



## Review Article

### **PREVALANCE OF HELICOBACTER PYLORI INFECTION IN DYSPEPTIC PATIENTS**

**PANDEY MC<sup>1</sup>, KUMAR AMIT<sup>2</sup>, BANSAL SP<sup>3</sup>**

<sup>1</sup> Associate professor of surgery, Autonomous state medical college, Ayodhya U.P.

<sup>2</sup> Assistant professor of surgery MSD Autonomous state medical college, Bahraich U.P.

<sup>3</sup> Associate professor of surgery, Autonomous state medical college, Ayodhya U.P

**Corresponding author: Dr. PANDEY MC, Associate professor of surgery, Autonomous state medical college, Ayodhya U.P. India. Orcid: 0000-0001-9473-3157**

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#### **ABSTRACT:**

**BACKGROUND-** Esophagogastroduodenoscopy (EGD) is widely available and relatively safe procedure (1). Dyspepsia refers to upper abdomen symptoms due to abnormality in upper gastro-intestinal tract which has wide range of symptoms and it is most common abdominal complaint in general population of India. In various studies and research it is found that H. Pylori is the primary cause of dyspepsia and gastric cancer. **AIMS AND OBJECTIVE-** To study the prevalence of HBP in patients with dyspepsia in upper G.I. Endoscopy and to study the role of HBP in dyspepsia and gastric cancer. **MATERIAL AND METHOD-** In this retrospective study we evaluate the role of H. pylori in dyspeptic patients for diagnosis of chronic gastritis and to differentiate it from non ulcer dyspepsia. Total 220 patients were evaluated for this study all patients were subjected to upper G.I. endoscopy and biopsies taken with RUT kit. Positive test was indicated by change in colour from yellow to pink. **RESULT-** out of 220 patients of dyspepsia 45% were positive for HBP. In ulcerative dyspepsia 32% ulcer seen in gastric area and 85% in duodenum. 29% patients with symptoms of dyspepsia had normal endoscopy but positive for HBP. 40% patients were of non ulcerative dyspepsia. **CONCLUSION-** From this present study it is evident that HBP is associated with peptic ulcer disease and may have role in the etio-pathogenesis of peptic ulcer disease and carcinoma stomach.

**KEYWORDS-** Rut, H.Pylori, Dyspepsia

#### **INTRODUCTION**

HBP is a gram negative microaerophilic bacterium that is present in about 50% of the population of the world that causes inflammation of the stomach. Chronic dyspepsia due to HBP causes metaplastic changes in the Gastric mucosa. Upper G.I. endoscopy is relatively safe procedure and widely available in western countries for decade but in developing countries like India it is not easily available for the most of the dyspeptic patients. Endoscopy is the essential in the classification of the patient's condition as organic or functional. In dyspeptic patients upper G.I. endoscopy should be the first line



of investigation with biopsy. In 1983 Warren and Marshal isolated a new curved Gram negative bacillus from the gastric mucosa of patients with active chronic gastritis, bacteria that was first named *Campylobacter pylori*, then *Campylobacter pylori* and finally

*Helicobacter pylori* (*H. pylori*) (2) *H. Pylori* is a gram negative bacteria which causes inflammation of the stomach and very common in developing countries and associated with low socio-economic class of population. *H.pylori* infection is known to be among most common human infection world wide. Approximately 50% of the world population is infected with *H.pylori* (3).

Production of the ammonia by this urease producing bacteria and release of bio chemicals such as proteases vacuolating cytotoxin A and phospholipases contribute significantly to its inflammatory and carcinogenic potential.(4)

**METHOD-** In this study all patients who underwent for upper G.I endoscopy for dyspepsia between period of February 2017 to February 2020 in endoscopy unit of T.S.M. medical college Lucknow and state medical college ayodhya were included both from inpatient as well as outpatient ward.

The data were analysed using statistical package for the social sciences version 14 (SPSS Inc; Chicago IL, USA) for window. Chi-square test with fisher's exact test used where applicable.

## **INCLUSION AND EXCLUSION**

### **Inclusion Criteria**

1. Patients above 18 years of age.
2. Patients having chronic upper abdominal pain.
3. Patients diagnosed as having chronic gastritis, gastric/duodenal ulcers on gastro-duodenoscopy
4. Patients who are known cases of chronic pancreatitis.
5. Patients on NSAID's for more than one month duration.
6. Patients who have received Anti-*Helicobacter pylori* treatment.

### **Exclusion Criteria**

1. Patients below 18 years of age.
2. Pregnant and Lactating women.
3. Patients with oesophageal growths on endoscopy
4. Unwilling or unfit patients for upper gastrointestinal endoscopy
5. Patient having acute abdominal pain.

