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Gastritis: Sociodemographic, Clinical, Endoscopic and Histological Aspects, about 593 Cases at the Digestive Endoscopy Unit of the General Hospital Idrissa Pouye

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Abstract

Introduction: Gastritis is a very common and widely distributed condition worldwide. It represents one of the most common pathological entities in gastroenterology and digestive endoscopy. Our objective was to determine the sociodemographic, clinical, endoscopic, and histological aspects of gastritis in the digestive endoscopy unit of the General Hospital Idrissa Pouye (GHIP). **Materials and Method:** This was a retrospective study over a period of 4 years (from 1 January 2014 to 31 December 2017) at the digestive endoscopy unit of GHIP. We had collated oesogastroduodenal endoscopy (EGDE) reports with gastritis appearance with gastric biopsies and reports with normal stomach appearance with gastric biopsies and their histological reports. We collected and analyzed data on age, gender, indications for endoscopy, endoscopic findings and histological results. **Results:** The reports of 593 patients were analyzed. The mean age was 45 years old (range 8 - 88 years old) and the sex ratio was 0.63 (230 men). The indications for endoscopy were epigastralgia in (91%) of cases, dyspepsia in (22%) of cases, pyrosis in (12%) of cases. The endoscopic appearance was normal in 229 patients (39%). The endoscopic location of the gastritis was antral in 76%, fundic in 22% and pangastric in 2%. The gastritis was erythematous in 327 patients (90%), erosive in 126 patients (35%), congestive in 53 patients (15%), pseudonodular in 14 patients (4%) and atrophic in 10 patients (3%). Histology was normal in 8 patients (1.3%) and showed gastritis in 585 patients (98.7%). Gastritis was chronic in

575 patients (98.2%), acute in 10 patients (1.7%). Gastritis activity was moderate in (52.7%) and mild in (42.9%). Atrophy was absent in 521 patients (88.6%) and mild in 46 patients (8.2%). Intestinal metaplasia was found in 66 patients (11%). Dysplasia was present in 1.7% of cases. This dysplasia was intermediate grade (60%) in 6 patients, low grade (20%) in 2 patients and severe grade (20%). *H. pylori* was present in 404 patients (68%). **Conclusion:** Gastritis is usually found in the digestive endoscopy unit of the GHIP. The indications for endoscopy are dominated by epigastralgia and histology is necessary for its diagnosis.

Keywords

Gastritis, *H. pylori*, Digestive Endoscopy

1. Introduction

Gastritis is an acute or chronic inflammatory disease of the stomach mucosa.

Chronic gastritis, which is much more common than acute gastritis, encompasses a group of conditions most often of infectious origin related to *Helicobacter pylori* (*H. pylori*) (type B gastritis), or more rarely of autoimmune origin (type A gastritis).

It is estimated that about half of the world's population is infected with *H. pylori* [1]. In developing countries, the prevalence of *H. pylori* infection is around 80% and the majority of people are infected in childhood and remain infected throughout their lives [2].

Low socioeconomic status, crowded urban environments, youthful population and communal living are risk factors for this infection [2].

It has been shown for several decades that chronic gastritis types A and B are associated with epithelial changes that can progress to atrophy, Intestinal Metaplasia (IM), dysplasia and even cancer. The famous histological cascade proposed by Correa goes from chronic gastritis related to *H. pylori* infection to cancer via gastric atrophy, IM and dysplasia [3].

Based on the relative risk observed in epidemiological studies, Kuipers *et al.* were able to determine that after 30 years of evolution, the individual risk of developing cancer in an *H. pylori*-infected patient was 1% [4].

The rapidity of the transition from atrophy to IM and from IM to dysplasia and then to cancer is extremely variable from subject to subject, and makes it difficult to establish recommendations for surveillance of the gastric mucosa of patients with pre-neoplastic lesions.

In Africa, where previous studies have reported *H. pylori* prevalences in excess of 70%, it is important to study chronic gastritis in order to select patients at risk of degeneration and requiring special surveillance. It is in this context that we conducted this study whose objective was to determine the sociodemographic, clinical, endoscopic, and histological aspects of gastritis in one of the largest en-

doscopy centres in Senegal.

