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Original Article

Incidence of Helicobacter pylori infection in the population of Islamabad

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ABSTRACT

Background: The prevalence of Helicobacter pylori shows the wide variation among developing and developed countries. The main reason to higher prevalence in developing countries is their low basic hygiene, poor diet and improper sanitation. All these factors favor to the spread of H. pylori infection in human population. The prevalence of H. pylori in a specific area shows the level of hygienist of that area. The main focus of study was to estimate the seroprevalence of H. pylori infection in population of Islamabad.

Methods: The study was conducted among 435 clinically suspected patients. Samples were collected and serum was separated. H. pylori 'One Step Test Device' based on immune-chromatographic technique was used for the detection of H. pylori antibodies.

Results: In the tested 435 clinically suspected patients, the subjects were categorized into 2 groups. Male group with 211 patients showed 34 positive cases, while 56 females from second group are positive out of 224. The overall percentages revealed 12.87%, females and 7.80% males as H. pylori positive. Overall there are 20.67% positive and 79.30% negative cases for H. pylori infection. **Conclusion:** The present results showed the prevalence of H. pylori in reported area and confirmed that the prevalence of disease is higher in developing countries.

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Introduction

Helicobacter pylori is a gram-negative, spiral-shaped bacterium that use gastric mucosa for its multiplication [1]. About 50% of the world's population is at risk from the impact of this bacterium. The prevalence of H. pylori shows variation in developed (25-50%) as well as in developing countries (80%) [2]. For example, the developing country India showed great difference as observed in developed nations and more than 50% of population has active colonization by the age of 20 years [3]. H. pylori are viewed as the most widely recognized bacterial infection in the world with an expected 75% of population in developing nation being tainted with organism even at early age and lower in the developed nation (normally less than 40%) with a declining pattern around the world [4.] Several cross sectional studies showed different prevalence regarding to their area. The prevalence of H. pylori in Bangladesh is 92% [5] and 79% in India [6] Household hygiene, drinking water, and sanitation systems have significant effects on prevalence of H. pylori. According to previous investigations, the H. pylori prevalence in people who use water from well was high (92%) in contrast to tap water drinkers (75%). The people using low clean water index (CWI) showed higher (88%) prevalence in contrast to people (30%) using high clean water index (CWI). H. pylori prevalence was also found to be higher (86 versus 70%) among people with low in contrast to high socioeconomic status[7].

Prevalence is also affected by the recurrence of H. pylori infection after its successful eradication and this is common in developing countries in contrast to developed nations [8]. Mostly recurrences in developed countries are considered due to recrudescence (infection with the same strain) and it is due to reinfection (infection with a new strain) in developing countries. [9]

The symptoms of H. pylori infected person include acute gastritis with dyspepsia, epigastric pain, belching, heartburn, nausea and vomiting [10]. Most of the patients infected with H. pylori remain asymptomatic. But many epidemiological studies have indicated strong relationship between H. pylori infection and the existence of gastric mucosa-related lymphoid tissue (MALT) lymphoma [11]. Likewise H. pylori have been connected with colorectal polyps and colorectal disease. The exact mode of transmission from one Individual to another is still unspecific. Several studies reported many potential possible factors causing transmission of the microbe. The Greek population study revealed that high prevalence was detected in parents and siblings of those children's, who are positive for H. pylori in contrast to those lacking H. pylori [12].

symptoms of dyspepsia, epigastric pain, belching, heartburn,nausea or vomiting. For negative control, the individuals without these symptoms (healthy) were enrolled. The study was conducted between January to July, 2014. About 3 ml of whole blood was collected from symptomatic patient by aseptic venipuncture technique in sterile gel test tubes. Serum was separated from blood samples after centrifugation. Sample was stored at 4 °C for future analysis

Then H. pylori 'One Step Test Device' with an immune-chromatographic assay was used for the detection of H. pylori antibodies in suspected serum in accordance to the manufacturer instructions. The result was noted after 10 minutes and appearance of two distinct red lines one at control region (C) and other at test region (T) were observed. The appearance of both control and test line indicate the presence of H. pylori (positive result) and only one red line in control region declare H. pylori negative[15].