## **DESIGN – Retrospective study**

**STUDY PERIOD – Two years**

**SAMPLING-** This comparative study evaluates 220 dyspeptic patients who underwent upper G. I. endoscopy.

**STUDY POPULATION –** In this study minimum age of the patient was 18 years and maximum age was 72 years.

The patients were asked for fast 8 hours prior to the procedure. All the patients were informed about procedure and written informed consent were taken from them.

Lignocain 10% spray was given to the patients 5 minutes before the procedure and left lateral position was made on the couch. Pulse oxymeter and monitor with B.P. cuff were placed in each patient.

After introducing scope all the anatomical region of oesophagus, stomach and 1<sup>st</sup> and 2<sup>nd</sup> part of duodenum examined and at least 4 mucosal biopsies were taken from antrum of the stomach and from suspicious areas for histopathological examination of H. pylori.

**RESULT :**

In this study all 220 dyspeptic patients had history of upper abdomen pain or epigastric pain out of them 96 patients was positive for HBP (43%). In 220 dyspeptic patients 73 patients had vomiting and nausea out of them 28 patients were positive for HBP (38.3%). 10 patients gave history of loss of appetite out of them 4 were positive for HBP (40%). Anaemia was there in 28 patients and 13 were positive for HBP (46%). 11 patients had melena out of them 6 were positive for HBP (54.5%). On examination 110 patients had epigastric tenderness out of them 70 were positive for HBP (63.63%).

**TABLE: 1 clinical presentation of dyspeptic patients and HBP infection**

Clinical Presentation	No. of Cases	H.Pylori Posi	Percentage
Pain in abdomen	220	96	43.63
Nausea/Vomiting	73	28	38.35
Loss of Appetite	10	04	40
Anaemia	28	13	46.42
Hemetemesis	12	05	41.66
Melena	11	06	54.54
Epigastric Tenderness	110	70	63.63



In this study various pathology were diagnosed in upper GI endoscopy and tested positive for H. pylori infection.

There were 124 cases of gastritis or Duodenitis and out of them 66 were found positive for HBP (53%). 12 patients also found to have gastric ulcer and out of them 8 were positive for HBP (66%).

There were 6 cases of duodenal ulcer out of them 5 were positive for HBP (83.33%). There were 4 who diagnosed with gastric carcinoma in histopathology examination found 3 out of them positive for HBP (75%). And 74 patients had normal endoscopy out of them 26 were found to be positive for HBP (35%).

**TABLE: 2 Various pathology during gastroduodenoscopy and HBP infection**

Cases	Total No. of Patients	H.pylori Positive	Percentage
Gastritis/ Duodenitis	124	66	53.22
Gastric Ulcer	12	08	66.66
Duodenal Ulcer	06	05	83.33
Ca Stomach	04	03	75.00
Normal Study	74	26	35.10

Out of 220 patient of dyspepsia there were 140 male and 80 females with age ranging from 18-70 years. Out of 220 dyspeptic patients 121 were diagnosed with H. pylori infection (55%) with 140 male and 80 female patients.

In this study out of 72 smokers 46 were positive for H.pylori as compare to 148 non smokers where 75 were positive for H. pylori and Odd ratio was 0.79. So incidence of h. pylori infection is 0.79 times more in smokers.

**TABLE 3: H.pylori infection in smoker and in non smokers**

GROUP	No.	HBP +ve
Smokers	72	46
Non Smokers	148	75
<b>Total</b>	<b>220</b>	<b>121</b>

Out of 220 patients 18 were using NSAID for more than 2 weeks out of them 6 were positive for H.pylori infection as compare to 202 patients who did not used NSAID out of



them 115 were positive for H.pylori. The odd ratio was 1.7 so there was 1.7 times more incidence of H.pylori infection in NSAID user when comparing to non NSAID user.

**TABLE 4 : Comparison between NSAID & non NSAID group**

GROUP	No.	HBP +ve
NSAID group	18	06
Non NSAID group	202	115
<b>Total</b>	<b>220</b>	<b>121</b>

We divided patients in two age groups more than 40 years and less than 40 years. There were 45 patients below 40 years and out of them 25 were H.pylori positive and in 175 patients of more than 40 years 96 were positive for H. pylori infection.