2. Material and Method

This was a retrospective descriptive and analytical study, based on EGDE reports and histological results of gastric biopsies performed between January 1, 2014 and December 31, 2017 (48 months). We collected all EGDE reports that described a gastritis or normal gastric mucosa. This gastritis appearance corresponded to the standard terminology of elementary lesions proposed by the Sydney system. Reports in which the performance of gastric biopsies was reported were included.

The following data were collected: age, sex, indications for examination, endoscopic findings and biopsy site.

The pathological findings of the gastric biopsies were analyzed according to the revised Sydney System recommendations by investigating the presence or absence of *H. pylori*, polymorphonuclear infiltrate, lymphoplasmacytic infiltrate, atrophy, metaplasia and dysplasia.

Endoscopic reports with incomplete data regarding patient age, sex, indications for endoscopy and histological results of biopsies were not used.

The data were collected on a pre-established sheet. They were entered with Sphinx software version 5.1.0.2. The data analysis was performed with the SPSS (Statistical Package for Social Sciences) version 18 software.

The descriptive study was carried out with the calculation of frequencies and proportions for qualitative variables and the calculation of means, standard deviation for quantitative variables.

The analytical study was done with the cross-tabulations. To compare the frequencies, we used Pearson's Khi-2 test or fisher's exact bilateral test according to their conditions of applicability with a threshold of significance $p < 0.05$. The Kappa K coefficient was used to assess endoscopic and histological concordance for the diagnosis of gastritis.

3. Results

The reports of 609 patients were collected and sixteen of them were not included due to incomplete information.

The results are based on 593 endoscopy and histology reports out of a total of 6804 digestive endoscopies performed during this period, 8.7% of all EGDE.

The mean age was 45 years with extremes of 8 and 88 years. The age group between 20 and 50 years represented 56% of the population.

There was a predominance of women with a sex ratio of 0.63 (363 women).

The indications were diverse and represented essentially by epigastralgia (in 91% of cases), dyspepsia (22% of cases) and pyrosis (12% of cases) (**Table 1**).

Upper gastrointestinal endoscopy in the 593 patients showed a normal appearance of the gastric mucosa in 229 patients (39% of cases) and gastritis in 364 patients (61% of cases).

Table 1. Distribution of patients according to EGDE indications.

	Numbers	Percentages
Epigastralgia	535	91%
Dyspepsia	131	22%
Pyrosis	71	12%
Others	51	8%

NB: several indications could be found in the same patient. Other: dysphagia, halitosis, eructation, vomiting.

The site of gastritis on endoscopy was antral only in 76%, fundic only in 2% and pangastric in 22%.

The appearance of the gastritis was erythematous in 327 patients (90%) (**Table 2**), erosive in 126 patients (35%), congestive in 53 patients (15%), pseudonodular in 14 patients (4%) and atrophic in 10 patients (3%).

The EGDE showed other lesions apart from gastritis in 121 patients or 20% of the population. These were peptic ulcers in 31.7%, bulbitis in 25.61%, hiatal hernia in 17.07%, peptic oesophagitis in 12.20% and oesophageal varices in 9.76%.

Biopsies were taken from the antrum in 98.15% of cases and from the fundus in 13.8% of cases.

Histological examination confirmed the diagnosis of gastritis in almost all cases where it was suspected at endoscopy (363 of 364 cases). In addition, histological examination allowed a correct diagnosis to be made when the mucosa had a normal endoscopic appearance (in 222 patients, 96.8% of the cases with normal gastric mucosa).

In all patients, chronic gastritis was present in 98% of cases and acute gastritis in 2% of cases.

In total, histology allowed the diagnosis of gastritis in 585 patients (98.7% of cases).

Thus, the positive predictive value of endoscopy for the diagnosis of gastritis is 99.7% and the negative predictive value is 3.07%.

Gastritis on histology was antral alone in 86% of cases, pangastric in 13% of cases and fundic alone in 0.9% of cases.

