

Research Article

Prevalence of intestinal metaplasia and dysplasia in infectious and non-infectious chronic gastritis

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ABSTRACT

Background: Objective of current study was to estimate the prevalence of intestinal metaplasia in dyspeptic patients in Duhok (Kurdistan region) and its association with *H. pylori* and dysplasia according to gender and age.

Methods: This was a prospective observational study. Study was conducted from Jan 2012 to Jul 2014 at Azadi Teaching Hospital Duhok City. A total number of 205 antral gastric biopsies were collected in Azadi GIT-Centre and examined histologically to detect intestinal metaplasia. These biopsies were stained by Giemsa to detect *H. pylori* organisms.

Results: *H. pylori* was found in 94 (46%) patients while intestinal metaplasia in general was found in 30 (15%) patients; (9.8% in association with *H. pylori*) and (4.7% without *H. pylori*). Among intestinal metaplasia 6 cases show dysplasia (6/205 = 3%).

Conclusions: This study has documented mainly that the prevalence of intestinal metaplasia is significant among patients (In Duhok) with chronic gastritis and mainly in those patients who are positive for *H. pylori* with an active chronic gastritis. Intestinal metaplasia mostly affects patients above the age of 40 years with no significant gender difference.

Keywords: Intestinal metaplasia, Chronic gastritis, Dysplasia

INTRODUCTION

Chronic gastritis is defined as presence of chronic mucosal inflammatory changes leading eventually to mucosal atrophy and intestinal metaplasia. In Western world the prevalence of chronic gastritis in the later decades of life is higher than 50%.¹ After 1982, etiology of gastritis and other different pathology of stomach (chronic non ulcer dyspepsia, peptic ulcer and even gastric carcinoma) has been changed completely when Marshal BJ and Warren JR discovered spiral and curved microorganism called *Helicobacter pylori* (*H. pylori*).²

This bacteria has ability to affect gastric mucosa and induces inflammation & eventually intestinal metaplasia

which refers to replacement of gastric epithelium with columnar and goblet cells of intestinal variety.³ The most common cause of intestinal metaplasia is *H. pylori* associated chronic gastritis.^{2,4} These metaplastic changes may become dysplastic and constitute a background for development of gastric carcinoma and that is why some considered it as a precancerous lesion; the risk for such tumor development is greatly increased in patients in whom mucosal inflammation progresses to multifocal mucosal atrophy and intestinal metaplasia.^{5,6} They thought that intestinal type gastric carcinoma “which presents in more than two thirds of gastric cancer” is to be arise from intestinal metaplasia of gastric epithelium, an assumption supported by electron microscopy and immunohistochemical studies.⁷

Aims of this study are detecting the presence of Intestinal Metaplasia (IM) in gastric biopsies, to find out the association between *H. pylori*, Intestinal metaplasia and dysplasia and to assess the age and sex distribution of the IM in gastric biopsies.

METHODS

During a period of two years a total 205 cases of endoscopic gastric biopsies were collected from Azadi teaching hospital. This study was performed by collection of endoscopic antral mucosa biopsies from Jan/2012-Jul/2014, each biopsy contained at least 2 mucosal pieces that submitted to a conventional histological processing and stained with hematoxylin-eosin stain to assess the presence of intestinal metaplasia. These biopsies were stained by Giemsa to detect *H. pylori* organisms. The age of patients ranged from 11-90 years, (106) were males and (99) were females. Statistical methods include Chi-square and t-statistics were calculated to measure the association between different parameters.

RESULTS

A total 205 biopsies from dyspeptic patients (Vary 11-90 years; mean age 43.7) were examined and showed; gastritis (n=164), peptic ulcer (n=30), erosion (n=10) and normal (n=1) consecutively (Table 1).

Table 1: Characteristics of patients according to histological diagnosis (n=205).

Diagnoses	Patients (n)	Patients(n) IM+ (% n)	Patients(n) HP+ (% n)
Normal	1	0 (0%)	-
Erosion	10	2 (20%)	2 (20%)
Gastritis	164	24 (14.6%)	82 (50%)
Gastric ulcer	30	4 (13.3%)	10 (33.3%)
Total	205	30 (15%)	94 (46%)

IM+: Intestinal metaplasia positive
HP+: *H. pylori* positive

H. pylori was found in 94 (46%) patients (11-75 years; mean age 43.3) (Figure 1). Intestinal metaplasia in general was found in 30 (15%) patients (Figure 2). Intestinal metaplasia that is associated with *H. pylori* seen in 20 (9.8%) patients, while intestinal metaplasia without *H. pylori* seen in 10 (4.9%) patients (Table 2). Among intestinal metaplasia 6 cases show dysplasia (6/205 = 3%) (Figure 3).

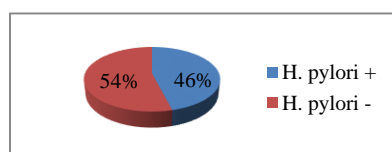


Figure 1: Percentage of *H. pylori* + among total 205 cases.

