



An Observational Study on Association of Helicobacter Pylori in Patients with Gastric Carcinoma

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Introduction

Background: *Helicobacter pylori* is a gastric pathogen that colonizes approximately 50% of the world's population. Infection with *H. pylori* causes chronic inflammation and significantly increases the risk of developing duodenal and gastric ulcer disease and gastric cancer.

Methods: Hospital based prospective study conducted at Department of general surgery, Calcutta National Medical College and Hospital, Kolkata. Patients aged over 35 years undergoing endoscopic biopsy evaluation for Ca-stomach & those who are being operated for Ca-stomach were included in this study.

Results: *H. pylori* is the gastric pathogen and it causes chronic inflammation which ultimately increases the risk of gastric cancer. In our study 31/35(88.57%) patients out of total 35 patients of carcinoma stomach were having *H.pylori* infection(i.e. RUT-positive cases). Only 4/35 cases of carcinoma stomach were found RUT-negative.

Conclusion: *Helicobacter pylori* is the common pathogen cause gastric carcinoma.

Keywords: *Helicobacter Pylori*, Gastric Cancer, Pathogen.

Introduction

Almost 1 million cases of gastric cancer are diagnosed each year, establishing this disease as the fourth most common cancer worldwide. This is the second leading cause of cancer-related deaths, and approximately 700,000 people succumb each year to gastric adenocarcinoma (1). In some regions of the world, gastric carcinoma is the most common malignancy, and in Japan, the incidence of gastric cancer is almost 10-fold higher than rates observed in the United States.

Gastric cancer is an example of a cancer associated with a chronic inflammatory process that results in a metaplastic epithelium and cancer. Other examples are Barret's esophagus, squamous metaplasia in the bronchus in smokers, chronic inflammation in ulcerative colitis, or urinary bladders infected with schistosomes. In general, the risk is related to the extent and severity of the atrophic changes present (2) .

Helicobacter pylori is a gastric pathogen that colonizes approximately 50% of the world's population. Infection with *H. pylori* causes chronic inflammation and significantly increases the risk of developing duodenal and

gastric ulcer disease and gastric cancer. Infection with *H. pylori* is the strongest known risk factor for gastric cancer, which is the second leading cause of cancer-related deaths worldwide. Once *H. pylori* colonizes the gastric environment, it persists for the lifetime of the host, suggesting that the host immune response is ineffective in clearing this bacterium.

Material And Methods

Study Area

Department of general surgery, Calcutta National Medical College and Hospital, Kolkata.

Study Population

Indoor and OPD adult patients aged over 35 years undergoing endoscopic biopsy evaluation for Ca-stomach & those who are being operated for Ca-stomach.

Study Period

From January 2015 to June 2016

Sample Size

35

Sample Design

Selection of patient is based on inclusion and exclusion criteria.

1. Inclusion Criteria

- Previously histopathologically diagnosed case of carcinoma-stomach (By endoscopic tissue biopsy & post-operative resected specimen sent for histopathological confirmation of gastric carcinoma and *H. pylori* infection by RUT).
- All patients above the age of 35 years having history and clinical features suggestive of gastric malignancy undergoing diagnostic upper GI endoscopic biopsy & RUT of biopsy tissue.

2. Exclusion Criteria

- Patients aged less than 35 years
- Patients presenting in emergency with acute haematemesis, perforation & undergoing any

intervention in emergency OT, suspected to have gastric carcinoma.

- Patients having Acute dyspeptic symptoms and clinical suspicion of Gastric carcinoma, subsequently proved to be non-malignant on upper GI-endoscopy and biopsy.

Study Design

Institution based prospective, single arm, observational study.

Parameters To Be Studied

- Detection of *H. pylori* association in patients who are detected to have carcinoma-stomach.
- Detection of *H. pylori* infection with presence of carcinoma at different sites of stomach.
- Detection of presence of *H. pylori* in Gastric carcinoma with different histopathological changes.

Study Tools

- Hospital based record of indoor and OPD patients undergoing upper GI endoscopy guided biopsy and Rapid Urease Test for *H. pylori* detection by RUT-Kit for evaluation of carcinoma stomach.
- RUT-Kit for presence of *H. pylori* in endoscopy guided biopsy specimens and operative specimens.

Study Technique

- Evaluation of endoscopic biopsy specimen for presence of *H. pylori* by RUT-Kit.
- Evaluation of operative specimen for presence of *H. pylori* by RUT-Kit.
- Assessment of histological types of gastric carcinoma with or without intestinal metaplasia and sites of carcinoma-stomach.

Plan For Analysis Of Data

All recorded data will be analysed with suitable diagrams, figures, tables and statistical methods if needed and findings will be evaluated in details to draw an appropriate conclusions.

