H. Pylori Infection in Iraqi patients with ischemic heart diseases

Eman Sh. AL-Obeidy*   BSc, PhD
Basil. N. Saeed **   FRCP MD

Summary:

Background: Cardiovascular diseases are among the most common cause of death in Developed countries. In addition to traditional risk factors for cardiovascular disease, nowadays, accumulating evidence indicates that a variety of infectious agents may contribute to pathogenesis of ischemic heart disease.

Patients and methods: 125 patients (25 females and 100 males) attending the department of cardiology, Baghdad, teaching hospital over the period December 2008- June 2009were enrolled. Their age range between (39-75 years) compared with 50 healthy individuation (Age & sex matched).
The sera were tested for H. pylori antibodies using enzyme linked immunosorbent assay (ELISA).

Results: 80% of patients showed the anti-H. Pylori IgGs (P < 0.05). But there were no significant association between risk factors & H. pylori infection (P > 0.05).

Conclusions: These findings raise the possibility that exposure to H. pylori may lead to increased risk of coronary artery disease independent of other risk factors.

Keywords: coronary artery disease, Helicobacter pylori, RAO

Introduction:

Cardiovascular diseases (CAD) are the main cause of death in developed countries mainly due to atherosclerosis. Risks of coronary atherosclerosis are not the same in all patients, and different causes may result in the occurrence and the progression of atherosclerosis in different patients. In humans, no single factor can account for all the causes of CAD, and a high percentage of patients have none of traditional risk factors such as hypertension, smoking, obesity, hypercholesterolemia or genetic predisposition (1). Accordingly, medical researchers are beginning to find other risk factors for coronary atherosclerosis. Clinical and experimental studies indicate that inflammatory Conditions have a role in atherosclerosis (2). Many epidemiological investigations have shown a significant relationship between coronary ischemia and various infectious agents such as bacterial and viral agents (3, 4, and 5). Helicobacter pylori is one of various spiral, gram negative and microaerophilic bacteria which produces colonies in human and primates' stomach and results in infectious and inflammatory diseases (6). The association between Helicobacter pylori infection of the stomach and ischemic heart disease has been documented by many studies (7, 8, and 9). However, the position remains uncertain, an assessment supported by a recent review (10). Since the risk of acquiring H pylori infection in childhood increases with socioeconomic deprivation and overcrowding (11), the association may be indirect,

H pylori infection and ischemic heart disease are both related to social class. Some studies have shown little or no excess risk (12, 13), but others reported a fourfold to fivefold increased risk without adjustment for measures of social class and other risk factors for ischemic heart diseases (14,15) or a Twofold to threefold increased risk after such adjustment (15). In this study, we attempted to study the link between H. pylori infection and coronary artery disease and also correlation between this infectious factor with other risk factors such as diabetes, hypertension and smoking.

Patients and Methods:

Patients: The present study included 125 Arab, Iraqi IHD patients (25 females and 100 males), attending department of cardiology; Baghdad Teaching Hospital during the period between December 2008 and June 2009.Their age raged between 39-75 years, compared with 50 healthy individuals (age and sex matched). Laboratory investigation: The sera of the patients and Control group were tested for H. pylori antibodies using Enzyme-Linked Immunosorbent Assay (ELISA) technique which use human IgG Fc as the antigen coated the microwells plate and isotype-specific horse antibodies coupled to radish peroxidase. Results were expressed as the optical density. A level >20 IU/ml was considered positive. Statistical analysis was done using SPSS version 7.5 computer software (Statistical Package for Social Sciences). The mean value with the standard deviation (SD) for each value was determined .P- value less than the 0.05 was considered indicative of statistically significant difference.

Dept. of Virology, Medical Laboratory, Medical City
** *Dept. of medicine, College of Medicine, University of Baghdad.*

Results:
Table (1): Clinical and demographic features of the study groups.

Clinical and dimorphic features	CAD patients (No=125)	Healthy control (N0=50)	P-value
Age (years)	57±12.5	52±10.5	NS
Male	80 (64%)	45(56%)	NS
Hypertension	<|40|90	<|40|90	NS
Diabetes	Fasting<125 mg/dl	Random <140 mg/dl	NS
Smoking	85 (68%)	10 (20%)	NS
Hyperlipidemia	37 (29.6%)	10 (20 %)	0.007

*NS=non significant

The above table showed the demographic and clinical picture for the studying groups. It revealed that the majority of patients were males (64%). Mean age for IHD patients was 57±12.5 which is comparable with healthy control group age. Hypertension, diabetes and hyperlipidemia on the other hand, yielded negative association. Sixty five (52 %) and five (10%) of CAD patients and healthy control group respectively were positive for H. pylori as presented in table-2. There was statistically significant difference in the mean value between the two groups.

Table (2): Concentration of H. pylori (IU/ml) in the studying groups.