Gastritis was moderate in 307 patients (52.7% of cases), mild in 250 patients (42.9% of cases), severe in 8 patients (1.4% of cases) and absent in 18 patients (3.1% of cases).

Gastric atrophy was present in 64 patients and was mild in 46 patients (8.2%) and moderate in 17 patients (3%). Intestinal metaplasia was present in 66 patients (11% of cases).

Dysplasia was found in 10 patients (1.7% of cases); it was high grade in 20%, low grade in 20% and intermediate grade in 60%.

H. pylori was present on histology in 404 patients (68% of the total). This *H. pylori* infection was associated with a normal endoscopic appearance in 173 patients, 75.5% of patients with normal endoscopy.

Table 2. Different endoscopic aspects of gastritis.

Aspects	Numbers	Percentages
Erythematous	327	90%
Erosive	126	35%
Congestive	53	15%
Pseudonodular	14	4%
Atrophic	10	3%
Ulcerated	10	3%
Edematous	9	2%
Petechial	4	1%
Others	3	1%

The Kappa coefficient, applied to assess the endoscopic and histological correlation for the diagnosis of gastritis, was 0.034 and this corresponds to a poor agreement.

4. Discussion

A predominance of women is observed in our study, with a sex ratio of 0.63 (363 women). Indeed, Andoulo *et al*. in Central Africa and Joutei *et al*. in the Maghreb respectively report a sex ratio of 0.69 and 0.88 [5] [6].

However, a male predominance has been reported in other studies in Africa and the West [7] [8].

Gender does not seem to be a risk factor, as *H. pylori* infection is not related to individual characteristics but mainly to hygiene and socio-economic conditions [9].

The average age of the patients in our series was 45 years. The age range between 35 and 50 years is the most represented and corresponds to the age range where *H. pylori* infection is predominant.

Other studies in Africa have also reported similar results [5] [6] [10].

In the West, gastritis, particularly *H. pylori*, is more common in people in their sixties. Indeed, Khakoo *et al*. in the USA and Andersen *et al*. in Denmark reported an average age of 60 and 59 years respectively [11] [12].

This age difference can be explained by the epidemiology of *H. pylori*, which is the leading cause of chronic gastritis worldwide. Indeed, the high prevalence of *H. pylori* in elderly subjects in developed countries could be explained by a cohort effect due to a rise in the socio-economic level, whereas in developing countries the infection is very high in children due to the low level of hygiene and promiscuity.

Table 3 shows the average age of patients according to some studies.

Epigastralgia is the main reason for performing endoscopy (91%), followed by dyspeptic disorders (22%).

In almost all series, epigastralgia is the first indication for endoscopy [13] [14] [15].

Table 3. Average ages of patients in some series.

Series	Country of Study	Average Age (Years)	Extremes (Years)
Our series	Senegal	45	8 - 88
Jouitei *et al.*	Morocco	43.5	3 - 89
Ilboudo *et al.*	Burkina Faso	35.5 ± 14	10 - 78
Andoulo *et al.*	Cameroon	42.3 ± 16.7	9 - 82
Mihara *et al.*	Japan	43.5	13 - 86
Khakoo *et al.*	USA	60	19 - 90
Andersen *et al.*	Danmark	59	55 - 64

It may seem paradoxical that epigastralgia should be the main finding in chronic gastritis given the often asymptomatic or pauci symptomatic nature of the latter. However, the lesions frequently associated with chronic gastritis, in particular gastro-duodenal ulcer disease, could probably also explain this symptomatology.

Dyspepsia represents the second indication for endoscopy in our study. Data from the literature show that dyspepsia is a frequent reason for consultation in gastroenterology. Its association with *H. pylori* infection is frequent, justifying the systematic search for this bacterium in cases of dyspepsia [14] [16] [17].

The endoscopic appearance of the stomach was normal in 229 patients, 39% of the population. Histology allowed a diagnosis of gastritis not suspected at endoscopy to be made in 222 patients, 96.8% of cases of normal gastric mucosa.

Many studies in the literature report high prevalences of normal endoscopy with histological evidence of gastritis [18] [19].