**TABLE: 5 Age group comparison**

Age group	No.	HBP +ve
< 39 yrs	45	25
> 40 yrs	175	96
<b>Total</b>	<b>220</b>	<b>121</b>

Effect of PPI's in RUT test is also evaluated .While comparing to proton pump inhibitors user with non PPI's user the ODD ratio is 1.4. in 39 PPI user 16 were positive for H. pylori infection while 181 non PPI user 105 were positive for H. pylori infection

**TABLE: 6 HBP positive in PPI's & non PPI's user**

GROUP	No.	HBP +ve
PPI User	39	16
NON PPI	181	105
<b>Total</b>	<b>220</b>	<b>121</b>

So there was 1.4 times more incidence of H.pylori infection in non PPI user group than PPI user group.



## **DISCUSSION-**

This study was done to establish the prevalence of *H. pylori* among the patients of dyspepsia. Prevalence of *H. pylori* infection can vary depending on socio-economic status of the population. It is anticipated that the prevalence of the *H. pylori* infection will decline as sanitary condition improves and it is also reflection of the wide spread use of antibiotics (5).

The infection rate is by and large higher and begins at an earlier age in developing countries as compared to developed countries demonstrating an important role of socioeconomic status in its transmission(6). *Helicobacter pylori* infection has been reported by several studies to be high in developing countries and associated with low level of education, low social economic status and poor sanitation. (7, 8) The route of spread of *helicobacter* infection is mouth to mouth or faecal to oral. Siblings and parents plays important role in transmission.

The risk factors for acquiring the infection include low socioeconomic status (9, 10) increasing number of siblings (11) and having an infected parents specially an infected mother (12)

In the country like India where services like endoscopy is limited and it is not possible to advice endoscopy to every dyspeptic patient so it is important that clinician should know the cause of dyspepsia.

There are several risk factors for dyspepsia including cigarette smoking, non steroidal anti-inflammatory drugs and anti platelets medicines. HBP bacteria are a major causative agent in development of gastric and duodenal ulcer as well as gastric cancer. The international agency for research into cancer has classified *H. pylori* as a class 1 carcinogen which is in the same class as cigarette smoking.(13,14,15)

The term dyspepsia is a Greek word which is used by the patient to demonstrate the upper abdominal symptoms including epigastric pain and burning, feeling of fullness after meal, abdominal distension nausea and vomiting. Dyspeptic symptoms are common and cause considerable direct (visit to the doctor, medications etc.) and particularly indirect cost (time off work) (16). Clinical manifestation occurs only in approximately 2 per cent cases. (17)

Various tests are available to diagnose the *helicobacter pylori* infection. Diagnostic test for detection of *H. pylori* infection has been divided into two groups. In first group of test which are used before antimicrobial therapy and in second group of test are used after the antimicrobial therapy for *H. pylori* infection. Culture, histopathology, PCR and serology are in first group of tests and urea breath test (UBT) and stool antigen test in second group of tests (18). some author believe that none of the diagnostic test for *H.pylori* is the





gold standard and result of more than one test could be acceptable for confirming bacterial infection(19). rapid urease test (RUT) is inexpensive, rapid and easily available method. Endoscopy with RUT is preferred method for diagnosis of HBP and has specificity of 95-100 per cent and sensitivity of 85-95 per cent. Some author have reported urease tests with specificities between 98 and 100 % and sensitivities between 64 and 98%, speed being the great difference between the methods of analysis.(20)

The effect of PPI's in RUT test is also evaluated in this study. It has been demonstrated that PPI's and bismuth exhibit bactericidal activity against H.pylori (21). PPI's can cause rise in the stomach pH, leading to accumulation of ammonia produced by H.pylori urease and suppression of bacterial viability. (22)

H. pylori infection is an independent risk factor for NDAID-induced ulcers and ulcer bleeding (23, 24). Eradication of H. pylori before starting NSAID treatment reduces the development of ulcers and risk of ulcer bleeding (25, 26). In present study it is evident that there is more chance of H.pylori infection in NSAID user as compare to non NSAID user.

## **CONCLUSION**

This study was conducted to establish the role of helicobacter pylori in acid peptic disease by endoscopic biopsy from antrum of the stomach in 220 dyspeptic patients. Mucosal injuries caused by NSAID and smoking along with PPI prophylaxis are considered to find out association between H.pylori and dyspepsia. Many other studies established the association between chronic gastritis and H. pylori infection. So from present study it is evident that H. pylori infection may have a role in etiopathogenesis of peptic ulcer disease and carcinoma of stomach.

## **DISCLOSURE :**

The author declares no conflict of interest and no source of funding.

## **AUTHOR CONTRIBUTION:**

M.C. Pandey and Amit Kumar designed the research study and analyzed the data. M.C. Pandey wrote the paper and S.P. Bansal, Amit Kumar gave substantial contribution to the acquisition of data. All authors approved the final version.

## **ETHICAL APPROVAL:**

This study was approved from the research ethics committee of autonomous state medical college Ayodhya.



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