

# Histopathological Pattern of Gastric Biopsies: Experience in a Tertiary Institution in Northern Nigeria and Review of Literature

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## ABSTRACT

**Background:** Disorders of the stomach are a frequent cause of clinical disease and a major reason for general and gastrointestinal outpatient clinics visits. We undertook this study to evaluate and document the pattern of gastric lesions in a tertiary institution in northern Nigeria.

**Methodology:** The study included a total of 543 cases of gastric biopsies received at the Pathology department of Aminu Kano Teaching Hospital from January 2009 to December 2015.

**Results:** There were 346 (63.7%) males and 197 (36.3%) females with a male to female ratio of 1.8:1. The ages of the Patients ranged from 12 to 100 years with a mean age of 51 years. There were 420 (77.3%) non-neoplastic and 123 (22.3%) neoplastic lesions. Chronic gastritis (388/71.5%) and Adenocarcinoma (111/20.4%) constituted the most common non-neoplastic and neoplastic lesions seen respectively. The gastritis was superficial in 237 (61.1%) cases, active in 50 (12.9%) cases and atrophic in 37 (9.5%) cases. Helicobacter pylori organisms were detected in 62 (16%) cases. Helicobacter pylori gastritis was active in 52 (13.4%) cases, atrophic in 9 (2.3%) cases and metaplastic in 1 (0.3%) case. The other non-neoplastic lesions consisted of 14 (3.3%) cases of reactive gastritis, 9 (2.1%) cases of benign ulcer, 6 (1.4%) cases of non-chronic gastritis, and 3 (0.7%) cases of hyperplastic gastropathy.

**Conclusion:** Chronic gastritis is prevalent in our environment with a H.pylori associated gastritis prevalence that is lower than the results of most studies in Nigeria. Adenocarcinoma is a common gastric lesion in our locality with a low frequency of premalignant histologic changes.

**Keywords:** Adenocarcinoma, Gastric biopsies, Chronic Gastritis, Helicobacter Pylori.

## INTRODUCTION

Disorders of the stomach are a frequent cause of clinical disease, with inflammatory and neoplastic lesions being particularly common and



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account for about one third-of all health care spending on gastrointestinal diseases in the USA.<sup>1</sup> They are major reason for general and gastrointestinal outpatient clinics visits in Nigeria and the world over with dyspepsia being the most common complain.<sup>2</sup> *Helicobacter Pylori*, are spiral-shaped gram-negative organisms that have being recognized as a major contributor to the development of chronic gastritis, peptic ulcers, gastric adenocarcinoma and Mucosa associated lymphoid tissue (MALT) lymphoma<sup>2</sup>. *H. Pylori* infection occurs worldwide, exhibiting variable regional prevalence with notable higher rates in the developing countries. In Nigeria, the *H. Pylori* prevalence rates reported is 68-84%.<sup>3-5</sup> With modernization of facilities and growing numbers of specialists such as Gastroenterologist and Endoscopists in developing countries, the Pathologists are faced now more than before with significant load of gastric biopsies. Upper GI endoscopy with gastric biopsy for histopathological examination plays an important role in making an exact diagnosis of these disorders for further management.<sup>6</sup> We undertook this study to evaluate and document the histopathological pattern of gastric biopsies in our institution a year after the introduction of endoscopy.

## MATERIALS AND METHODS

The materials for this study consisted of slides and paraffin embedded tissue blocks of all gastric specimens received at the Pathology Department of Aminu Kano Teaching Hospital, Kano, Nigeria from January 2009 to December 2015. These samples were received from within and outside the teaching hospital including more than five neighboring states in the northern region of

Nigeria. Haematoxylin and eosin (H & E) stained slides of cases were retrieved from the archives and, where necessary, fresh slides were made from archival paraffin embedded tissue blocks and stained with routine haematoxylin and eosin. Special stain stains were employed where necessary while the tumours were classified according to the WHO classification of tumours.<sup>7</sup> The clinical data of the patients such as age, sex, and clinical summaries were extracted from the histology request forms and patients' files where necessary. The data were then analyzed and presented as tables and figures.

## RESULTS

A total of 543 gastric biopsies were received in the department during the 7- year study period. The ages of the Patients ranged from 12 to 100 years with a mean age of 51 years. There were 420 (77.3%) non-neoplastic lesions and 123 (22.3%) neoplastic lesions. Chronic gastritis (388/71.5%) and Adenocarcinoma (111/20.4%) constituted the most common non-neoplastic and neoplastic lesions seen respectively. There were 346 (63.7%) males and 197 (36.3%) females with overall male to female ratio of 1.8:1. (Table 1). The male to female ratio of the neoplastic lesions and adenocarcinoma were both 2.6:1 while it was 1.1:1 for chronic gastritis (Figure 1). The gastritis was superficial in 237 (61.1%) cases, active in 50 (12.9%) cases and atrophic in 37 (9.5%) cases. *Helicobacter pylori* organisms were detected in 62 (16%) cases. *Helicobacter pylori* gastritis was active in 52 (13.4%) cases, atrophic in 9 (2.3%) cases and metaplastic in 1 (0.3%) case (Table 2). The other non-neoplastic lesions consisted of 14 (3.3%) cases of reactive gastritis, 9 (2.1%) cases of benign ulcer, 6 (1.4%) cases of non-chronic gastritis and 3 (0.7%)

cases of hyperplastic gastropathy. The Adenocarcinoma (Figure 2) was seen in the age range from 20-100 years, with a mean age of 51.46 years at presentation. The highest incidence was seen in the 51-60 age group (28), followed by the 61-70 and 41-50 age groups. The adenocarcinoma consisted of 91/82% no special type, 10/9% Intestinal type, 8/7.2% signet ring type and 1/0.9% each of mucinous and papillary types

