

Prevalence of *Helicobacter pylori* Infection in Type 2 Diabetes Mellitus Patients in Central India.



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Abstract

Helicobacter pylori infection is one of the forerunners in a number of people infected with gastrointestinal disorders. Single point cross-sectional observational study was done to evaluate the association of *Helicobacter pylori* infection with diabetes. Eighty diabetic patients (49 males, 31 females 55.3 ± 12 years) were enrolled in the study. 25(31%) patients were positive for *H. pylori* and rest 55(69%) patients were negative for the test. There was no gender difference and the awareness of diabetes and its treatment was same in both the groups. Duration of diabetes, glycaemic control and awareness of disease and treatment has got an association of *H. Pylori* infection and type 2 diabetes. Better designed large studies are required to establish the cause and association.

Key Words: *Helicobacter pylori*, Diabetes Mellitus,

Introduction

Prevalence of *Helicobacter pylori* infection with diabetes mellitus patients generates a lot of interest and newer insights in recent years (Ciortescu *et al*, 2009). In the last 2-3 years there are a lot of research publications showing association and non association of *H. Pylori* infection with glycemic control in diabetics (Dai YN *et al* 2015). Bajaj *et al* (2014) stated that socioeconomic status, poor hygiene and lowering of immunity amongst diabetic patients has been an explanation for the association with type 2 diabetes. They further stated that Dysautonomia leading to poor gastric emptying creating a favorable condition for the infection. According to Zhou X *et al* () suggested that *H. Pylori* infection induced hepatic insulin resistance signaling pathway. This newer concept can lead to better targets for improving insulin resistance in future. There are reports of increased metformin induced gastritis in infected patients leading to change of therapy in type 2 diabetes (Huang, *et al*, 2015)

The association of metabolic syndrome, insulin resistance and *H. pylori* infection in Type 2 diabetes is a metabolic parameters in elderly population has been extensively studied by Sotuneh, *et al*. (2014). India is going to be a diabetes capital by 2030 hence planning of this of illness in India in general and central India in particular is required. Keeping this in account an attempt has been taken to correlate the association of *Helicobacter pylori* infection and Type 2 diabetes.

Material and Methods

This single point cross-sectional study was conducted at Hamidia Hospital, Bhopal from November 2014 to December 2014. In this study, 80 patients (aged ≥ 18 years)

who were diagnosed to have diabetes as per American Diabetic Association (ADA; 2012) criteria were studied. Patients with type 1 diabetes, history of intake of antibiotics, proton pump inhibitors, H2 receptor blockers, or antacids in last 6 weeks and with past and present evidence of active gastrointestinal bleeding, jaundice, or post gastric surgery were excluded from the study. Diabetics were tested for *H. pylori* infection by ELISA based test. All routine investigations were done. To know the awareness of diabetes and treatment questionnaire was prepared and was filled by the patient. Data was analyzed with the appropriate statistical methods. Chi square test was used to calculate the p value using SPSS software. Tests were considered significant if p values were less than 0.05.

Results

Eighty diabetic patients (49 males, 31 females 55.3 ± 12 years) reporting at Hamidia Hospital outdoor were enrolled in the study. 25(31%) patients were positive for *H. pylori* and rest 55(69%) patients were negative for the test. (Table 1) So two groups were formed i.e. *H. Pylori* positive and negative. The two groups were comparable in terms of FBS, PPBS levels (Table 2). The *H. Pylori* positive group had a longer duration of diabetes than the negative group but the difference was not statistically significant (p=0.27). The age of *H. Pylori* positive cases were in the range of 50-70 years of age (Table 3). The incidence of positivity increased with age. The number of positive cases were more in males (n=18, 36.7%) than females (7, 22.6%) p=0.18 (table 1). When compared with HbA1C levels mean HbA1C was higher in the *H. Pylori* positive group 7.92 ± 2.1 vs 7.51 ± 1.5, p=0.34 (Table 4). Sugar levels at the time of diagnosis was known to 43 (33.8%) patients 19(34.5%) in *H. Pylori* positive patients

and 16(64%) in the negative group(p=0.014)Table 5. When asked about the details of medication 6(10%)in the negative and 3(12%)in the positive group remembered the details of medication(p=0.89)Table 6.The awareness of fundus examination was21(38.2%) in the negative group and 15(60%) in the positive group (p=0.69)Table 7.

