

## **Chronic Gastritis Documented in Bobo-Dioulasso (Burkina Faso): Epidemiological, Clinical, Endoscopic, and Histological Aspects**

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### **Abstract**

**Introduction:** Chronic gastritis (CG) is a frequent condition with a potential for progression to gastric cancer. Their causes are dominated by *Helicobacter pylori* infection.

**Purpose:** To evaluate the hospital frequency of CG and describe its clinical, endoscopic and histological aspects.

**Methods:** This was a cross-sectional, descriptive and analytical study conducted from January 2015 to August 2017 in the gastroenterology service of Suro Sanou University Hospital in Bobo-Dioulasso. Patients with histologically confirmed gastritis after per endoscopic biopsy were included.

**Results:** 585 out of 888 (65.9%) patients were included during the 32 months of the study. The female gender was predominant at 53.3%, with no difference in statistical distribution ( $p = 0.828$ ). The average age was 43.2 years old. The main clinical indication of endoscopy was epigastralgia (52.8%). At endoscopy, it was mainly pan-gastritis (44.5%); and the appearance of erythematous gastritis was the most observed in 44.1% of cases. Histology reported predominant pan-gastritis (45.8%). The degree of inflammation and cellular activity ranged from mild to moderate. Mucosal glandular atrophy and intestinal metaplasia were found in 26.8% and 13.5% of cases, respectively. *H. pylori* search was positive in 58.3% of cases.

**Conclusion:** chronic gastritis is frequent, dominated by *H. pylori* gastritis. The existence of precancerous lesions justifies increased surveillance.

**Keywords:** Chronic Gastritis; *Helicobacter pylori*; Gastroscopy; Histology

### **Introduction**

Chronic gastritis (CG) is a chronic inflammatory involvement of the lining of the stomach. This definition is primarily histological. Chronic gastritis is a common condition [1,2]. The evolutionary risk of certain types of gastritis to stomach cancer is now demonstrated [3]. Etiologically, infection with *Helicobacter pylori* (*H. pylori*) remains the main cause, far ahead of bile reflux and autoimmune diseases [3].

Chronic gastritis has been the subject of many studies in the world, particularly in Europe and Asia [1,4-6]. In Africa, much work has also been done on chronic gastritis in Morocco [7], as in Sub-Saharan Africa, particularly in Ivory Coast [8,9], Togo [10,11], Mali [12,13], Senegal [14], Cameroon [15], and Kenya [16] have been published.

In Burkina Faso, no data on chronic gastritis was found. This work is therefore a pioneering study on this pathology. We therefore found it useful to conduct this study, the purpose of which was to evaluate the extent of chronic gastritis, and to describe its clinical, endoscopic and histological aspects at the Suro Sanou University Hospital Center in Bobo-Dioulasso.

## Patients and Methods

### Type of study, population and sampling

It was a cross-sectional, descriptive and analytical study spread from January 1<sup>st</sup>, 2015 to August 31<sup>st</sup>, 2017 at the Gastroenterology service of Suro Sanou University Hospital Center (CHU-SS) in Bobo-Dioulasso (Burkina Faso). The study focused on patients who underwent upper gastrointestinal endoscopy (UGIE) with per endoscopic biopsies during the period. We included all cases of chronic gastritis, histologically confirmed on gastric biopsies, without presaging etiology. We excluded chronic gastritis in the vicinity of an ulcer or malignant gastric neoplasia, and biopsy samples of poor quality or non-representative of the gastric body.

### Data collection technique

Endoscopic examinations were performed at the gastrointestinal endoscopy unit of the CHUSS gastroenterology department by experienced gastroenterologists. A multidirectional axial vision video endoscope of the brand STORZ 13821 PKS was used. The endoscopic description of the lesions was made according to the revised Sydney classification [5].

The biopsies performed according to the Sydney system were 5 in number, including 2 in the antrum, 2 in the fundus and 1 in the angulus, in the presence or absence of gastric endoscopic lesion. Note that they were made on normal mucosa in the presence of clinical symptoms. The biopsy specimens were immediately fixed in Formol at 10% and sent to the Pathology Anatomy and Histology Laboratory at CHUSS of Bobo-Dioulasso. Gastric biopsies underwent standard paraffin embedding techniques with haematin-eosin (H-E) staining for the detection of gastritis lesions, and Giemsa for the detection of *H. pylori*. The analysis of histological lesions was performed according to the revised Sydney System 1994 classification [5].

