

## A Prospective Study on Prevalence of Intestinal Metaplasia and Dysplasia in Infectious and Non-Infectious Chronic Gastritis in a Tertiary Care Teaching Hospital.

Sheetal Sanjay Desai<sup>1</sup>, Sanjay Vitalrao Desai<sup>2\*</sup>

<sup>1</sup>Associate Professor, Department of Pathology, <sup>2\*</sup>Associate Professor, Department of Medicine, Dr. D. Y. Patil Medical College, Kolhapur.

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### \*Correspondence to:

Dr. Sanjay V Desai,  
Associate Professor,  
Department of Medicine,  
Dr. D. Y. Patil Medical  
College, Kolhapur.  
drsanjayvdesai@gmail.com.

### ABSTRACT

**Background:** Chronic gastritis is defined as presence of chronic mucosal inflammatory changes leading eventually to mucosal atrophy and intestinal metaplasia. This study was carried out to know the prevalence of Intestinal Metaplasia (IM) in gastric biopsies, and 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:** This prospective study was performed in age group of 25-65 years. Total 103 antral gastric biopsies were examined histologically to detect intestinal metaplasia. These biopsies were stained by Giemsa to detect H. pylori organisms.

**Results:** H. pylori was found in 47 (46%) patients (25-65 years; mean age 45.8). Intestinal metaplasia in general was found in 15 (15%) patients. Intestinal metaplasia that is associated with H. pylori seen in 10 (9.8%) patients, while intestinal metaplasia without H. pylori seen in 5 (4.9%) patients. Among intestinal metaplasia 3 cases show dysplasia (3/103 = 2.9%)

**Conclusions:** Prevalence of intestinal metaplasia is significant among patients 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%.<sup>1</sup> 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).<sup>2</sup>

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.<sup>3</sup> The most common cause of intestinal metaplasia is H. pylori associated chronic gastritis.<sup>2,4</sup> 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.<sup>5,6</sup> 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 immune histochemical studies.<sup>7</sup>

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.

### MATERIALS & METHODS

This prospective study was performed in age group of 25-65 years, attending outpatient Medicine department of Dr. D. Y. Patil Medical College, Kolhapur, a tertiary care Centre.

During a period of 8 months a total 103 cases of endoscopic gastric biopsies were collected from Dr. D.

Y. Patil Medical College, Kolhapur hospital. About 103 (60 were males and 43 were females) patients were enrolled on the basis of inclusion and exclusion criteria. This study was performed by collection of endoscopic antral mucosa biopsies from October 2014-May 2015, 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. Permission was taken from Institutional Ethical Committee before the commencement of the study.

**Table. 1 Characteristics of patients according to histological diagnosis (n=103).**

Diagnoses	Patients (n)	Patients(n) IM+ (% n)	Patients(n) HP+ (% n)
Normal	1	0 (0%)	-
Erosion	5	1 (20%)	1 (20%)
Gastritis	82	12 (14.6%)	41 (50%)
Gastric ulcer	15	2 (13.3%)	5 (33.3%)
Total	103	15 (15%)	47 (46%)

**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>	10 (10%)	Active chronic gastritis
IM+ without <i>H. pylori</i>	5 (5%)	Chronic gastritis only
Total	15 (15)	15

## RESULTS

A total 103 biopsies from dyspeptic patients (Vary 25-65 years; mean age 45.8) were examined and showed; gastritis (n=82), peptic ulcer (n=15), erosion (n=6) and normal (n=1) consecutively (Table 1).

*H. pylori* was found in 47 (46%) patients (25-65 years; mean age 45.8). Intestinal metaplasia in general was found in 15 (15%) patients. Intestinal metaplasia that is associated with *H. pylori* seen in 10 (9.8%) patients, while intestinal metaplasia without *H. pylori* seen in 5 (4.9%) patients (Table 2). Among intestinal metaplasia 3 cases show dysplasia (3/103 = 2.9%)

From 15 intestinal metaplasia positive cases (6 males & 9 females). The prevalence of intestinal metaplasia according to gender was 7.20% in male & 7.80% in female.

9 biopsies out of total 15 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,<sup>8,9</sup> 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.<sup>10,11</sup> 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.<sup>9</sup> 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.<sup>12,13</sup> IM has been found to be more prevalent in those high-risk groups.<sup>14</sup>

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).<sup>15</sup> 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. study<sup>16</sup> and Hackelberger A et al. rate in the gastric corpus.<sup>17</sup> But it is significantly lower than Kim HJ et al. study in Korea (42.5%) in males & (32.5%) in females<sup>18</sup> and Zhang C et al. study in China (39.9%).<sup>19</sup> 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).<sup>20</sup>

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.<sup>21</sup>

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.<sup>5</sup>

## CONCLUSION

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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