Discussion

Helicobacter pylori (H. pylori) is the main etiologic agent of gastritis, peptic ulcer and gastric cancer. It is the most common chronic infections in Patients with diabetes mellitus. Many studies have evaluated the prevalence of *H. pylori* infection in diabetic patients and the possible role of this condition in their metabolic control. Some studies found a higher prevalence of the infection in diabetic patients and a reduced glycaemic control, while others did not support any correlation between metabolic control and *H. pylori* infection as suggested by Ciortescu *et al*, and Ojetti *et al*).The present study confirms the observation of these authors.There are meta analysis supporting the association and refuting the association of *H Pylori* and diabetes. This was single point one time crosssectional observational study . The number of patients were small and there were two groups *H Pylori* positive and negative and the doscopy and tissue biopsy was not done. The association of infection in prolonged diabetic patients was found to be 8.64 ± 8.4 in positive group and 6.64±6.9 years. Similar association has been found in many previous negative group acted as control. The analysis with respect to upper gastrointestinal studies is in conformity to the work of Quadri *et al* () and Dai *et al*(). Long duration of disease, poor hygiene and poor glycaemic control has been associated with diabetes in positive cases and confirms the observations of Marrollo *et al* () and Jmaa *et al*().

There has been association of awareness of disease and the association of *H.Pylori* positivity in cases of diabetes (Sotuneh N). When tested in terms of awareness of blood sugars at the diagnosis, knowledge of medicines prescribed, and fundus examination there was no statistical difference noticed in our study. The association of the *H. Pylori* infection and diabetes needs to be addressed in the light of extra gastrointestinal complications and the prevalence of diabetes in our community. Better designed systematic double blind randomized trials addressing the issue is the need of hour. Infection leading to insulin resistance was not studied in our study. There is a need to study the association of anti *H.Pylori* treatment and its effect on diabetes.

Conclusions - Association of *H. pylori* infection and diabetes is well accepted fact. the duration of disease and poor glycaemic control has got association with infection. There is a need for better designed randomized control trials to clear doubts about the association , diagnosis and treatment.

SEX	<i>H. pylori</i> positive	<i>H. pylori</i> negative	Total
Female	7	24	31
	22.6%	77.4%	100.0%
Male	18	31	49
	36.7%	63.3%	100.0%
Total	25	55	80
	31.3%	68.8%	100.0%

Chi square =1.7, p =0.183 [not significant difference]

Table 1. Patients distribution according to gender and H. pylori status:

Variables	<i>H. pylori</i> positive (25)	<i>H. pylori</i> positive (55)	p value
Age (years)	55.6± 11.5	55.36± 11.6	0.93
FBS	136.27± 37.5	134.2± 40.3	0.89
PPBS	205.32 ± 101.6	190.85± 77.9	0.48
Duration of DM	8.64 ± 8.4	6.64± 6.9	0.27
HbA1c level	7.92 ± 2.1	7.51± 1.5	0.34

Data expressed in mean ± Standard deviation, Student t test used for comparing the mean, P value considered significant if < 0.05

Table 2: H. pylori infection among type 2 diabetic patients in relation to laboratory data

Age groups (years)	<i>H.pylori</i> positive	%	<i>H. pylori</i> negative	%
30-39	1	4.0	4	7.3
40-49	7	28.0	13	23.6
50-59	10	40.0	20	36.4
60-69	2	8.0	10	18.2
> 70	5	20.0	8	14.5
Total	25	100.0	55	100.0

Table 3 Patients' distribution according to age and H pylori status

HbA1c Levels	<i>H. pylori</i> positives (25)	<i>H. pylori</i> Negatives (55)	Total
≤ 7	13 (33.3%)	26(66.7%)	39
7.1 - 8.0	4 (20%)	16(80%)	20
>8.0	8 (38.1%)	13(61.9%)	21
Total	25 (31.2)	55(68.8%)	80

Table 4: HbA1C levels among *H. pylori*-positive and -negative cases

<i>H. pylori</i>	No	Yes	Total
Negative	36	19	55
	65.5%	34.5%	100.0%
Positive	9	16	25
	36.0%	64.0%	100.0%
Total	45	35	80
	56.3%	43.8%	100.0%

Chi square=6.1, p-0.014 [significantly higher no of h pylori positive cases gave positive response of this question]

Table 5. Are you aware of blood sugar levels at the time of diagnosis Yes/No ?

<i>H. pylori</i>	No	Yes	Total
Negative	49	6	55
	89.1%	10.9%	100.0%
Positive	22	3	25
	88.0%	12.0%	100.0%
Total	71	9	80
	88.8%	11.3%	100.0%

Chi square=0.02, p-0.89 [not significant]

Table 6. Do you know about the medicines you are taking for diabetes Yes/No ?

<i>H. pylori</i>	N0	Yes	Total
Negative	34	21	55
	61.8%	38.2%	100.0%
Positive	10	15	25
	40.0%	60.0%	100.0%
Total	44	36	80
	55.0%	45.0%	100.0%

Chi square=3.3, p-0.069 [not significant]

Table 7. Did you got your eyes(Fundus) checked for DM in last 1 year Yes/No?

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