Some tests have been used for the diagnosis of the bacterium like Blood Antibody Test, Stool Antigen Test and Carbon Urea Breath test[13]. But the serological method for H. pylori is reliable for people because it is less expensive and also authentic. Since the discovery by Warren in 1983 many kits are now available for finding H. pylori[14] In perspective of this, the present study was designed to estimate the prevalence of H. pylori infections in Islamabad (Pakistan). This specific study area was chosen because it includes both high and low-socioeconomic containing people.

Methodology

This study was designed at Department of Medical Lab Technology, University of Haripur and conducted at Capital Development Authority (CDA), Islamabad, Pakistan. Patient's inclusion criteria were based on symptoms of the disease i.e. the patients with

Results and Discussion

All the 435 clinically suspected people (subjects) for H. pylori were tested. Of these 435 people, 90 were H. pylori positive and 345 were negative for H. pylori antibodies (Figure 1). These 435 subjects were further categorized into two groups, male (211) and female (224). Of the 211 tested males, 34 were reported as positive and 177 were negative for H. pylori antibodies. Similarly 224 females were tested, of which 56 were positive and 168 were negative for H. pylori antibodies (Figure 1). Collectively 90 people from both sexes (groups) were positive and remaining 345 suspected people were found negative for H. pylori antibodies or were normal persons. In between these suspected people, the H. pylori antibodies negative or normal people are 79.30% and the H. pylori antibodies positive people are 20.70%. Of the positive cases, 7.80% male and 12.87% females were reported. The collected data revealed that there is higher prevalence of H. pylori negative people in contrast to H. pylori positive people.

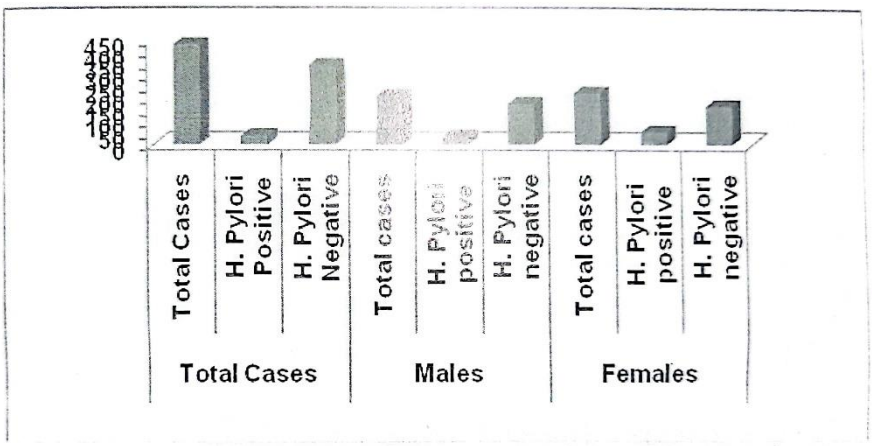

Figure 1: Graph indicating the prevalence of H. pylori in people of Islamabad city.

The present study showed that there is low prevalence of H. pylori infection as compared to other developing countries but still higher than developed ones. The developing country like Bangladesh showed very high (92%) prevalence[16] but on other side it is very low in developed countries like several European countries and Australia

(15.1%)[17]. The variation in the prevalence of H. Pylori infection between different populations suggests that different parameters such as socioeconomic status and environmental factors play a key role in the acquisition of H. pylori infection[18]. Our study is not in accordance to a previous study conducted in Barakaho, Islamabad, Pakistan, which reported that the prevalence in asymptomatic individuals was 73.5% in males and 75.4% in females[19].

Conclusions

The present study concluded that the prevalence of H. pylori positive cases are low in Islamabad, but still higher than the developed cities and countries. It was concluded that the prevalence of H. pylori is greatly affected by the hygienic status, low socio-economic status, improper sanitation system, overcrowding and poor diet quality. This prevalence is helpful in defining the hygienic status of Islamabad, Pakistan. The educational projects on the transmission, causes and prevention from H. pylori infection should be implemented and encouraged to control the risk of spreading H. pylori infection.

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Declaration Of Interest

The authors declare no conflict of interest.

Author's Contribution.

M.K, F.N: Created concept and design of the research, prepared initial draft, collected data, interpreted the results and generated discussion and conclusion.

U.A, AWK, N.H.: Data collection and Proof reading.

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