

## Original Article

# Clinical Presentation, Histological Findings and Prevalence of *Helicobacter pylori* in Patients of Gastric Carcinoma

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### Abstract

Carcinoma stomach is the second leading cause of cancer death worldwide. This study was undertaken to determine the clinical and pathological profile of carcinoma stomach in Bangladesh and to find out the prevalence of *H. pylori* infection in carcinoma stomach subjects. Patients with carcinoma stomach confirmed on histopathology were included in the study. Data were recorded regarding demography, clinical features, blood group of the patients, location and macroscopic type of the cancer at endoscopy. Three to five biopsies from non-necrosed region and two paired biopsies from non-cancerous part of stomach were taken. One piece of each paired specimen was placed in the urea-agar media for CLO test and the other piece was used for histological examination. Out of 50 patients, 64% were male and 36% were female. The mean age was 51.05±14.98 years. Common presenting complains were dyspepsia/ abdominal pain, vomiting and dysphagia; abdominal mass, metastatic lymph node and ascites were predominant signs. About one third (34%) patients had blood group A. About 50% cancer was located in antrum followed by antrum and body (24%), then body (18%), fundus and body (4%) and fundus (4%). In 56% cases the lesion was ulcerative followed by polypoid (34%) and ulceroinfiltrative (10%). Histopathologically 52% was intestinal type, 28 % was diffuse type 20% was poorly differentiated adenocarcinoma. The prevalence of *H. pylori* in overall carcinoma stomach cases was 60% but individually in intestinal type 88%, in diffuse type 57% and in poorly differentiated type 50%.

**Key words:** Carcinoma stomach, *Helicobacter pylori*.

### Introduction :

Gastric cancer is the second most common cause of cancer related deaths in the world and is responsible for

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approximately 650,000 deaths globally each year. There is a wide variation in the prevalence of gastric cancer throughout the world. Although the incidence of gastric cancer in USA and western Europe over the past 50 years is dramatically declining but in most regions of Latin America and Asia, the incidence still remains very high. Annual incidence rate is still highest in Japan and China<sup>1</sup>. It is also a major problem in India<sup>2</sup>. Because of its dramatic change in incidence from place to place and from one generation to the next, it has been hypothesized that incidence of gastric cancer is determined by environmental factor rather than genetic factors<sup>3</sup>. The International Agency for Research on Cancer (IRAC), sponsored by the World Health Organization (WHO) in 1994 has categorized *Helicobacter pylori* (*H. pylori*) infection as a class I carcinogen and a definite cause of human gastric cancer<sup>4</sup>.

In a developing country like Bangladesh overcrowding, bad sanitation and unhygienic practices favor high prevalence of *H. pylori* in the population. In a sero-epidemiological survey, the prevalence of *H. pylori* infection has been reported to be 91% in healthy young adults in Bangladesh<sup>5</sup>. The point prevalence of peptic

ulcer disease is about 15% and its association with *H. pylori* is more than 90%. It is likely that the prevalence of gastric cancer may be high in Bangladesh. In 1996, a total of 107 cases of gastric cancer out of 2403 all cancer patients were registered in National Cancer Institute of Bangladesh (personal communication). This study was undertaken to determine the clinical and pathological profile of carcinoma stomach in Bangladesh and to find out the prevalence of *H. pylori* infection in carcinoma stomach subjects.

**Materials and Methods:**

This study was carried out in the department of Gastroenterology, Bangabandhu Sheikh Mujib Medical University (BSMMU) Dhaka from July 1996 to June 2006. Fifty endoscopically and histologically proven cases of gastric carcinoma were included in this study. After selection of patients, informed consent was taken for this study. Data were collected from the study patients regarding demography, symptoms, physical findings and their blood group. At endoscopy site of the lesion and macroscopic type of the lesion were identified and recorded. Three to five biopsies were collected from non-necrosed region of cancer. Two paired biopsies from noncancerous part preferably antrum, body or body and fundus were taken. One piece of each paired specimen was placed in the urea-agar media for rapid urease test for detection of *H. pylori*. Histological slides were made from formalin preserved specimens. Sections were stained with H&E, Alcine-blue, peroidic acid schiff and modified Giemsa for assessment of tumor type and *H. pylori* infection. Data were analyzed for descriptive statistics.

**Results**

A total of 50 patients were included in the study. Of them 32 (64%) patients were male and 18 (36%) patients were female. The male to female ratio was 1.7:1. The age range of the study patients was between 23 and 76 years and the mean age was 51.05±14.98 years.

The age distributions along with male to female ratio of each age group are shown in Table I.

