

Peptic Ulcer Disease in Patients with Cirrhosis in the Hepato-Gastroenterology Department of the Yalgado Ouedraogo University Hospital in Ouagadougou

Lawagoulé Joseph Emile Ky¹, Ben Moctar Abdou Djibo¹, Stella Line Emmanuella Paré², Abdoul Rasmané Zongo¹, Arouna Sessouma¹, Fabrice Ouédraogo¹, Fanta Ousseini^{3,4}, Mamadou Sarifou⁷, Sandrine Marie Odile Soudré^{5,6}, Aboubacar Coulibaly^{1,6}, Sosthène Somda^{1,6}, Arsène Roger Sombié^{1,6}

¹Department of Hepato-Gastroenterology, Yalgado Ouedraogo University Hospital, Ouagadougou, Burkina Faso

²Department of Hepato-Gastroenterology, Fada N’Gourma Regional Hospital, Burkina Faso

³Faculty of Health Sciences, Abdou Moumouni University, Niamey, Niger

⁴Department of Hepato-Gastroenterology, Niamey National Hospital, Niamey, Niger

⁵Department of Hepato-Gastroenterology, Tengandogo University Hospital, Ouagadougou, Burkina Faso

⁶UFR/SDS Joseph KI-ZERBO University, Ouagadougou, Burkina Faso

⁷Faculty of Health Sciences and Techniques, Gamal Abdel Nasser University, Conakry, Guinea

Email: *kjoemile@gmail.com

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Abstract

Background: Cirrhosis, the final stage in the evolution of most chronic liver diseases, is a major concern for practitioners and patients alike. The association of peptic ulcer disease and cirrhosis poses pathogenic and therapeutic problems. **Aims:** To study peptic ulcer disease in patients with cirrhosis in the Hepato-Gastroenterology Department of the Yalgado Ouédraogo University Hospital. **Patients and Methods:** This retrospective study examines the prevalence and characteristics of peptic ulcer disease (PUD) in 111 patients with cirrhosis at a Burkina Faso hospital between 1 January 2018 to 31 December 2022. Patients with cirrhosis hospitalised in the Hepato-Gastroenterology Department of the Yalgado Ouédraogo University Hospital were included. The diagnosis of cirrhosis was based on histological or elastometric criteria, or a combination of clinical, biological and morphological arguments. **Results:** A total of 111 patients were included, 79 of whom were men (71.2%). The mean age was 47.6 years with a standard deviation of 13.4 years. Forty-eight patients (43.2%) had peptic ulcer disease. Of these, 36 had gastric ulcers, three had duodenal ulcers and nine had both gastric and duodenal ulcers. The ulcer was located in the antrum in 75% of cases. The ulcer was asymptomatic in 38 pa-

tients (79.2%). One hundred and one patients (91%) had cirrhosis of B viral origin. Patients classified as Child-Pugh C accounted for 51.4% of cases. In multivariate analysis, there were no significant differences in terms of age, sex, alcohol or tobacco consumption, or stage of cirrhosis severity between patients with and without peptic ulcer disease. **Conclusion:** Our study showed a high prevalence of peptic ulcer disease in patients with cirrhosis. In our context, an upper gastrointestinal endoscopy should be performed as part of the initial health assessment of any patient with cirrhosis to look for signs of portal hypertension and peptic ulcer disease.

Keywords

Cirrhosis, Peptic Ulcer, Upper GI (Gastrointestinal) Endoscopy, Africa

1. Introduction

Cirrhosis, the final stage in the evolution of most chronic liver diseases, is a major concern for practitioners and patients alike. The association of peptic ulcer disease and cirrhosis poses pathogenic and therapeutic problems. The underlying mechanism of ulcers in cirrhosis is not clearly defined [1] [2]. While in the general population *Helicobacter pylori* infection is at the heart of peptic ulcer pathogenesis, its role in patients with cirrhosis has yet to be elucidated [3]. Numerous studies have shown a higher prevalence of peptic ulcer disease in patients with cirrhosis than in the general population [4]-[7]. Peptic ulcer disease can be complicated by haemorrhage [8] and upper gastrointestinal haemorrhage is one of the most dangerous complications in cirrhosis. In fact, it marks a turning point in the natural history of this pathology, given the increase in mortality that results. Haemorrhagic ulcers play a significant role in the occurrence of digestive haemorrhage in patients with cirrhosis. Although oesophageal and gastric varices are the main causes, a significant number of patients with cirrhosis bleed from peptic ulcers [9]. It has also been shown that, compared with the general population, these patients have a significantly higher risk of bleeding ulcers. In 2012, a study carried out in Taiwan Region revealed that the risk of developing a bleeding peptic ulcer was four times higher in patients with cirrhosis [10].

