



ORIGINAL ARTICLE

Seroprevalence survey of Helicobacter Pylori (HP) Infection in Patients with Coronary Artery Disease (CAD) in Iranian Population

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ABSTRACT

The aim of our survey was to detection of seroprevalence of Helicobacter pylori (HP) in coronary artery disease patients (CAD). We examined 192 Patients with coronary artery disease were referred to sayodoshohada hospital, Urmia, Iran. CAD risk factors analyzed included age, diabetes mellitus, lipid profile and demographic conditions. The results of this study showed a high seroprevalence of Helicobacter pylori infection in patients with CAD (87.5%). Our data showed HP infection was correlated with CAD ($P > 0.01$). also HP infection was positively associated with triglyceride level therefore data suggested that HP infection influences some lipid profile changes, and also correlated to C reactive protein (CRP) that is one of the activate systemic inflammation factor, ($p > 0.01$), also associated with elevated blood sugar ($p > 0.01$) that these are substantial risk factors in study population. We notice that further study are needed to clarify the precise role of Helicobacter pylori infection on the development of coronary artery disease.

Key words: coronary artery disease, Helicobacter pylori infection

Received 21.10.2014

Revised 01.11.2014

Accepted 08.12.2014

INTRODUCTION

Helicobacter pylori (H.P) is, a typical microaerophilic bacterium could possibly present in the stomach, and might be contained in other areas of the body. [1-5]. It causes common infection in various communities. Several studies have acknowledged that chronic infections by H.P, might be related to atherosclerosis and vascular heart disease [6-14]. Coronary artery disease (CAD) is the most frequent form of heart disease. World width in both gender is leading reason for death. CAD happens once the supply blood of heart muscle decreased and arteries, become to harden that ultimately generate plaque. This buildup is known as atherosclerosis, since it grows, less blood can flow through the arteries that can cause angina or even a attack. Also During time, CAD cause heart failure. The connection between *H. pylori* and cardiovascular risk factors could be an essential subject to control the incidence of cardiovascular disease [6-8]. Inflammatory means of infectious agents such as for example Helicobacter pylori can be quite a Promoting factor for atherosclerosis. The action of a dynamic inflammatory Phenomenon in atherosclerosis pathogenesis of the coronary circulation is ongoing. The inflammation as a cardiovascular risk factor and HP involvement in other digestive disorders made researchers to judge the HP role in atherosclerosis processes [13-19]. However in different studies HP association with CAD is Contradictory. Inflammatory procedure for infectious agents such as for example HP *could be* a Promoting factor for atherosclerosis. We've also investigated these effects .Our goal in this study were to Determine the seroprevalence of Helicobacter pylori in patients with coronary artery disease and study of inflammatory parameter, IgG antibodies against Helicobacter pylori, and some lipid parameters such as for instance Triglyceride (TG), high density lipoprotein cholesterol (HDL-c), low density lipoprotein cholesterol (LDL-c), Total Cholesterol (TC) in patients with coronary artery disease [3-9,10-23]. Indeed Influence of *H.P* infection on reinforce of CAD complication were studied.

MATERIALS AND METHODS

In order to Study of the Seroprevalence survey of H.P infection in individuals with CAD, we performed a cohort study that was initiated in august 2012, until December 2013, that comprising of 192 CAD patients with mean age of 57.43 ± 11.078 was selected in Urmia Seyedoshohada hospital, Iran. All the patients underwent physical examinations by cardiologist and had a positive angiogram. Permission form for patients was distributed with sufficient descriptions for patients on the study. The Blood samples (4 ml) were collected, and serum separated and stored at -30°C until use. All patients were tested for H. pylori-specific antibodies. H.P Antibodies Levels of immunoglobulin G (IgG) in the serum were assayed by a commercially available Enzyme Linked Immunosorbent Assay (ELISA) as per the manufacturer's instructions. (diapron,Rom , Italy). Plasma total triglycerides, cholesterol, and high density lipoproteins (HDL), FBS: fasting blood sugar, blood sugar (BS), was determined using spectrophotometry and commercially available kits (Pars Azmoun, Iran). Inflammatory Marker, c reactive protein (CRP) in the serum by immunoturbidimetric methods with commercially available latex kit (Aniston) were measured. Statistical analyses were performed using SPSS version 21. T test used to determination of frequency (percentage %) for quantitative variables. Computation of Differences between blood serum parameters were calculated using independent t- test.For comparison, of the mean lipids concentrations and significant difference between patients ANOVA/Chi-square test were used. Data presented as mean \pm SD for studied variables and significant differences was $P < 0.01$

RESULT

In this survey, 192 patients with coronary artery disease who underwent coronary angiography in Urmia sayodoshohada Hospital, were studied. The age range of the patients was 29 to 95 years. For the entire sample, 88 patients (49.7 %) women and 89 (50.3 %) were male .Mean age of the study population was 57.43 ± 11.078 years. Demographic and biochemical results of the study patients are shown in Table 1. Results from the HPIgG antibody and CRP tests were considered as seronegative or seropositive based on the results shown in table 2.

