

The Association of CagA⁺ Helicobacter pylori Infection and Gastric Carcinoma

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Gastric Cancer- ranked second in all cancer related mortality

- **Gastric cancer is the second leading cause of cancer-related deaths worldwide.**
- **Malignancy of the stomach is the most common cancer in Asia, nearly two-thirds of which occurs in developing countries.**

***Helicobacter pylori* and CagA**

***H.pylori* is recognized as a definite carcinogen on the basis of sufficient epidemiologic and histologic evidences.**

Approximately 60%-80% of *H.pylori* strains express a high molecular weight protein, denominated CagA, coded by the cagA gene.

CagA -“The pivotal player” in carcinogenesis

CagA strain of *H.pylori*



Positive patients show enhanced
expression of various cytokines



DNA damage with accumulation
of mutations  **Cancer.**

CagA association with Gastric cancer

- Several case-control studies, in different countries, have investigated the association between **CagA⁺** *H.pylori* and gastric cancer, and most evidence in literature agrees this association does exist.

Data against CagA association

- However, other data have revealed that the occurrence of gastric malignancy is independent of CagA status.
- In our country one small study and several studies from India failed to show higher frequency of CagA⁺ *H.pylori* infection in patients with gastric cancer than controls.

Rationale

- The conflicting results had not been highlighted firmly as very few studies were carried out till to date. In our country, study had been carried out showing relation of *H.pylori* with gastric malignancy.

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- But only one study in relation of **CagA⁺** *H.pylori* infection and gastric carcinoma with small number of cases has been done yet. There was no statistically significant difference in **CagA** status irrespective of cancer & non-cancer population.

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- In SOMCH Gastric carcinoma case is very common in Medicine, Gastroenterology and Surgery wards. Therefore, this study has been planned to show the association of **CagA⁺** *H.pylori* infection and gastric carcinoma with large number of cases.

Study & it's Objectives

Research question: Is gastric carcinoma associated with **CagA⁺** *H. pylori* infection?

Hypothesis: Gastric carcinoma is associated with **CagA⁺** *H. pylori* infection.

General objective: To see the association of the **CagA⁺** *H. pylori* infection and Gastric carcinoma.

Specific objective: To see the site of involvement of Stomach and to determine the histologic variety of Gastric carcinoma.

Materials and Methods

- **Study design:** This was a cross sectional comparative study.
- **Study Setting:** Department of Medicine in collaboration with Department of Gastroenterology and Department of Surgery, Sylhet MAG Osmani Medical College Hospital, Sylhet.
- **Study period:** From January 2011 to December 2012.

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Study population: Patients those were undergoing upper GI endoscopy in Department of Gastroenterology, Sylhet MAG Osmani Medical College Hospital, were the study population and among those fulfilled the inclusion and exclusion criteria were the sample population in this study.

Inclusion criteria

Case- 1. Endoscopically suspected carcinoma cases confirmed on histopathological examination as adenocarcinoma of the stomach.

2. Age 18 years or older and

3. Consented to participate in this study.

Control- Age and sex matched patients submitted to upper GI endoscopy with apparently normal stomach.