Result and Analysis

TABLE 1: Age and Sex distribution

Age	40-50 yrs	51- 60yrs	61-70 yrs	71 -80 yrs	Total
Female	0(0%)	4(66.67%)	1(16.67%)	1(16.67%)	6(100%)
Male	0(0%)	28(96.55%)	1(3.45%)	0(0%)	29(100%)
Total	0(0%)	32(91.43%)	2(5.71%)	1(2.85%)	35(100%)

$X^2 = 6.8391, p = 0.0327$

Although our study was designed to study the patients above the age of 35 years, but there were no patients between 35-50 years in our study.

Table 2: frequency of site of lesion

Site of lesion	frequency	Percentage
Fundus	3	08.57
Body	5	14.29
Antro-pylorus	27	77.14
Total	35	100

Table 3 : Frequency Of Endoscopic Biopsy RUT

Endoscopic biopsy RUT	Frequency	Percentage
Negative	4	11.43
Positive	31	88.57
Total	35	100

95% confidence limit- RUT negative – 26.74%

RUT positive – 96.80%

Table 4. Frequency of endoscopic biopsy

Histopathology	Frequency	Percentage
Benign	2	5.71
Malignant	33	94.29
Total	35	100

Discussion

In this observational study we included 35 cases of carcinoma-stomach, aged above 35 years, admitted from Surgical-OPD of CNMC & H,Kolkata; during the time period of January-2015 to June-2016 to study the association of H.pylori infection with carcinoma stomach

with reference to different sites of gastric involvement and different histopathological types of Ca-stomach.

For this we included the patients with endoscopic-biopsy proved carcinoma stomach who subsequently underwent operative procedures and those patients whose clinical features & physical examinations were suggestive of gastric malignancy who subsequently underwent endoscopic biopsy. In both groups of patients, either the resected specimen (obtained by surgery) or the biopsy specimen (obtained by upper GI endoscopy) was examined by RUT-Kit (Rapid Urease Test) for confirmation of H. pylori infection along with histopathological confirmation of gastric malignancy.

In different overseas & Indian studies, it was found that H.pylori infection is strongly associated with carcinoma stomach. Prevalence of H.pylori infection is more common in distally (antro-pyloric region) located gastric cancer and in adenocarcinoma type of carcinoma stomach.

This study also shows the following results which are supported by many overseas & Indian studies.

Age & Sex Distribution

In this present study, the majority of gastric carcinoma patients (32/35) are aged between 51-60 years. Ashis Kumar Saha et al (3) study also found the same age distribution (around 55 years of age) of the carcinoma stomach patients and Male : Female ratio was 2.7:1. In our study, only 2 patients were between the age of 61-70 years and only 1 patient was found above the age of 70 years. Out of 35 patients 29 were males & 6 were females (i.e. male:female ratio is 4.83:1), in which 28 males (out of 29) and 4 females (out of 6) were between 51-60 years of age. So this study (as per table no. 1) shows that male patients are more frequently affected by carcinoma stomach and mainly the age group between 51-60 years is affected, which is statistically significant also as the X^2 is 6.8391 and p value is 0.0327.

Site of involvement by carcinoma stomach

In this study as per table no.8, it was found that antro-pyloric region is the most common site of stomach involved in Carcinoma stomach. In our study, in 27/35(77.14%) patients, antro-pyloric region of stomach found to be involved by carcinoma stomach, followed by 5/35 (14.29%) cases in body and 3/35(8.57%) cases in fundus of the stomach. MA Kabir et al (4), AK Khanna et al (5) and Ashis Kumar Saha et al (3) studies also concluded that antro-pyloric region of the stomach is the most frequent of involvement by carcinoma stomach.

In this study (as per table no.14), 26 cases(96.30%) out of total 27 cases of antro-pyloric carcinoma-stomach were harboring the H.pylori infection(i.e. RUT-positive) while in body region 3/5 (60%) and in fundus region 2/3(66.67%) cases were RUT-positive. So this study shows that H.pylori infection is associated with antro-pyloric involvement(96.30%) by carcinoma stomach followed by fundic (66.67%) and body region(60%) and this association of H.pylori infection with site of involvement by carcinoma stomach is statistically also significant as the X^2 is 7.046 and p-value is 0.0295. Narayan thapa et al(6), AK Khanna et al(5) and Martin-de-Argila-C et al (7) studies also shown that H.pylori infection is commonly associated with distal(antro-pyloric region) gastric carcinoma. In Narayan Thapa et al (6) study, H. pylori infection in distal (Antro-pyloric) Ca-stomach was found in 75.86% cases while in rest of sites it was found only in 45.45% cases. In an Indian study by AK Khanna et al (5) H.pylori infection was found in 69.7% cases of Antral Ca-Stomach, 66.6% cases of body Ca-stomach and 50% cases of cardiac carcinoma stomach. So, all these studies show similar observation that distal (antro-pyloric region) Ca- stomach is frequently associated with H. pylori infection.

Conclusion

Helicobacter pylori is the common pathogen colonizing gastric epithelium. Chronic infection by this organism in stomach causes the development of chronic atrophic gastritis and metaplastic changes, which ultimately may leads to the development of gastric cancer.

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