To our knowledge, there have been no studies of peptic ulcer disease in patients with cirrhosis in Burkina Faso. The aim of our work was to study peptic ulcer disease in patients with cirrhosis.

2. Patients and Methods

This is a descriptive and analytical cross-sectional study with retrospective data collection covering the period from 1 January 2018 to 31 December 2022. Patients hospitalised in the hepato-gastroenterology department of the Yalgado Ouedraogo university hospital for cirrhosis were included. The diagnosis of cirrhosis was based on:

- histological criteria: F4 fibrosis in METAVIR histological score;
- elastometric criteria: liver stiffness greater than 13 - 15 kPa;
- or a cluster of clinical findings (hard, painless hepatomegaly with an irregular anterior surface and a sharp lower edge, portal hypertension syndrome, hepatocellular insufficiency syndrome, clinical cholestasis syndrome), biological findings (hypoalbuminemia, low prothrombin and factor V levels, elevated transaminases with an ASAT/ALAT ratio > 1, hyperbilirubinemia with a conjugated bilirubin/total bilirubin ratio ≥ 70%) and morphological findings (on radiology: chronic liver disease signs, signs of portal hypertension. On upper GI endoscopy: oesophageal and/or gastrics varices, portal hypertension gastropathy).

Our study did not include patients with primary liver cancer, patients in whom upper gastrointestinal endoscopy could not be performed or in whom endoscopy was unable to visualise the gastroduodenal mucosa, and patients with a history of gastrectomy.

At endoscopy, peptic ulcer was classified according to the Forrest classification [11].

Data were collected on an individual survey form from the patients' medical records. The study variables were: sociodemographic data, patients' medical history and lifestyle, clinical data and paraclinical data (upper GI endoscopy, pulse elastometry, radiology and laboratory data). The data collected were entered and analysed on a computer using Epi info software version 7.2.2.6.

3. Results

➤ General characteristics of the study population

A total of 111 patients were included in our study. The mean age was 47.6 ± 13.4 years, with extremes of 17 and 80 years. The 40 - 50 age group accounted for 28.8% of patients. There were 79 men (71.2%), a sex ratio of 2.5. Cirrhosis was of viral B origin in 91% of patients and viral C in 8.1%. In terms of the Child-Pugh prognostic score, 57 patients (51.4%) had cirrhosis classified as Child-Pugh C. Alcohol consumption was noted in 44.1% of cases, and smoking in 21.6%. Epigastralgia was observed in 23 patients (Table 1).

Table 1. General characteristics of the study population.

Variable	Number
Sex (Male/Female)	79/32
Etiology of cirrhosis: VHB/VHC/other	101/9/2
Child-Pugh class: C/B/A	57/54/0
Alcohol consumption	49
Smoking	24
Epigastralgia	23
Anaemia	94

➤ Endoscopic results

Peptic ulcer was observed in 48 patients, representing a prevalence of 43.2%. Of these patients 36 (75%) had gastric ulcers, three (6.3%) had duodenal ulcers and nine (18.7%) had both gastric and duodenal ulcers. Thirty-six ulcers were located in the antrum and twelve in the bulb (Figure 1).

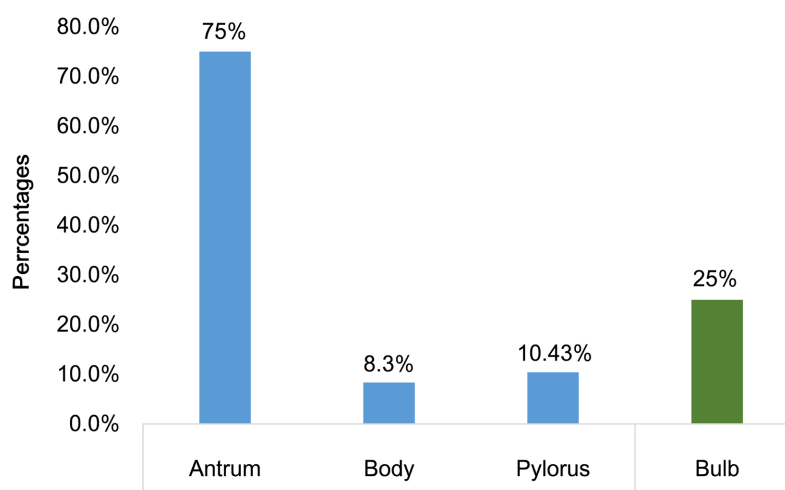


Figure 1. Distribution of patients according to ulcer site.