H. pylori positive			P-value
Mean ±SD IU/ml	CAD patients No (%)	Healthy group No (%)	
	65(52 %)	5(10 %)	
	55.2±10.2	32±6.7	0.006
Range	30.2-58.5	20.5-33.2	

Discussion:
This study is the first study on H pylori and coronary artery disease in Iraq. The idea that infections play an important role in CAD and its clinical manifestations has been taken into consideration (8, 9). H. pylori is one of the most common human infections still the transmission mode is not yet known (9-11). Several studies report a relation between this infection and the majority of upper gastrointestinal diseases (10, 12). A met analysis of 18 epidemiological studies show a significant association between H. pylori infection and risk factors of coronary diseased such as diabetes, hypertension and smoking (11) this study shows a significant association between H pylori infection and CAD. However, the precise cause is unknown but may be related to plasma fibrinogen, since in one of the studies originally linking H pylori infection with I CAD suggested that the infection increased plasma fibrinogen, a plausible mechanism for the association

with heart disease. (2). Gunn et al. in a case-control research determined serological status for cagA and H. pylori in 342 cases with CAD and 214 control subjects free of clinical CAD. Accordingly, the association of chronic H. pylori infection with risk of CAD appeared to be limited to cagA bearing strains (12). In addition, Jin SW et al. found a modest influence on CAD and progressive atheroma caused by H. pylori infection (14). From the above we can conclude that, the link between H .pylori infection and coronary atherosclerosis requires further studies. H .pylori infection is a potentially curable disease and for this reason, the identification of this condition as a coronary risk factor may have important implications for the prevention for ischemic heart disease.

Conclusion:
The link between H. pylori infection and coronary atherosclerosis requires further studies. H. pylori infection is a potentially curable disease and for this reason, the identification of this condition as a coronary risk factor may have important implications.

References:
1. Fong IW. Review article: Emerging relations between infectious diseases and coronary artery disease and atherosclerosis. CMAJ 2000; 163(1): 49-56.
2. Maseri A. Inflammation, atherosclerosis and ischemic events: exploring the hidden side of the moon. N Engl J Med. 1997; 336: 1014-1016.
3. Benditt EP, Barrett T, McDougall JK. Viruses in the etiology of atherosclerosis. Proc Natl Acad Sci USA 1983; 80: 6386-6389.
4. Saikku P, Mattila K, Nieminen MS, Huttunen JK, Leinonen M, Ekman MR, et al. Valtonen V. Serological evidence of an association of a novel Chlamydia, TWAR, with chronic coronary heart disease and acute myocardial infarction. Lancet 1988; 2: 983-986.
5. Jousilahti P, Vartiainen E, Tuomilehto J, Puska P. Symptoms of chronic bronchitis and the risk of coronary disease. Lancet 1996; 348: 567-572.
6. Graham DY, Malaty HM, Evans GE, Evans DJ, Klein PD, Adam E. Epidemiology of Helicobacter pylori in an asymptomatic population in the United States. Gastroenterology 1991; 100: 1495-501.
7. Goran K. Hansson. Mechanisms of disease inflammation, Atherosclerosis, and Coronary Artery Disease. N Engl J Med 2005; 352: 1685-95.
8. Ridker PM. Inflammation, infection, and cardiovascular risk: how good is the clinical evidence? Circulation 1998; 97: 1671–1674. Editorial.
9. Brown LM, Thomas TL, Ma JL, Chang YS, You WC, Liu WD, et al. Helicobacter pylori infection in rural china: demographic, lifestyle and environmental factors. Int J Epidemiol 2002; 31: 638-46.

10. Chaun H. Update on the role of H.pylori infection in gastrointestinal disorders. Can J Gastroenterology 2001; 15:251-255.

11. Danesh J, Peto R. Risk factors for coronary heart disease and infection with Helicobacter pylori: metaanalysis of 18 studies. BMJ 1998; 316: 1130-1132.

12. Gunn M, Stephens JC, Thompson JR, Rathbone BJ, Samani NJ. Significant association of cagA positive Helicobacter pylori strains with risk of premature myocardial infarction. Heart 2000; 84: 267-271.

13. Ridker PM, Danesh J, Youngman L, Collins R, Stampfer MJ, Peto R, et al. A prospective study of Helicobacter pylori seropositivity and the risk for future myocardial infarction among socioeconomically similar U.S. men. Ann Intern Med. 2001; 135: 184-188.

14. Jin SW, Her SH, Lee JM, Yoon HJ, Moon SJ, Kim PJ,et al. The association between current Helicobacter pylori infection and coronary artery disease. Korean J Intern Med 2007 Sep; 22 (3): 152-6.

15. Esmaili Nadimi A, Jafarzadeh A. Association of Helicobacter pylori seropositivity with coronary artery disease. Atherosclerosis 2008; 9(1) suppl.:253-254.

16. Pellicano R, Fagoonee S. Helicobacter pylori and atherosclerosis: can current data be useful for clinical practice? IJCARD 2008; 127(2):288-289.

17. Ahmad Hamed SH, Amine N, Galal GH, Helal SH, Tag EL-din L, Shawky O. Vascular Risks and complications in diabetes Mellitus: The Role of Helicobacter pylori infection. J stroke cerebrovasdis 2008; 17(2):86-94.