Exclusion criteria

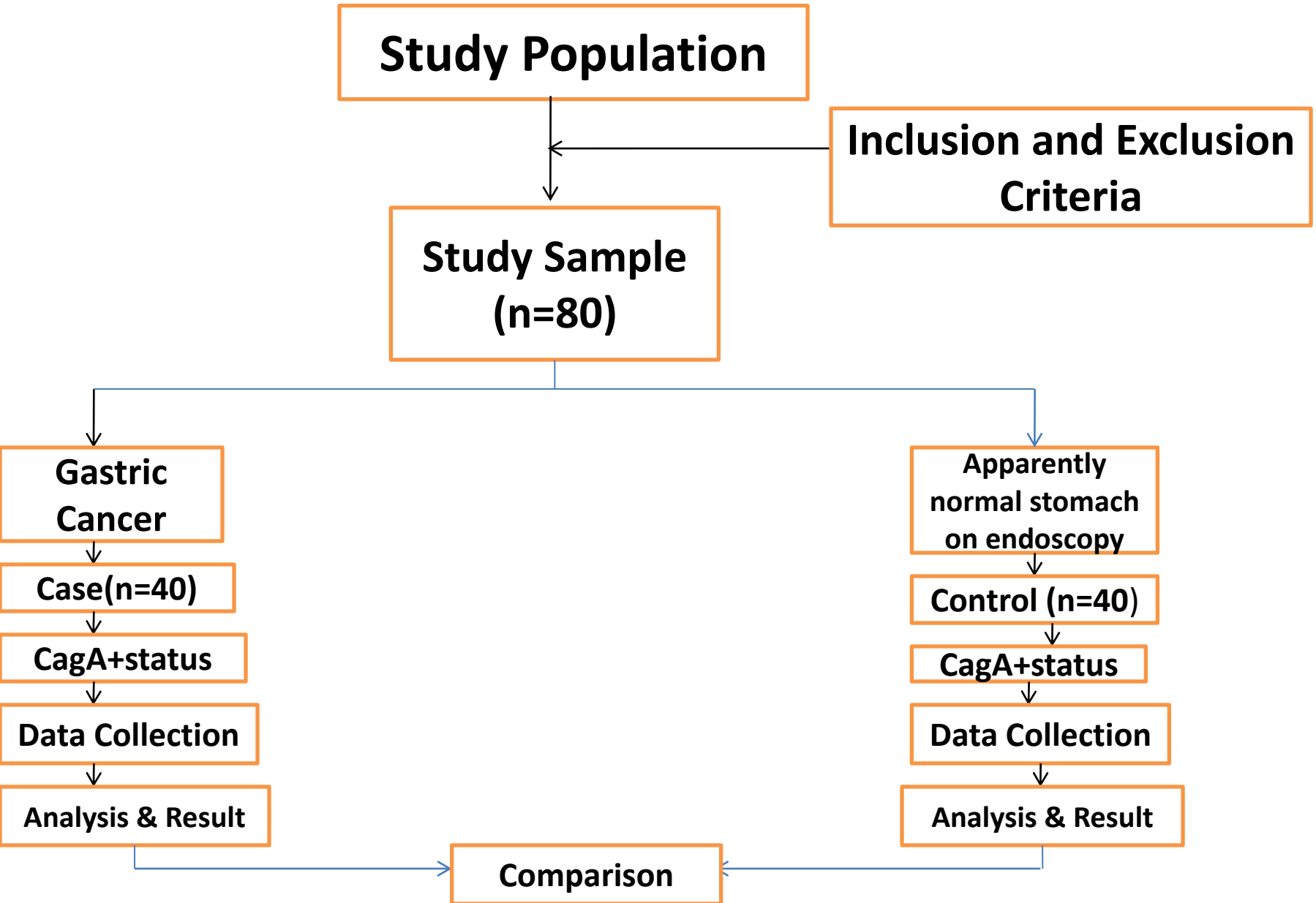
Case- Diagnosis had **no histopathological confirmation**, upper GI hemorrhage, *H.pylori* eradication therapy with antibiotics within last 4 weeks of endoscopy.

Control- Patients with upper GI hemorrhage, *H. pylori* eradication therapy with antibiotics within last 4 weeks of endoscopy and history of subtotal gastrectomy, pregnancy and refusal of upper GI endoscopy.

Study Procedure in brief

The endoscopic examination was performed using video endoscope . 5-7 sample biopsies were taken from the suspected lesion for histopathology with **H&E** stain and 2 samples each from normal area for **CLO** test & histological examination with **Giemsa** stain to detect *H.pylori*. For control group 4 samples were collected for **CLO** test & for **Giemsa** stain to detect *H.pylori*. Blood (5ml) was collected with 10 ml disposable syringe maintaining all aseptic measure from both case & control to do serological tests (**Detection of antibody against *H.pylori* & cagA antibody via ELISA method**).

Flow chart of the steps of study



Results

- **A total of forty cases with carcinoma stomach and another forty patients with apparently normal stomach regarded as control were selected during the study period from 1st January 2011 to 31st December 2012 according to inclusion and exclusion criteria.**

The outcome of the study

Distribution of site of involvement in gastric carcinoma patients (n=40)

Site of involvement	Frequency	Percentage
Antrum and pylorus	15	37.5
Fundus	2	5.0
Body	4	10.0
Body and fundus	6	15.0
Body and antrum	10	25.0
Antrum, body and fundus	3	7.5
Total	40	100.0

Distribution of histopathological types of gastric carcinoma (n=40)

Types on the basis of Histopathology	Percentage(%)
INTESTINAL	72.5%
DIFFUSE	27.5%

Distribution of patients according to various tests for *H.pylori*

Patients group	Rapid Urease test or CLO Test		Giemsa Stain for <i>H.Pylori</i> (Histology)		ELISA for <i>H.pylori</i>	
	Positive	Negative	Positive	Negative	Positive	Negative
Case (n=40)	23	17	27	13	40	None
Control(n=40)	19	21	19	21	40	None

Distribution of patients by **CagA** status

CagA status	Case (n=40)	Control (n=40)	Odds Ratio (95% of CI)	p value
Positive	37 (92.5)	35 (87.5)	1.762	*p=0.456
Negative	3 (7.5)	5 (12.5)	(0.392–7.929)	

Result summary

There was no significant association between case and control in relation to **CagA** status. Though hypothesis of this study is being not proved there are sufficient paper in favor of it which state that either **CagA** positivity or *H.pylori* is not the sole agent of Gastric carcinoma. However, it will be left open for the future research to find out the exact relationship of **CagA** positvity and Gastric carcinoma.

THANKS FOR YOUR PATIENCE...

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