Peptic ulcer was classified as Forrest III in 42 patients (87.5%). It was haemorrhagic in 12.5% of patients (Table 2). *Helicobacter pylori* was tested in nine (18.8%) of the peptic ulcer patients. It was found in five out of nine cases.

Table 2. Distribution of patients according to forrest classification.

Forrest classification	Number	Percentage
Ib	3	6.3
IIb	2	4.2
IIc	1	2
III	42	87.5
Total	48	100

➤ Factors associated with peptic ulcer presence

Three-quarters of patients with peptic ulcer were male. Peptic ulcer patients were classified as Child-Pugh B and C respectively in 50% of cases. Less than a quarter (20.8%) of peptic ulcer patients had epigastralgia. More than half of the patients with peptic ulcer disease were alcohol-free and less than 20% were smokers. In multivariate analysis, there was no correlation between age, sex, alcohol consumption or smoking, the stage of severity of cirrhosis and the presence of a peptic ulcer in patients with cirrhosis (Table 3).

Table 3. Factors associated with peptic ulcer in multivariate analysis.

Variables	Peptic ulcer		OR	IC à 95%	P-value
	Yes N = 48 (%)	No N = 63 (%)			
Age					
<40	11 (22.9)	20 (31.7)	0.63	[0.27 - 1.5]	0.30
[40 - 60[26 (54.2)	30 (47.6)	1.3	[0.61 - 2.76]	0.49
≥60	11 (22.9)	13 (20.6)	1.14	[0.46 - 2.83]	0.77
Sex					
Female	12 (25)	20 (31.7)	0.71	[0.30 - 1.66]	0.44
Male	36 (75)	43 (68.3)			
Child-Pugh					
B	24 (50)	30 (47.6)	1.1	[0.51 - 2.33]	0.80
C	24 (50)	33 (52.4)			
Epigastralgia					
Yes	10 (20.8)	13 (20.6)	1.01	[0.40 - 2.55]	0.97
No	38 (79.2)	50 (79.4)			
Alcohol consumption					
Yes	22 (45.8)	27 (42.9)	1.12	[0.52 - 2.40]	0.75
No	26 (54.2)	36 (57.1)			
Smoking					
Yes	9 (18.8)	15 (23.8)	0.73	[0.29 - 1.87]	0.52
No	39 (81.2)	48 (76.2)			

4. Discussion

Our study has the inherent limitations of any retrospective study. Moreover, it is a monocentric study. Due to lack of health insurance, some patients were unable to undergo upper GI endoscopy.

The prevalence of peptic ulcer disease in patients with cirrhosis varies from one study to another. This variation reflects the acknowledged difficulty in the literature of estimating the true prevalence of this condition. However, all authors agree that the prevalence of peptic ulcer disease in patients with cirrhosis is higher than in the general population, although the factors associated with the development of this ulcer and the causes of its increased prevalence in these patients are poorly understood [6] [12]-[15]. This high prevalence could be the result of a disturbance in the balance between the aggressive and protective mechanisms of the gastroduodenal mucosa. A reduction in the protective factors of the gastroduodenal mucosa has been observed during cirrhosis [16] [17]. According to Svoboda *et al.*, this prevalence is 4 to 15 times higher than that of the general population [18]. A prevalence of 6.3% was reported by Siringo *et al.* in Italy [5]. Voulgaris *et al.* in

Greece reported a prevalence of 19% [19]. Kamalaporn *et al.* in Thailand and Tsai in Taiwan Region found a prevalence of 38.5% and 49.2% respectively [14] [20]. This prevalence was 52.2% according to Ichianagui *et al.* in Peru and 24.3% according to Kim *et al.* in South Korea [4] [21]. This variation in the prevalence of peptic ulcer disease in the various studies conducted in patients with cirrhosis could be explained by the living conditions and hygiene of the general population, which vary from one country to another.