**Table 1: Frequency distribution Of Gastric lesions by sex**

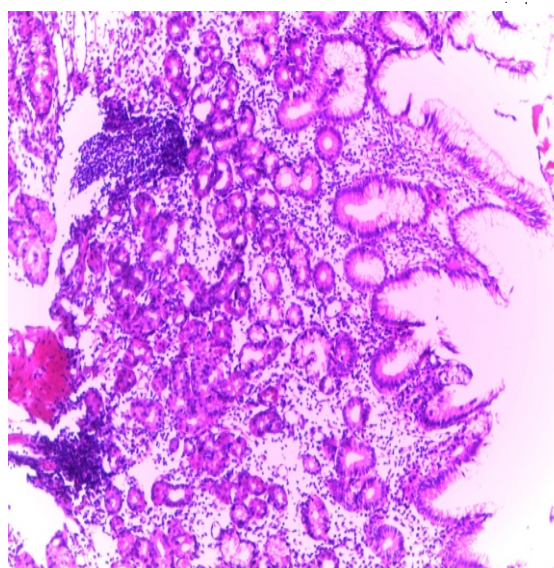
Sex	Frequency	%
Male	346	63.7
Female	197	36.3
Total	543	100

**Table 2: Histological pattern of Non- neoplastic lesions and Gastritis**

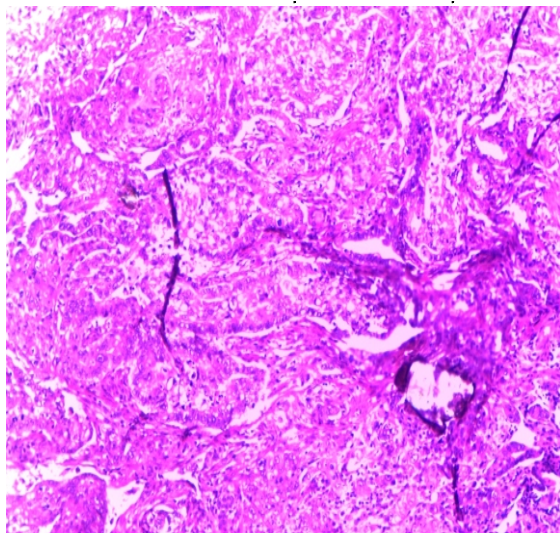
Histologic diagnoses	No	%
<b>A. Chronic gastritis</b>	388	91.9
Chronic superficial gastritis	237	
Chronic active gastritis	50	
Chronic atrophic gastritis	37	
H. Pylori with chronic gastritis	62	
H. Pylori with chronic active gastritis	52	
H. Pylori with chronic atrophic gastritis	9	
H. Pylori with chronic atrophic gastritis and Metaplasia	1	1.4
<b>B. Other gastritis</b>	6	
Infectious gastritis	1	
Schistosoma gastritis	2	
Lymphocytic gastritis	1	
Haemorrhagic gastritis	1	
Granulomatous gastritis	1	6.7
<b>C. OTHERS</b>	26	
Reactive gastritis	14	
Gastric ulcer	9	
Hyperplastic gastropathy	3	
<b>Total</b>	<b>420</b>	<b>100</b>

**Table 3: Histologic pattern of Neoplastic gastric lesions**

Neoplasm	No.	%
<b>A. Malignancy</b>		
<b>Epithelial</b>		
1. Adenocarcinoma		
i. No special type	91	73.9
ii. Intestinal type	10	8.1
iii. Signet ring type	8	6.5
iv. Papillary type	1	0.8
v. Mucinous type	1	0.8
2. Carcinoid		
<b>Non Epithelial</b>		
1) Kaposi sarcoma	2	1.6
2) Marginal zone B -cell lymphoma of MALT type	1	0.8
<b>B. BENIGN</b>		
i. Gastrointestinal stromal tumour	7	5.7
ii. Polyp	1	0.8
<b>TOTAL</b>	<b>123</b>	<b>100</b>



**Figure 1. Chronic superficial gastritis showing mucosal glands lined by cuboidal epithelium with bland nuclei. The surrounding lamina propria contains moderate lymphoplasmacytic infiltrates.**



**Figure 2. Gastric adenocarcinoma showing infiltrating nests of malignant glands disposed within a desmoplastic fibrous stroma containing areas of necrosis and inflammation.**

