplasia in 8 (36.4%), and these correlations were not significant (P values 0.31, 1.0, 0.46 and 1.0 respectively).

It was also found that occult bleeding (low haemoglobin with positive occult blood test) was statistically not correlated to rectal varices (P value 0.08) or angiodysplasia (P value 0.4).

The stage of liver cirrhosis (estimated by Child-Pugh score) was studied in relation to colonic lesions and it showed that the one patient (2.9%) with Child's score A had no haemorrhoids by colonoscopy, while the 14 patients (40%) with Child's score B, 12 of them (85.7%) had haemorrhoids; and the 20 patients (57.1%) with Child's score C, 8 of them (40%) had haemorrhoids; and this correlation was statistically significant (P value 0.02).

However, the single patient (2.9%) with Child's score A had no rectal varices, no hyperemia and no angiodysplasia; but the 14 patients (40%) with Child's score B, 2 of them (14.3%) had rectal varices, 9 (64.3%) had hyperemia and 5 (35.7%) had angiodysplasia. The 20 patients (57.1%) with Child's score C, 3 of them (15%) had rectal varices, 7 (35%) had hyperemia and 7 (35%) had angiodysplasia. These correlations were statistically not significant (P values 0.92, 0.16 and 0.71 respectively).

But when the lesions were studied collectively as Portal Hypertensive Colopathy (PHC), the correlation between PHC and Child-Pugh score was statistically significant (P value 0.01) (Table 4).

Table 4: Relation between Child-Pugh score and PHC.

<table>
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<td>1</td>
<td>0</td>
<td>1</td>
<td>0.01 (S)</td>
</tr>
<tr>
<td>B</td>
<td>0</td>
<td>14</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>C</td>
<td>7</td>
<td>13</td>
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<td>Total</td>
<td>8</td>
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Discussion

Portal hypertension diffusely affects the gastrointestinal tract. Portal colopathy is a clinical entity with liver cirrhosis but the frequency and profile of distinct colonic mucosal lesions (portal colopathy) and rectal varices have been little studied in patients with liver cirrhosis[7]. The frequency of at least one of these features in cirrhosis has been estimated at 50 to 90% [8].

Since the colonic lesions, although usually asymptomatic and clinically insignificant, are a potential source of acute or chronic lower GI bleeding, further investigation is needed to reduce the risk of bleeding and offer alternative treatment models [7].

In our study, PHC in the form of haemorrhoids, anorectal varices, angiodysplastic lesions or diffuse hyperemia was detected in 27 patients (77.1%), and there were 8 patients (22.9%) with normal colonic mucosa. Similarly, Bresci et al.[9] and Ito et al. [2] detected colonic lesions in 82% and 66% of their studied patients respectively. On the other hand, Bresci et al. [10] detected colonic lesions in 92% of their patients.

The prevalence of colonic lesions (haemorrhoids, rectal varices, angiodysplastic lesions and hyperemic colonic mucosa) in patients with cirrhotic portal hypertension has varied greatly; this discrepancy may be explained by differences in the patient populations studied (eg. viral vs. alcoholic cirrhosis), inter-observer variability among endoscopists, or differences in the indications for colonoscopy. Also, ViggianoandGostout[11] and Bresci et al. [9] found that there is confusion regarding the diagnostic criteria and clinical significance of colonic lesions in cirrhotic portal hypertension and attributed this to imprecise terminology, lack of uniform endoscopic descriptions, inter-observer variability, and the absence of distinctive histopathologic features.

Increase in the prevalence of PHC with worsening Child-Pugh class was observed in our study. Also there was a significant correlation between the presence of haemorrhoids and worsening of Child-Pugh class. This could be attributed to increased haemodynamic dysfunction in patients with more advanced liver disease. Also, Ghoshal et al. (2001), [12] Ito et al. (2005) [2] and El Kady et al. [13] demonstrated the same correlation. However, this correlation was not proved by Bresci et al. [9].

In our study, haemorrhoids were detected in 57.1% of patients. This was higher than that reported by Ghoshal et al.
In this study, 7 patients gave history of bleeding per rectum, representing 20% of the patients included in the study, and 25.9% of patients with colonic lesions. Significant correlation between rectal bleeding and presence of haemorrhoids has been found in our study, but not found with rectal varices, hyperemic mucosa or angiodysplastic lesions. Misra et al. [12] and El Kady et al. [13] found that rectal bleeding significantly correlated with the presence of haemorrhoids and with rectal varices also.

The incidence of diffuse hyperemic colonic mucosa in our study, was close to the studies of Bini et al. [6] Ghoshal et al. [12], Misra et al. [14], Ito et al. [2] and Bresci et al. [9] as they reported it in 38%, 36.6%, 57%, 42% and 54% respectively.

In our study, histopathologic examination of colonic mucosa to study changes due to PHC was not performed. But El Kady et al. [13] studied the correlation between the histopathologic evidence and colonicoscopic features of PPH by taking biopsies from rectum and sigmoid colon. Thirty four patients (85%) had histopathological evidence of PPH, 27 patients of these had coexisting colonicoscopic features of PPH. Evaluation of colonicoscopic features of PPH revealed a sensitivity of 79%; specificity of 66.6%, PPV of 93% and a NPV of 36.4% taking histopathology as the gold standard for diagnosis.

In conclusion, the prevalence of portal hypertensive colopathy and haemorrhoids increases with the progression of liver cirrhosis and worsening of Child-Pugh grading. Being a potential source of acute lower GI bleeding, portal hypertensive colopathy requires additional studies not only to determine their frequency but also to understand their pathophysiology and establish proper universal endoscopic classification.

**Conflict of Interest and Source of Funding**

All authors disclose that there aren’t any commercial associations or other arrangements (e.g. finSSSSancial compensation received, patient-licensing arrangements, potential to profit, consultancy, stock ownership, etc.) that may pose a conflict of interest in connection with this article.

**References**


