

## ORIGINAL ARTICLE

## HELICOBACTER PYLORI INFECTION AMONG GENERAL POPULATION AND PATIENTS OF MYOCARDIAL INFARCTION

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**Background:** Evidence showed a role of *Helicobacter pylori* infection in the aetiology of myocardial infarction. *Helicobacter pylori* is more prevalent in the developing than the developed countries, the sero-prevalence in Pakistan being about 58–60%. **Methods:** A total of 200 subjects were included in this study. They were divided into two groups. Group A (n=150) consisted of admitted patients of myocardial infarction after the first-time myocardial infarction. Group B (n=50) were apparently healthy adults. Mean age of the subjects in the two groups was non-significantly different and ranged between 40 and 65 years. About 10 ml of venous blood was drawn in a syringe, left to clot, and serum was separated by centrifugation. *H. pylori* antibodies were estimated using ELISA. **Results:** In group A, 68.7%, and in group B 44% patients showed IgG antibodies for *H. pylori*. The comparison of the percentages of *H. pylori* positive cases in group A and group B was statistically significant. In our study, 44% of apparently normal, healthy population was shown to have antibodies to *H. pylori*. **Conclusion:** A significantly increased percentage of subjects suffering from myocardial infarction showed *H. pylori* antibodies in their sera compared to apparently normal, healthy subjects.

**Keywords:** Myocardial infarction, *Helicobacter pylori*, sero-prevalence

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## INTRODUCTION

*Helicobacter pylori* infections are the most common human infections worldwide. These are more prevalent in developing than the developed countries and the prevalence is directly proportional to the economic conditions in the country.<sup>1</sup> Prevalence of *H. pylori* infection is declining rapidly in the developed countries like USA. But 30–40% of the population is still found to be infected. More number of non-whites and immigrants are infected compared to the whites.<sup>2</sup> Humans are infected during infancy and childhood and mode of its transmission is from person to person.<sup>3</sup>

The studies published recently show a high prevalence of *H. pylori* infection in Asia. It is ranging from 54 to 76 percent in different countries of the region.<sup>4–10</sup> In Pakistan, the studies showing the prevalence of *H. pylori* are scanty but some earlier studies showed a sero-prevalence of 58–60%.<sup>11</sup>

Microbiologically, *H. pylori* are gram negative, spiral shaped, motile and flagellate bacilli. They reside underneath the gastric mucus membrane adjacent to the gastric epithelial cells. They measure from 3.5 to 0.5  $\mu\text{m}$  and are non-spore forming.<sup>12</sup> Initially the *H. pylori* infection was found to be associated with gastro-duodenal diseases. Later studies have shown its possible role in several other diseases, other than the gastrointestinal diseases.<sup>12</sup> Some studies have reported its potential role in the occurrence of cardiovascular diseases. The Cag A-positive strains of *H. pylori* were shown to be implicated.<sup>14–16</sup>

This study was carried out to find out the prevalence of *H. pylori* infection in our population and

to demonstrate any association between *H. pylori* infection and the myocardial infarction.

## SUBJECTS AND METHODS

This study was carried out in the Department of Microbiology, Nishtar Medical College, Multan in collaboration with the Ch. Pervaiz Elahi Institute of Cardiology, Multan. Permission was obtained from the Institutional Research Ethics Committee. A total of 200 subjects were included in this study. They were divided into two groups. Group A (n=150) consisted of the patients of myocardial infarction which were admitted to the CPE-IC after the first myocardial infarction. Among them 121 were males and 29 were females. Group B (n=50) consisted of 50 apparently healthy, age matched, normal subjects. There were 38 males and 12 females in this group. Mean age of the subjects in the two groups ranged from 40 to 65 years.

History and general physical examination was done on every patient. The information was entered into a proforma. Blood samples were collected from each subject in the morning after an overnight fasting. About 10 ml of venous blood was withdrawn into a syringe adopting safe aseptic measures. The blood was transferred to a clean, sterile centrifuge tube and it was allowed to clot. The clotted blood was then centrifuged at 3,000 RPM. Serum was separated and was stored in a micropipette at  $-20\text{ }^{\circ}\text{C}$  for subsequent analysis of *H. pylori* antibodies by using ELISA method.

The data were entered into the proforma. Percentages of *H. pylori* positive cases were calculated on the basis of the antibodies detected in the sera of subjects. The data parameter percentages were compared and  $p < 0.05$  was considered significant.

## RESULTS

Table-1 shows the gender-wise distribution of subjects in the two groups. Group A consisted of 121 males and 29 females. Group B had 38 males and 12 females. Mean age of the subjects in group A was 52.42 years and mean age of subjects in group B was 51.96 years. The comparison of age of the subjects in the two groups was statistically non-significant ( $p>0.05$ ).

Table-2 shows the percentage of *H. pylori* positive cases in the two groups. In group A, 68.7% showed IgG antibodies for *H. pylori*. In group B, 44% showed IgG antibodies for *H. pylori*. The comparison of the percentages of *H. pylori* positive cases in group A and group B was statistically significant ( $p<0.05$ ).

**Table-1: Gender-wise distribution of subjects**

Group	Males (n=159)	Females (n=41)	Mean Age (Year)
Group A	121	29	52.42
Group B	38	12	51.96

Differences between the two groups were non-significant ( $p>0.05$ )

**Table-2: Helicobacter pylori positive cases (%)**

Group	Positive	Males	Females
Group A	68.7	69.4	65.5
Group B	44*	42.1	50.0

\*Differences between the two groups were significant ( $p<0.05$ )

## DISCUSSION

*H. pylori* usually cause a lifelong infection of the gastric mucosa. In addition, *H. pylori* infections have been shown to be related to coronary heart disease because of some systemic effects. *H. pylori* infection and coronary heart disease are also common conditions of the late middle and old age. *H. pylori* are a major cause of gastric ulcer disease. Its co-morbidity with coronary heart disease is found to be more frequent than expected.<sup>17</sup>

In our study, 44% of apparently normal, healthy population was shown to have antibodies to *H. pylori*. This was less than the previously reported 58–60% *H. pylori* infection in our population.<sup>11</sup> Decreased percentage found in our study may be due to the increased awareness about this infection in relation to the gastric conditions and because of the greater use of antibiotics in gastric conditions.

## CONCLUSION

There is a significantly increased percentage of subjects suffering from myocardial infarction having *H. pylori* antibodies in their sera compared with apparently normal, healthy subjects. This finding points towards the possible association of *H. pylori* infection with myocardial infarction. Further studies are needed to

show any causal relationship between *H. pylori* infection and the myocardial infarction.

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