**Table I:** Age and sex distribution of the patients (n=50)

Age range	Total patients	Male	Female	Male: Female
<30 years	5	3	2	3:2
31 -40 years	15	10	5	2:1
41 -50 years	7	5	2	5:2
51 -60 years	9	6	3	2:1
>60 years	14	8	6	3:2

The common symptoms were dyspepsia, abdominal pain, vomiting, dysphagia, weight loss and anorexia. On physical examination abdominal mass, metastatic lymph nodes and ascites were the predominant findings. At endoscopy three types of lesions were found- ulcerative, ulceroinfiltrative and polypoid, distribution according to macroscopic type and part of the stomach involved are shown in Figure I. Table II shows the symptoms, physical signs and location and type of lesions of the study patients.

**Table II:** Clinical presentation, site and type of lesion in study population (n=50)

		No of patients	Percentage
Symptoms	Dyspepsia/ abdominal pain	50	100
	Vomiting	39	78
	Dysphagia	12	24
	Weight loss	31	62
	Anorexia	18	36
Physical signs	Abdominal mass	9	18
	Metastatic lymph node	6	12
	Ascites	2	4
Site of lesion	Antrum	25	50
	Body	9	18
	Antrum+Body	12	24
	Fundus+Body	2	4
	Fundus	2	4
Type of lesion	Ulcerative	28	56
	Ulceroinfiltrative	5	10
	Polypoid	17	34

Among the total patients 17 (34%) patients had A, 11 (22%) patients had B, 14 (28%) patients had O and 18 (36%) patients had AB blood group. (Table III)

**Table III:** Blood group of the patients (n=50)

Blood group	No of patients (n=50)	Percentage
A	17	34
B	11	22
O	14	28
AB	8	16

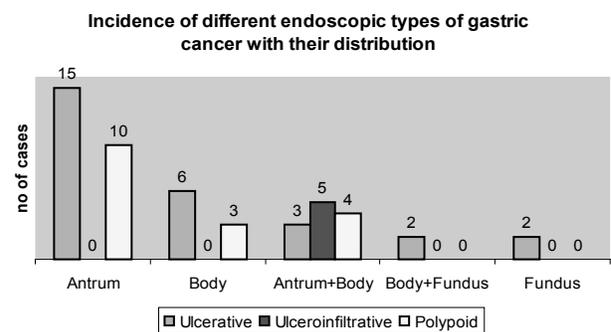


Figure 1: Incidence of different endoscopic types of gastric cancer with their distribution.

The histopathology of the biopsy specimen from the lesion showed that 26 (52%) cases were intestinal type, 14 (28%) cases were diffuse type and 10 (20%) cases were poorly differentiated type. (Table IV)

**Table IV:** The histological type of gastric carcinoma in study population (n=50)

	No of patients (n=50)	Percentage
Intestinal type	26	52
Diffuse type	14	28
Poorly differentiated	10	20

Prevalence of *Helicobacter pylori* among patient with carcinoma stomach showed that as a whole 30 (50%) cases were positive for *H. pylori* but among individual type 23 (88%) patients with intestinal type, 8 (57%) with diffuse type and 5 (50%) with poorly differentiated type were positive for *H. pylori*. (Table V)

**Table V:** Prevalence of *Helicobacter pylori* in different histological types of gastric carcinoma

	Total	<i>H. pylori</i> positive	Percentage	<i>H. pylori</i> negative	Percentage
Gastric cancer	50	30	60	20	40
Intestinal type	26	23	88	3	12
Diffuse type	14	8	57	6	43
Poorly differentiated	10	5	50	5	50

## Discussion:

In the United States, the median age of diagnosis of gastric carcinoma is 71 years, with the highest proportion (28%) diagnosed between the ages of 75 and 84. In Japan, a country with high incidence of gastric cancer, the mean age of diagnosis is roughly a decade earlier<sup>6</sup>. Afridi SP et al showed that the mean age of carcinoma stomach in Pakistan was 48.6±4.47 years, ranging from 26 to 65 years and male to female ratio was 1.5:1<sup>7</sup>. Satti MB et al showed the mean age in Saudi Arabia was 57 years with age range 21-102 and male female ratio was 2.2:1<sup>8</sup>. Cherian JV et al conducted a study in Tamil Nadu, a southern state in India and reported that the mean age was 54.13±12.53 years<sup>9</sup>. Qurieshi MA et al showed the male to female ratio of carcinoma stomach in Kashmir, a northern state in India of 3.3:1 and the average age of male patients was 61 years but in females it was 63 years, slightly higher than that of males<sup>10</sup>.

In a review of 18,365 patients performed by the American College of Surgeons the common presentation of carcinoma stomach were weight loss in 66.6%, abdominal pain in 51.6%, nausea/vomiting in 34.3%, anorexia in 32%, dysphagia in 26.1%, melaena in 20.2% and early satiety in 17.5% patients<sup>3</sup>. Qurieshi MA et al showed 35% patients reported weight loss,

76.5% had dyspepsia, 35.8% had anorexia and vomiting. On physical examination anemia was found in 81.5%, ascites in 11.1% and epigastric mass in 9.9% cases<sup>10</sup>.