## DISCUSSION

This study included 543 cases of gastric biopsies which constituted less than 5% of the specimens received in the department over the study period. This sample size is, however bigger than most series in Nigeria<sup>3-5, 8-13</sup>, and other parts of the world<sup>14-17</sup> except for a Saudi Arabian study.<sup>18</sup> Our study shows a slight male predominance with male to female ratio of 1.8:1. This ratio is in concordance with most of the literature.<sup>5, 9, 14-16, 18, 19</sup> Zaltman et al<sup>17</sup> working in Brazil found a significantly higher male preponderance with a male to female ratio of 2.2:1, while Duduyemi et al<sup>3</sup> in Abuja, Jemilohun et al<sup>10</sup> in Ibadan, and Picardo et al<sup>13</sup> in Enugu, Nigeria reported a ratio of 1:1 with a slight absolute female predominance. There is no universally accepted

rational for this male predominance, however, Shennak et al<sup>19</sup> attributed it to a greater exposure of males to the various risk factors of gastric diseases and a greater attendance of male patients to outpatient departments. The ages of the Patients in our study ranged from 12 to 100 years with a mean age of 51 years. This is in keeping with the work by Picardo et al<sup>13</sup> who reported an age range of 18 to 92 years and a mean age of 52.2 years. A similar mean age was seen in other works in Nigeria<sup>9, 10</sup> and elsewhere.<sup>17</sup> This mean is lower than that reported by Ajayi et al<sup>4</sup> in Ekiti, Mustapha et al<sup>5</sup> in Maiduguri and Zeinab et al<sup>18</sup> in Saudi Arabia. The mean age reported by these Authors were a decade lower than ours. Thus, we observed involvement of older patients in our study. Geographic and eating lifestyle reasons have been speculated as the basis for this variation in age. The stomach is a site for a wide variety of lesions, with inflammatory and neoplastic lesions being particularly common.<sup>1</sup> There were 420 (77.3%) cases of non-neoplastic lesions in our study, representing over three times more than the neoplastic lesions in our experience. This finding of a predominance of inflammatory non-neoplastic lesion is observed in all other series.<sup>3, 5, 8, 14-19</sup> Chronic gastritis (388/71.5%) with an equal sex distribution was the most common lesion in this study, while the superficial subtype outstrips the other subtypes. It is by far the most common lesion in other studies.<sup>4, 8, 15-16, 19-20</sup> Duduyemi et al<sup>3</sup> and Zeinab et al<sup>17</sup> recorded chronic active gastritis are the most common lesion. The gastritis was associated with H. Pylori in 16% of cases. This rate is low in comparison to other studies in Nigeria<sup>3-5, 8</sup> and elsewhere in the world.<sup>17-20</sup> The reason for this low H. Pylori rate in our work is uncertain. However, the role of antibiotic abuse has been proposed to suppress Pylori infection as is the indiscriminate use of NSAIDs a risk for non H.

Pylori associated gastritis. Helicobacter Pylori, are spiral-shaped gram-negative organisms that have being recognized as a major contributor to the development of chronic gastritis, peptic ulcers, gastric adenocarcinoma and Mucosa associated lymphoid tissue (MALT) lymphoma<sup>2</sup>. In this work, H. Pylori gastritis was active in 52 (13.4%) cases, atrophic in 9 (2.3%) cases and metaplastic in 1 (0.3%) case. The latter two are believed to lead to dysplasia which is precursor to the development of H. Pylori related gastric malignancy.<sup>7</sup>

Malignancy constituted a fifth of all the lesion seen during the study period with adenocarcinoma representing over 96%. This is overwhelming abundance of adenocarcinoma is consistent with documented literature.<sup>1,7,11-12,21-23</sup> Adenocarcinoma occurred 2.6 times more in males than females. This male predominance is in keeping with previous observations reported in studies done in Nigeria<sup>12,21-22</sup> and elsewhere in the world.<sup>23</sup> The Adenocarcinoma was seen in the age range from 20 100 years, with a mean age of 51. 46 years at presentation. This mean age of presentation is similar to the 51.35 years reported in Maiduguri<sup>22</sup>, 51 years reported in Zaria<sup>21</sup>, 53.36 years reported in Ibadan<sup>12</sup>, and the 52 years found in Tanzania.<sup>23</sup> Our study documented a peak incidence in the sixth decade as it is in most series.<sup>21-23</sup> The middle age in this study showed a high incidence of gastric carcinoma with 20% of the cases. This trend toward a younger age group is worrisome and was also reported by Ebili et al in Ibadan.<sup>12</sup> Only a case of B-cell lymphoma was documented in this series. This rarity is that seen in other studies<sup>11-12,21-23</sup> and parallels the low H. Pylori rate in this work.

In conclusion, Chronic gastritis is prevalent in our environment with a H.pylori associated gastritis prevalence that is lower than the results of most studies in Nigeria. Adenocarcinoma is a common

gastric lesion in our locality with a low frequency of premalignant histologic changes.

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