The concept of taking anti-secretory agents, antibiotics or anti-inflammatories in the month preceding the completion of endoscopy has not been reported. As is the concept of smoking and alcohol consumption.

### Variables studied

The variables studied were age, sex, main clinical indication of fibroscopy, endoscopic aspects of gastritis, i.e. topography (antral, fundal, antro-fundic) and macroscopic appearance. (Erythema, erosion, edema, nodule, haemorrhage, atrophy, visible vessels, hypertrophy), as well as the histological parameters of gastritis (inflammatory infiltration of the chorion, cell activity, mucosal atrophy, presence of *H. pylori* and intestinal metaplasia), represented by their severity (mild, moderate, severe) according to the Sydney system.

### Data processing and analysis.

The data collected was captured and analyzed using SPSS Version 20. The descriptive statistics were used to determine the means and standard deviations of the quantitative variables, as well as the proportions of the different lesions. The Pearson chi2 test was used to compare the proportions, and the significance level selected was  $p < 0.05$  for a 95% confidence interval.

## Results

During the 32 months of the study, 585 (65.9%) cases of chronic gastritis were included from the results of the histology report of 888 patients. They were distributed in 312 (53.3%) women and 273 (46.7%) men, a sex ratio of 0.87 in favor of the female gender, without any significant difference being observed ( $p = 0.828$ ). The mean age was  $43.2 \pm 15.2$  years with extremes of 11 and 96 years. Two-thirds of our patients were under age 50 (not significant distribution,  $p = 0.195$ ). Figure 1 gives a breakdown of cases of gastritis by age group and sex.

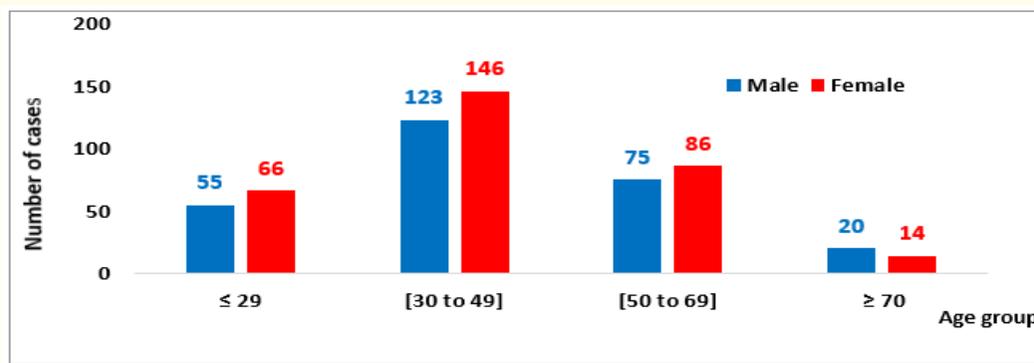


Figure 1: Distribution of chronic gastritis by age group and sex.

Clinically, the symptoms were often entangled, associating the same patient with several signs of appeal. The main indication for fibroscopy in our patients was epigastralgia (52.8%). Table 1 gives the distribution of our sample according to the main indication of upper gastrointestinal endoscopy (UGIE).

UGIE Indications	Effective	Percentage
Epigastralgia	309	52.8
Dyspepsia	53	9
Gastro-Esophageal Reflux	41	7
Portal hypertension	35	6
Vomiting	32	5.5
Digestive bleeding high	29	5
Other abdominal pain	16	2.7
Peptic ulcer control	15	2.6
Dysphagia	15	2.6
Hiccup	10	1.7
Anemia balance	8	1.4
Odynophagia	7	1.2
General condition alteration	6	1
Halitosis	5	0.8
Others *	4	0.7
Total	585	100

Table 1: Distribution of 585 patients according to the clinical indication of UGIE.  
 \*: Scope pellagra (1), control caustic burn (1), scleroderma (1), and health check (1).

Upper gastrointestinal endoscopy, performed in all patients, showed normal mucosa in 10.4% (n = 61) of patients. Among the 524 patients who had endoscopic gastritis, this was mostly antro-fundic (44.5%) and antral (42%) localization. Fundic locations were present in 13.5% of patients.