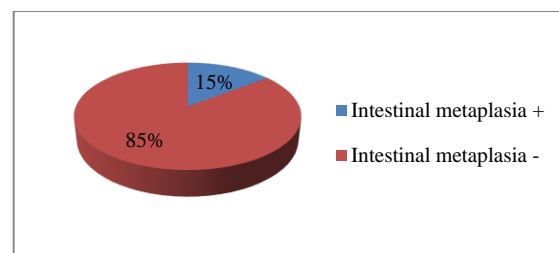


Figure 2: Percentage of intestinal metaplasia among total 205 cases.

Table 2: Number of cases and percent of IM+ in association with HP (n=30).

Diagnoses	Patients(n) IM+ (% n)	Type of gastritis
IM+ with <i>H. pylori</i>	20 (10%)	Active chronic gastritis
IM+ without <i>H. pylori</i>	10 (5%)	Chronic gastritis only
Total	30 (15)	30

IM+: Intestinal metaplasia positive
HP+: *H. pylori* positive

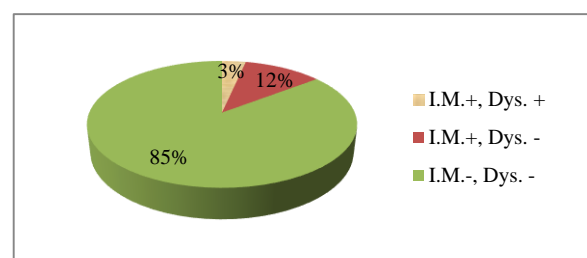


Figure 3: Relationship between intestinal metaplasia and dysplasia among total 205 cases.

I.M.+ : Intestinal metaplasia positive.
I.M.-: Intestinal metaplasia negative
Dys.+ : Dysplasia positive
Dys.-: Dysplasia negative

From 30 intestinal metaplasia positive cases (13 males & 17 females). The prevalence of intestinal metaplasia according to gender was 7.20% in male & 7.80% in female and by application of Chi-square test this difference was insignificant ($P>0.05$).

20 biopsies out of total 30 biopsies of intestinal metaplasia (66.6%) were present in patients above the age of 40 years. The peak age distribution was between 40-59 years that included (33.33%) of cases.

DISCUSSION

The International Agency for Research on Cancer categorized *H. pylori* infection as a type I carcinogen,⁸ and it is considered the primary cause of gastric cancer. The infection induces a chronic inflammatory process in

the gastric mucosa. Over time, atrophy and IM may develop.^{10,11} IM is frequently identified in distal gastric biopsies, especially in populations at high risk for gastric cancer, such as those of eastern Asia, eastern Europe, and Andean Latin America. In such countries the Intestinal Metaplasia (IM) of the gastric mucosa is a relatively frequent precancerous lesion.⁹ In the United States, the majority of the population is at low risk for gastric cancer, but there are several ethnic populations at high cancer risk, such as African Americans, Native Americans, and immigrants from Asia and Latin America.^{12,13} IM has been found to be more prevalent in those high-risk groups.¹⁴

Although the risk of gastric cancer is increased in the presence of IM, the overall risk of gastric cancer in a patient with IM is extremely low compared with the risk of adenocarcinoma in a patient with Barrett's Esophagus (BE).¹⁵ In the present study the prevalence of intestinal metaplasia in patients with dyspepsia was 15%, (7.20%) in males and (7.80%) in females, this rate is in agree with Carrilho C et al. study¹⁶ and Hackelberger A et al. rate in the gastric corpus.¹⁷ But it is significantly lower than Kim HJ et al. study in Korea (42.5%) in males & (32.5%) in females¹⁸ and Zhang C et al. study in China (39.9%).¹⁹ These high rates of IM in the above two studies are in keeping with the high prevalence of gastric carcinoma in these countries.

The prevalence of IM in the present study puts Iraqi population in the low prevalence area and this result had provided a confirmatory evidence to Al-Kanawy et al. study which reported that the prevalence of IM in Saudi Arabian was 15.2% (considered as a low prevalence area).²⁰

In agree with other studies, the current study revealed no significant gender variation among patients with IM ($P>0.05$) and the peak age distribution of IM was between 40-49 years.²¹

Giemsa stain was positive in 10% (and negative in 5%) of biopsies with IM. This rate of *H. pylori* negative cases (5%) is probably because *H. pylori* colonization is usually absent in areas of IM.⁵

CONCLUSIONS

1. According IM prevalent in patients with *H. pylori*.
2. Searching for IM in each gastric biopsy is a major criterion for a severity of gastritis and progression of lesion toward neoplasia.
3. Histopathological study still superior for tissue based test and serology to detect intestinal metaplasia.
4. IM more common in patients older than 40.

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Ethical approval: The study was approved by the institutional ethics committee

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