In our study, 75% of patients had gastric ulcers. The predominance of the gastric location is corroborated by Kamalaporn *et al.* and Voulgaris *et al.* who found gastric ulcers in 76% and 73.6% of patients respectively [14] [19]. This predominance of gastric ulcers in patients with cirrhosis could be explained by the development of portal hypertension gastropathy during cirrhosis. The combination of gastric and duodenal ulcers was observed in 18.7% of cases. Zeriouh *et al.* reported a similar result with a combination of gastric and duodenal ulcers in 18.2% of cases [7]. Antrum was the main site of peptic ulcer in patients with cirrhosis. In fact, 75% of patients had an antral ulcer. Our results are similar to those of Voulgaris *et al.* (73.6%). Since portal hypertension gastropathy most often predominates in the body of the stomach and not in the gastric antrum, this may reflect the existence of other associated mechanisms in the pathophysiology of gastric ulcer in patients with cirrhosis [19].

At endoscopy, 12.5% of patients had a bleeding ulcer. This result may be underestimated. Because endoscopic haemostasis is not performed in our hospital, endoscopy was not performed in the acute phase in patients admitted with upper gastrointestinal bleeding. These patients received a stand-by treatment based on high-dose injectable omeprazole.

Helicobacter pylori was detected in five out of nine patients with peptic ulcer disease. This prevalence is lower than the data in the literature concerning *Helicobacter pylori* infection in Burkina Faso and Africa. In a 2017 meta-analysis, the prevalence of *Helicobacter pylori* infection in Africa was 79.1% [22]. The testing for *Helicobacter pylori* in only 18.8% of patients with peptic ulcer disease was a major limitation, as it hampers the ability to fully understand its role in this population. Another explanation for this low prevalence could be that the diagnosis of *H. pylori* is essentially made indirectly in our context by examination of the stools. Not performing gastric biopsies to look for *H. pylori* gastritis during digestive endoscopies, even though this is standard practice for operators, is not good practice. The stomach is the preferred site for the bacteria. It would be advisable to detect the presence of *Helicobacter pylori* directly by means of biopsies taken during gastrointestinal endoscopy, whenever this is performed, rather than searching for it later using indirect, non-invasive methods. However, it should be noted that a negative correlation between the prevalence of *Helicobacter pylori* infection and the severity of cirrhosis according to the Child-Pugh classification was observed by Kim *et al.* in South Korea [4].

Our study found no correlation between the severity of cirrhosis (expressed by

the Child-Pugh score) and the presence of peptic ulcer. Similar results were found by Voulgaris *et al.* in Greece in 2019 and Chang *et al.* in Taiwan Region in 2014 [19] [23]. There was no statistically significant relationship between age, sex, alcohol consumption, smoking and the occurrence of peptic ulcer disease in patients with cirrhosis. Our results are similar to those of Chen *et al.* in China and Voulgaris *et al.* in Greece [13] [19]. One observation of our study was the asymptomatic nature of the clinical expression of peptic ulcer disease in patients with cirrhosis. Indeed, 79.2% of patients with an endoscopic ulcer did not present any epigastralgia. A similar observation was made by Siringo *et al.* in Italy, who reported an asymptomatic ulcer in 71% of patients [6]. According to the international recommendations of Baveno VII, screening upper GI endoscopy should be performed in patients with cirrhosis if liver stiffness is ≥ 20 kPa or if the platelet count is ≤ 150 G/L [24]. Given the high prevalence of peptic ulcer disease in these patients in our setting, upper GI endoscopy should be recommended as part of the initial health assessment of any patient with cirrhosis. This endoscopic investigation has a dual purpose: to look for signs of portal hypertension and to enable early diagnosis of peptic ulcers.

5. Conclusion

Our study revealed a high prevalence of peptic ulcer disease in patients with cirrhosis. One of the peculiarities of ulcers in these patients is that in most cases they develop asymptotically. In our context, an upper gastrointestinal endoscopy should be performed as part of the initial health assessment of any patient with cirrhosis to look for signs of portal hypertension and to detect peptic ulcer disease. Early diagnosis of peptic ulcer disease will lead to appropriate treatment and prevention of serious or even fatal complications. The role of *Helicobacter pylori* infection in the pathogenesis of peptic ulcer disease in patients with cirrhosis may be the subject of future studies in our context.

Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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