The appearance of erythematous gastritis (44.1%) and erosive gastritis (29.6%) was the most observed at endoscopy. Table 2 gives the distribution of the different macroscopic aspects observed during this study.

Aspect of the mucosa	n	%
Normal	61	10.4
Erythematous	258	44.1
erosive	173	29.6
Congestive	60	10.3
Nodular	18	3.1
Atrophic	14	2.4
Hypertrophic	1	0.1
TOTAL	585	100

**Table 2:** Distribution of patients according to the endoscopic aspect of chronic gastritis.

On histological examination, gastritis was predominantly antro-fundal (45.8%); followed by antral (40.5%) and fundal (13.7%) localizations. The inflammation present on all biopsy specimens was moderate in most cases (74.4%, n = 435). Cellular activity was observed in 76.2% of cases but was mostly mild. Intestinal atrophy and metaplasia were observed in 26.3% and 13.5% of patients, respectively. The prevalence of *H. pylori* on the biopsy specimens was 58.3% (n = 341). It was found mainly in the antrum and the antro-fundic region in the respective proportions of 44% and 41.6%. In the fundus, 14.4% of *H. pylori* was present. This bacterium was significantly associated (p = 0.000) with the presence of atrophic and metaplastic lesions. Table 3 gives the different histological features of chronic gastritis in this study.

Histological features of CG		HP present	HP absent	Numbers	Percentages
Chronic inflammation	Mild	69	37	106	18.1
	Moderate	236	199	435	74.4
	Severe	35	9	44	7.5
Cellular activity	Mild	167	89	256	43.8
	Moderate	134	43	167	28.5
	Severe	18	5	23	3.9
Atrophy	Mild	89	18	101	18.3
	Moderate	36	7	43	7.3
	Severe	6	01	7	1.2
Intestinal metaplasia	Mild	43	4	47	8.0
	Moderate	25	4	29	4.9
	Severe	2	1	3	0.6
<i>Helicobacter pylori</i>	Mild	-	-	78	22.8
	Moderate	-	-	90	26.3
	Severe	-	-	158	46.3

**Table 3:** Histological features of chronic gastritis in 585 patients in Bobo-Dioulasso.

### Discussion

For this pioneering study in our country, we included all cases of chronic gastritis without predicting etiology.

### Limits of the Study

This study has some shortcomings, including a selection bias related to how our patients were recruited, all of which were clinically symptomatic. As a result, our results cannot be generalized to the entire population.

### Epidemiological characteristics

The frequency of chronic gastritis was 65.9% in our series. This corroborates data from the literature [1], as well as African authors such as Bagny, *et al.* [10] and Darré, *et al.* [11] all in Togo reported respective frequencies of 53.4% and 83.4%.

In our series, chronic gastritis affected young adults as evidenced by the average age of 43.2 years. Our result is close to those of other authors in the West African region such as Diarra, *et al.* [12] in Mali, Bagny, *et al.* [10] in Togo, Attia, *et al.* [8] in Ivory Coast, and Doh [14] in Senegal. In contrast, Rouchdi [7] in Morocco reported an average age of 50 years.

We did not observe a difference in the distribution of cases of gastritis by gender ( $p = 0.828$ ), as reported by various other authors [7,8,10,14,15]. Chronic gastritis would not be influenced by gender in view of these disparities.

### Clinical aspects

Epigastralgia was the main indication (52.8%) of gastroscopy in this study; as it was in other similar studies, with varying proportions [7,8,10,11,13,17]. This is a common symptom in peptic diseases, including peptic ulcer disease, which is not specific for chronic gastritis. Other clinical manifestations such as dyspepsia and gastro-oesophageal reflux syndrome were also present. This confirms the symptomatological polymorphism of chronic gastritis. It is not said that “chronic gastritis can simulate everything”!

### Endoscopic aspects

Histological chronic gastritis was diagnosed in 10.4% of our patients with normal mucosa at endoscopy. Indeed, Doh, *et al.* [14] in Senegal reported 81% of chronic gastritis on a sample of normal endoscopy patients; while Lee, *et al.* [18] in Malaysia reported 21.8% of mucosa normal to histology while gastritis was diagnosed at the endoscopy. There is therefore no correlation between endoscopic data and histology, as reported by many authors [4,6-8,15].