The west has noted a steady increase in the incidence of gastric cancer in cardia and proximal stomach and a decline in the incidence of cancers in the distal stomach. Reports from Asian countries like Japan, Korea and Iran have been conflicting. The Japanese and the Korean populations have a predominance of noncardiac gastric cancers while the Iranians have reported a trend similar to that in the west. A recent study from the southern state of Kerala in India showed that carcinoma of the distal stomach has remained predominant although a trend towards a proximal shift has been noted. But Cherian JV et al showed no change in the site specificities of the carcinoma of the stomach in south Indian population<sup>9</sup>. Qurieshi MA et al showed the site of growth among the Kashmiri patients at proximal stomach in 42%, distal stomach in 45.7%, at mid stomach and diffuse throughout the stomach in 6.2% each<sup>10</sup>. Afridi SP et al reported in the study conducted in Pakistan that growth was found at the cardiac end in 33%, at pylorus and antrum in 40%, linitus plastica in 13.3% patients, only body and body and pylorus were involved in 6.7% each<sup>7</sup>. Satti MB et al also showed the majority of carcinoma occurred in the antrum (60%)<sup>8</sup>. In our study antrum was the most common site of the lesion and the proximal stomach was the least common site of involvement which is similar to the result of most Asian studies including those from Indian subcontinent.

The macroscopic appearance of gastric cancer has been classified into four types. Type I represents polypoid lesion, type II fungating cancers, type III represents ulcerated lesions infiltrating the gastric wall and type IV are diffusely infiltrating tumors or linitis plastica lesions. There is considerable overlap between the different types. About 40-50 % of cancers are polypoid in appearance and 40% are ulcerative in nature. Qurieshi MA et al showed at endoscopy in Kashmiri patients 35.8% had ulceroproliferative, 26% had proliferative, 31% had ulcerative and 7.4% had infiltrative type of lesions<sup>10</sup>. In this study ulcerative type was the most common among the macroscopic types of lesions which was similar to result of Kashmiri study.

Regarding the histopathologic diagnosis, Afridi SP et al showed two third (66.6%) patients had diffuse type and 20% had intestinal type gastric carcinoma and 13.3% had gastric lymphoma<sup>7</sup>. Qurieshi MA et al revealed out of 81 patients 38.2% had poorly differentiated adenocarcinoma and 60.5% had well to moderately

differentiated adenocarcinoma<sup>10</sup>. In contrary to Saudi study, our study showed that intestinal type was more common than other histologic types of gastric carcinoma.

Studies of the prevalence of *H. pylori* infection in gastric cancer have been conducted in several countries and produced widely varying results ranging from 60-100%. In a review of *H. pylori* studies in relation to gastric cancers Miwa et al observed that the established link between *H. pylori* and gastric cancer in Japan is not reported in countries like India and Bangladesh which had a high prevalence of *H. pylori* but low gastric cancer<sup>11</sup>. In Bangladesh Talukdar et al showed in his study that prevalence of *H. pylori* detected by CLO and histology was 66% out of 50 gastric cancer cases<sup>12</sup>. Maleeha et al reported that prevalence of *H. pylori* was 60% out of 10 cases<sup>13</sup>. Kabir MA et al showed that prevalence of *H. pylori* was 71.8% in gastric cancer subjects and 20% among the control group. This difference was significant ( $p < 0.001$ ). Among the patients with intestinal type gastric cancer, *H. pylori* were found positive in 86.96% cases and 50% of diffuse type and poorly differentiated type each had *H. pylori* infection<sup>14</sup>. In Kashmir Qurieshi MA et al observed that among the gastric cancer patients 39% were *H. pylori* positive<sup>10</sup>. The result was near to the study result conducted by Malik et al which showed 34% were *H. pylori* positive<sup>15</sup>. Satti MB reported that among the patients with intestinal type gastric adenocarcinoma 37% were *H. pylori* positive and among the patients with signet ring type mucus cell adenocarcinoma 29% were positive for *H. pylori* positive<sup>8</sup>. In this study the prevalence of *H. pylori* in overall gastric carcinoma was 60% which is near to the study result of Talukdar et al and Maleeha et al. Among the histologic types, in intestinal type the prevalence of *H. pylori* was high (88%) which is very near to the result of Kabir MA et al. In comparison to the Kashmiri and Saudi studies, the prevalence of *H. pylori* in carcinoma stomach patients in Bangladesh is higher than in those regions.

### Conclusion:

In conclusion, the results of this study will enable us to detect early gastric carcinoma and its management. A large population based study can give the actual scenario of clinicopathologic spectrum of gastric carcinoma in Bangladesh. A positive association of carcinoma stomach occurrence especially intestinal type with *H. pylori* is visible from this study as well as that of an earlier study. So further large scale studies are warranted to confirm this possible association and thus help us to prevent gastric carcinoma.

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