Table 1. Demographic and biochemical parameters of the study patients

N=192	Mean \pm	Std. Deviation	Std. Error Mean
Age	57.43 ± 11.078		.799
HDL	37.06 ± 19.727		1.718
LDL	47.27 ± 51.372		3.883
TG	180.37 ± 104.265		7.882
TC	125.62 ± 67.385		7.307
BS	123.46 ± 101.199		7.739
FBS	108.80 ± 54.792		4.582

Table 2. HPIgG frequency distribution in patients with coronary artery disease.

Percent%	frequency	HPIgG
87.5	168	seropositive
12.5	24	seronegative
100.0	192	total

Variables are presented as Mean \pm Std. Deviation, TC: Total cholesterol, TG triglyceride, BS: blood sugar, FBS: fasting blood sugar, LDL: low density lipoprotein cholesterol, HDL: high density lipoprotein cholesterol Based on results, Helicobacter pylori infection had a high prevalence in patients with coronary artery disease. Data from the HPIgG antibody tests were considered as seronegative or seropositive results shown in Table 2.

Results from the CRP test were considered as seronegative or seropositive based on the results shown in Table 3.

Table 3.CRP frequency distribution in patients with coronary artery disease

Percent%	frequency	CRP
71.01%	98	seropositive
28.09%	40	seronegative
100.0%	138	total

Regression analysis revealed that there was noticeable correlation between some biochemical parameters, and presence of H.P infection in CAD patients. In this survey, positive HP infection was significantly associated with CAD (95% CI, $p < 0.01$) and TG (95% CI, $P < 0.01$) and CRP (95% CI, $P < 0.01$) and FBS level (95% CI $P < 0.01$), BS level (95% CI $P < 0.01$). (Table 4)

Table 4. Correlation of with HPIGg with, serum triglycerides (TG) LDL-c, Fasting Blood Sugar FBS, Triglyceride TG, Total cholesterol TC, in patients,CRP;C reactive protein.

	CRP	FBS	LDL	HDL	TG	T.C	BS
Pearson correlation	0.362	0.270	0.057	0.16	0.246	0.031	0.220
Significance	Sig	<u>Sig</u>	N Sig	<u>NSig</u>	sig	<u>NSig</u>	Sig
<u>Pv</u>	<0.01	<0.01	>0.01	>0.01	<0.01	>0.01	<0.01
<u>Sig</u> : Significant							
<u>NSig</u> : Non significant							
<u>Pv</u> : Pvalue							

CONCLUSION

Coronary artery disease is The situation that in which plaque build-up in the heart’s arteries wall can lead to blockage of arteries, this conditions restricts blood and oxygen flow to the heart muscle.(6-8). There are many phase in the phenomenon leading to atherosclerosis. For men and women CAD is the final argument of death. Some studies Report higher prevalence of infection with H.P in persons with CAD, while other study do not. In fact our studies examined the relationship of infection with Helicobacter pylori and prevalence of CAD patients. H. pylori is a bacterium mostly found in the stomach. During the time, the bacteria can lead to stomach inflammation (gastritis), can also increase the risk of stomach cancer. It is estimated approximately 20% of people under 40 years old and half of adults over 60 years old in the U.S are infected with HP.(1,2,4,6,8,10-21).One OF the important goals of this study was to determine the prevalence of HPIGg among coronary artery disease in our population. The HPIg gseropositivity reached 87.5%% (168 patients) of CAD. In fact our results showed a high seroprevalence of HP infection in patients with CAD. CRP seropositivity detection was also were 71.01% (98 patients) in CAD patients. There was significant positive correlation between HP infection and CAD. According to our study, HPIGg seropositive patients are at higher risk for CAD and the number of their involved arteries is greater.in fact in this study positive HPIGg test that considered as HP infection have remarkable frequency distribution among CAD patients, also data shown HP seropositivity was associated with coronary artery disease risk factors like,triglyceride ($p < 0.01$)and elevated blood sugar, $(P < 0.01)$ that proved in this study . HP IgG was positively associated with triglyceride level therefor data suggested that HP infection influences some lipid profile changes, and also activate systemic inflammation factors, such as CRP, that could be suggested HP infection may cause activate immune responses and production of acute phase proteins such as CRP. There was no association between of HP Infection and other studied lipid parameters, high density lipoprotein cholesterol (HDL-c), total cholesterol, low density lipoprotein cholesterol (LDL-c) in our population. Detection of HP high rate of HP infection in CAD patients suggested noticeable link between CAD and this infection that could be say H. pylori extirpation causes rebate of chronic inflammation in CAD patients.

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CITATION OF THIS ARTICLE

Zakieh R K, Mohadeseh N, Mahshid M. Seroprevalence survey of *Helicobacter Pylori* (HP) Infection in Patients with Coronary Artery Disease (CAD) in Iranian Population .*Bull. Env. Pharmacol. Life Sci*, Vol 4 [2] January 2015: 24-27