Erythematous gastritis was the most observed macroscopic appearance in our series (44.1%). This erythematous appearance of the mucosa during chronic gastritis is reported by Rouchdi in Morocco [7]. The predominance of erythematous gastritis is also reported by other authors [8,11], but especially in the context of *H. pylori* gastritis. However, other factors (alcohol, coffee, bile reflux) could be involved in the erythema as stipulates Diarra in Mali [12].

### Histological aspects

In histology, the importance of cell density was the basis of the diagnosis of chronic gastritis. This cell density was moderate in 74.4% of patients. Similar cell densities have been reported by Bagny, *et al.* [10] in Togo (77.6%), and by Rouchdi [7] in Morocco (72.7%). Ahmed, *et al.* [16] in Kenya reported densities of 98% at the antrum and 93% at the fundus. The cell density reflects the duration of exposure to the various contributing factors.

The cellular activity during CG is a reflection of the degree of activation of the immune system in the gastric mucosa, and results in proliferation of neutrophils. It was present in 76.2% of the cases in our sample and was close to that observed by Attia in Ivory Coast [8] and Bagny in Togo [10], which were respectively 81.4%, and 65%.

The frequency of glandular atrophy was 26.8% in our study. Frequencies of glandular atrophy lower (3.7% to 17%) than ours have been reported by other authors [4,14,16,19]. Other authors [1,7,13,18] reported frequencies that were higher than ours, but less than 50%. In addition, very high rates of atrophy varying between 71% and 99% have been reported by other authors [8-11,15]. The frequency of glandular atrophy therefore varies from one study to another or even from one region to another. These variations could be explained by the methodology used in each study, and a cohort effect related to the epidemiology of *H. pylori* in the different studies; this bacterium

being responsible for atrophic CG. Indeed, the frequency of atrophy would be lower in regions with low *H. pylori* prevalence than in areas of high prevalence.

Intestinal metaplasia was observed in 13.5% of the cases in this study. The same observation was made by other African authors who had observed rates of intestinal metaplasia ranging between 9.8% and 18.6% [7,8,14,16]. Lower rates were reported by Assi, *et al.* [9] in Ivory Coast, Noah Noah, *et al.* [15] in Cameroon, Maïga, *et al.* [13] in Mali, in the respective order of 6.8%, 6.3% and 5.4%. Lee, *et al.* [18] in Malaysia reported 7.7% metaplasia in an area of low *H. pylori* prevalence. These low levels of metaplasia are often correlated with low levels of mild to moderate gastric atrophy, indicating a slow progression of chronic gastritis. On the other hand Darré, *et al.* [11] in Togo reported an 85% prevalence of metaplasia. For Tayyab, *et al.* [19] in China, metaplasia is the most common histological lesion (67.4%) in endoscopic gastric mucosal atrophy. This high prevalence of metaplasia is probably under the activity of *H. pylori* [3].

The various epidemiological studies on *H. pylori* have been found to have high prevalence. Thus, Ilboudo, *et al.* [20] and Wermé, *et al.* [21], have respectively 81.3% and 91.4% prevalence in their series, against a frequency of 58.3% in our series. The differences observed with the techniques used to identify *H. pylori*. In part, the combination of the urease test, the bacteriology, the histology of Ilboudo, *et al.* [20] and partially, the use of the gene amplification technique (PCR) of the team of Wermé, *et al.* [21], *H. pylori*, but classical histology with the use of unmodified text are not modified. Also, information from our study on the price of antibiotics, nonsteroidal anti-inflammatory drugs, proton pump inhibitors, but also our rate, their use of false negatives [22].

Exclusion notwithstanding antibiotic patients, Bagny, *et al.* [10] in Benin, and Noah Noah, *et al.* [15] in Cameroon revealed a prevalence rate of *H. pylori*, similar to our rate, 53.4% and 56.7% respectively. Is the prevalence of *H. pylori* infection in Bobo-Dioulasso, and in the subregion in Benin, in recent years?

## Conclusion

Chronic gastritis is common in patients seen in upper gastrointestinal fibroscopy in Bobo-Dioulasso. They mainly affect young adults under 50, and *H. pylori* remains the predominant etiological factor (58.3%). The presence of precancerous lesions, atrophy (26.3%) and intestinal metaplasia (13.5%), justifies endoscopic and histological surveillance.

## Conflict of Interest

The authors state not to have conflict of interest.

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