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A QUESTIONNAIRE BASED SURVEY ON AWARENESS AND STUDY OF HELICOBACTER PYLORI INFECTION AND TYPE 2 DIABETES IN CENTRAL INDIA

Sachin Chittawar¹, Rakesh Singh Jagat², Jeetendra Sharma³, Vijan Rai⁴, K. K. Kawre⁵,
Ram Singh Maniram⁶

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ABSTRACT: Awareness of Diabetes in India is the need of hour. Questionnaire based survey to assess the awareness was done. Helicobacter Pylori infection is one of the forerunners in the number of people infected and gastrointestinal disorders. Single point cross-sectional observational study was done to evaluate the association of Helicobacter Pylori infection and 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.

KEYWORDS: Helicobacter Pylori, Diabetes.

ABBREVIATIONS:

H Pylori-Helicobacter Pylori.

Diabetes-DM.

INTRODUCTION: As per the World Health Organization (WHO) report India is going to be one of the forerunners in the world with over 32 million diabetic patients and this number is projected to increase to 79.4 million by the year 2030.¹ Recent survey had shown a projection of increase in diabetic burden by 119% by 2030.² Diabetes now affects a staggering 10-16% of urban population and (5-8%) of rural population in India.³ Better understanding of disease pathogenesis invokes a lot of collateral thinking which generates new association of factors giving newer insights in the subject. Helicobacter Pylori infection is one of the forerunners in the number of people infected and gastrointestinal disorders.^{4,5}

Extra gastrointestinal manifestation of H .Pylori infection has generated a lot of interest in recent years.⁶ In the last 2 -3 years there are a lot of research publications showing association and non-association of H Pylori infection and diabetes.^{7,8,9} Issues of poor socioeconomic status ,poor hygiene and lowering of immunity amongst diabetic patients has been an explanation for the association.¹⁰

There are reports igniting newer point of views i.e. H Pylori infection induced hepatic insulin resistance by the c-Jun/miR-203/SOCS3 signaling pathway. This newer concept can lead to better targets for improving insulin resistance in future.¹¹ Dysautonomia leading to poor gastric emptying creating a favorable condition for the infection has been one of possible explanations.¹⁰ there are reports of increased metformin induced gastritis in infected patients leading to change of therapy in type 2 diabetes.¹²

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The association of metabolic syndrome, insulin resistance, H Pylori infection and Type 2 diabetes is becoming a debatable issue.¹³ there is very little data on the level of awareness and prevalence about diabetes and H pylori infection in developing countries like India. Such data is important to plan the public health program.

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 $\pm$ 12years) 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 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%) then 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 $\pm$ 2.1 vs. 7.51 $\pm$ 1.5, $p=0.34$ (Table 4).

Burning in epigastrium, belching, recurrent vomiting and gas formation was in 18(29.5%) in positive cases and 43(70.5%) in H Pylori negative cases ($p=0.54$). History of melena was 6(42.9%) in positive cases and 8(57.1%) in H Pylori negative cases ($p=0.31$). 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 was 21(38.2%) in the negative group and 15(60%) in the positive group ($p=0.69$) Table 7.

Six patients (27.3%) positive for H Pylori had loss sensation in foot and 16(72.7%) in negative cases ($p=0.64$). History of high blood pressure was in 9(28.1%) in positive cases, 23(71.9%) in negative cases ($p=0.62$). History of heart disease was 4(40%) in positive cases and 6(60%) in negative cases. History suggestive of postural hypotension was 9(30%) in positive group, 21(70%) in negative cases. Intermittent claudication in 12(33.3%) positive cases 24(66, 7%) in negative cases ($p=0.72$).

History of erectile dysfunction was 4(50%) in both groups ($p=0.22$). Family history of diabetes, thyroid illness, alcohol intake, and smoking was comparable in both groups ($p=0.43$).

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Questions regarding compliance of drug intake, regular tests daily exercise had comparable results and had no statically difference.

DISCUSSION: Diabetes is becoming a big challenge to the health policy makers, epidemiologist, clinicians and administrators in India. India is being projected as Diabetes capital of world by 2030. Awareness of diabetes, treatment of disease, screening for complications and their prevention is the need of the hour. Helicobacter pylori (H. pylori) is one of the most common chronic infections worldwide, is the main etiologic agent of gastritis, peptic ulcer and gastric cancer.

Patients with diabetes mellitus are often affected by chronic infections. 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.^{4,5} There are meta-analysis supporting the association and refuting the association of H Pylori and diabetes.

This was single point one time cross sectional observational study. The number of patients were small and there were two groups H Pylori positive and negative and the negative group acted as control. The analysis with respect to upper gastrointestinal endoscopy and tissue biopsy was not done. The association of infection in prolonged diabetic patient's 8.64 ± 8.4 years in positive group and 6.64 ± 6.9 years. Similar association has been found in many previous studies.^{6,7} Long duration of disease, poor hygiene and poor glycaemic control has been associated with diabetes in positive cases.^{8,9}

There has been association of awareness of disease and the association of H. Pylori positivity in cases of diabetes.¹³ 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:

Awareness of Diabetes is the need of hour in India: 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	H pylori Positive	H pylori 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%

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

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

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Variables	H. pylori positive (25)	H. pylori 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

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

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

Age Groups (years)	H pylori Positive	%	H pylori 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	H Pylori Positives (25)	H Pylori 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

H-PYLORI	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%

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

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

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H-PYLORI	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%

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

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

H-PYLORI	NO	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%

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

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

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AUTHORS:

1. Sachin Chittawar
2. Rakesh Singh Jagat
3. Jeetendra Sharma
4. Vijan Rai
5. K. K. Kawre
6. Ram Singh Maniram

PARTICULARS OF CONTRIBUTORS:

1. Assistant Professor, Department of General Medicine, GMC, Bhopal.
2. Assistant Professor, Department of General Medicine, GMC, Bhopal.
3. Post Graduate Resident, Department of General Medicine, GMC, Bhopal.

FINANCIAL OR OTHER

COMPETING INTERESTS: None

4. Assistant Professor, Department of Gastroenterology, GMC, Bhopal.
5. Assistant Professor, Department of General Medicine, GMC, Bhopal.
6. Professor, Department of General Medicine, GMC, Bhopal.

NAME ADDRESS EMAIL ID OF THE CORRESPONDING AUTHOR:

Dr. Sachin Chittawar,
E 9/7, Charimli, Bhopal-462013.
Madhya Pradesh.
E-mail: chittawarsachin@gmail.com

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