These results remind us that the diagnosis of gastritis remains histological and they justify the systematic performance of gastric biopsies in the absence of endoscopic lesions.

Endoscopy showed gastritis in 363 cases, 61% of the population.

Erythematous gastritis was the most frequent finding (90%), followed by erosive (35%), congestive (15%), pseudonodular (4%) and atrophic (3%).

Comparable results have been reported in many studies [11] [18] [20] [21].

Gastric atrophy, a preneoplastic lesion sometimes requiring endoscopic surveillance, shows 2 peaks of frequency in our series.

The first peak is observed in patients aged between 35 and 50 years. It is probably related to *H. pylori* infection as shown by the high prevalence of *H. pylori* in this age group.

Other series in the literature, notably from North Africa, report high frequencies of *H. pylori* related gastric atrophy [9] [22] [23].

The second peak in frequency is observed in patients between 50 and 65 years of age. Comparable results are reported in the literature. Zhang *et al.* in China report a statistically significant association between gastric atrophy and age above 50 years [24].

Indeed, with age, histological changes in the gastric tract are noted with a rare-

faction of the gastric glands which are replaced by fibrosis.

The discovery of *H. pylori* has led to a reassessment of the importance of ageing and studies have focused on the long-term effects of *H. pylori* infection and its role in the development of atrophic gastritis.

If the gastric mucosa is normal on endoscopy, histology shows chronic gastritis in 75.5% of our patients.

In the literature, it has been shown that there is a poor correlation between endoscopy and histology for the diagnosis of gastritis. Thus, biopsies should be performed routinely even in cases of normal endoscopy [18] [25].

In our study, antral biopsies were performed in 98% of cases. Fundiacal biopsies were performed in only 14% of cases. These minimal biopsies do not allow for optimal exploration of the entire gastric mucosa. Under these conditions, the staging of atrophy Operative Link on Gastritis Assessement (OLGA) and Operative Link on Intestinal Metaplasia (OLGIM) as suggested by many authors [26] [27] [28] cannot be done and therefore monitoring protocols could not be well defined with accuracy.

Intestinal metaplasia with the presence of *H. pylori* is observed in 38 of our patients.

Intestinal metaplasia is a step in the corea cascade, and *H. pylori* infection is the primary cause.

Chronologically, this lesion occurs later than gastric atrophy. Like the latter, it is all the more associated with the risk of cancer as it is multifocal and not localised to the antrum, hence the importance of varying the biopsy sites in order to have a good mapping of the metaplasia.

Dysplasia was found in 10 of our patients, 3 of whom had *H. pylori* infection on histology.

Persistent *H. pylori* infection is the main risk factor for progression to dysplasia through atrophy and metaplasia [29] [30].

It has been recognised for several decades that gastric mucosal dysplasia, especially severe dysplasia, represents a precancerous lesion [31].

Indeed, gastric cancer essentially develops on dysplastic mucosa [32] [33] [34], which does not mean that dysplasia necessarily develops into cancer.

According to our results, the PPV of endoscopy for the diagnosis of gastritis is 99.7% and the negative predictive value is 3.07%. Similar results have been reported in a large cohort by Tytgat *et al.* [35].

However, the Kappa coefficient applied to assess the endoscopic and histological correlation for the diagnosis of gastritis was only 0.034. This value corresponded to a poor agreement between the endoscopy and the histology. This value corresponded to a poor agreement.

This is in agreement with many studies that show that endoscopic findings do not actually predict the presence, or absence, of gastritis on histology [19] [35] [36].

Thus, endoscopic findings are an unreliable predictor of histological gastritis.

This should encourage endoscopists to systematically perform gastric biopsies even in the case of normal endoscopy, in accordance with the quality criteria recommended by the learned societies.

5. Conclusion

Our study has shown that endoscopic appearance is an unreliable predictor for the diagnosis of gastritis. This conclusion is consistent with most studies in this field, and we agree with other authors who have concluded that histology is mandatory for an accurate diagnosis and that biopsies should always be performed, regardless of endoscopic findings.

Conflicts of Interest

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

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