E-ISSN: 2378-654X

Recent Advances in Biology and Medicine

Original Research Article

Preliminary Serological Study of *Helicobacter pylori* Infection in Some University Students

HATASO

Preliminary Serological Study of *Helicobacter pylori* Infection in Some University Students

Abdullah A Mahrazi[1], Mohammad A Khibrani[1], Khatib S Ismail[1]*, Emad Abada[1,2]
[1]Department of Biology, College of Science, Jazan University, Jazan, Saudi Arabia.
[2]Botany and Microbiology Department, Faculty of Science, Helwan University, Cairo, Egypt.

***Correspondence**: sayeedkhatib@gmail.com, kismail@jazanu.edu.sa

Received: Oct 8, 2019; Accepted: Oct 23, 2019

Note: This article is a work mainly by undergraduates, and it has undergone only Editorial Review, not peer-review. We encourage the students to pursue research as a career by publishing such preliminary studies in our journal.

Citation: Mahrazi AA, Khibrani MA, Ismail KS, Abada E. Preliminary serological study of *Helicobacter pylori* infection in some University students. Recent Adv Biol Med. 2020; 6(1): 958557. https://doi.org/10.18639/RABM.2020.958557

Abstract
Helicobacter pylori has been associated with peptic ulcer and gastric carcinoma. This study aimed to find the seroprevalence of *H. pylori* infection in some male students of Jazan University, Saudi Arabia. Twenty students were enrolled in the study ($n = 20$). Informed consent was obtained from the students. About 2 ml blood was collected intravenously in Improvacuter® evacuated blood collection tubes. The blood was allowed to clot at room temperature. The serum was collected and stored at −20°C for further use. The separated serum was used to detect IgG and IgM antibodies by Enzyme Linked Immunosorbent Assay (ELISA) against *H. pylori* for the in vitro diagnosis. A total of 11 (55.00%) students tested positive for IgG antibodies against *H. pylori* indicating previous infection. All the samples tested negative for IgM antibodies against *H. pylori* indicating no active infection. The seroprevalance of IgG antibodies against *H. pylori* was found to be very high in some male university students and is a cause of concern regarding their health. Obesity ($p < 0.05$; Value statistically significant), stress and bad eating habits, eating out, drinking carbonated beverages, and eating spicy food were some of the factors found to be associated with IgG seropositive students. The students were counseled and were instructed to undergo a confirmatory test and get medical intervention. Further large-scale studies need to be performed to plan action against this disease causing organism and to improve the health of students.

Keywords: *Helicobacter pylori*; Sero-prevalance; ELISA; University students.

1. INTRODUCTION

Peptic ulcer is one of the most common and irritating disease. *H. pylori* was found to be the causative agent of peptic ulcers as well as associated with gastric carcinomas [1-3]. *H. pylori* are a Gram negative, microaerophilic, helical bacteria found in the stomach with lophotrichous flagella. *H. pylori* was first discovered by Dr. Barry Marshall and Dr. Robin Warren in Perth, Australia. *H. pylori* is mainly found in the upper gastrointestinal tract. More than 80% people harboring *H. pylori* are asymptomatic. Their incidence is higher in developing countries as compared with that in the developed countries.

Earlier studies reported from Jeddah, Saudi Arabia showed as high as 96% seropositivity in asymptomatic children [4]. In an another study carried out in Al Khobar, Saudi Arabia, 85.7% patients tested positive for *H. pylori* [5]. Another study suggested the prevalence of *H. pylori* infection in 60% population in the Middle Eastern population [6]. In another study carried out in Al-Ahsa, *H. pylori* was present in 85.5% patients [7]. *H. pylori infection* was also reported in patients in urban areas [8]. Other study carried out in Jeddah region indicated a seropositivity of 78% [9]. *H. pylori* seroprevalance was also found in asymptomatic patients [10].

Though *H. pylori* are found in the gastric mucosa, they were also found to be present in the oral cavity as an extra-gastric reservoir [11]. *H. pylori* have also been associated with iron deficiency as reported earlier [12]. Hence it is very necessary to detect the presence of *H. pylori* infection in asymptomatic individuals.

2. METHOD(S)

A total of 20 male students studying in the Faculty of Science, Jazan University New Campus, were enrolled in this study (n = 20). Informed written consent was obtained from the students. Students who did not give written consent were excluded from the study including those who gave consent. Their family and medical history was gathered and their eating habits will be

Table1: ELISA test results for IgG and IgM.

H. pylori ELISA	Test positive (%)	Test negative (%)	Total (%)
IgG antibodies	11 (55.00)	9 (45.00)	20 (100)
IgM antibodies	0 (0.00)	20 (100)	20 (100)

Table 2: Obesity versus previous infection (IgG positive).

BMI	IgG Positive	IgG negative	Total
Obese	11	5	16
Not obese	0	4	4
Total	11	9	20
$X^2 = 6.111$	Df = 1	$P(X^2 > 6.111) = 0.0134$	$p < 0.05$ Value significant

recorded. After that 2 ml of blood was collected intravenously in evacuated blood collection tube with no additives. The blood was allowed to clot at room temperature and centrifuged at 3500 RPM for 5 minutes. The serum was separated and further stored at −20ºC for further use. It was tested for the presence of *H. pylori* Ig G and Ig M antibodies using an ELISA for the in vitro diagnosis of *H. pylori* antibodies immediately after separation. Anti *H. pylori* IgG and IgM ELISA (Orgentic Diagnostika, Germany) were used for the serological detection of antibodies toward *H. pylori*. The serological tests were be performed as per the manufacturer's instruction (product insert provided as supplemental data). The data obtained were analyzed statistically.

3. RESULTS AND DISCUSSION

In this study, 20 male students studying in the faculty of science, Jazan University New Campus, were enrolled. ELISA was carried out on the serum samples (Table 1). Of the 11 students positive for IgG ELISA test, 8 (72.72%) did not eat regularly on time, while 10 (90.91%) students ate outside. All the students tested negative for IgM ELISA indicating past *H. pylori* infections (Table 1). All the 11 IgG positive students were obese (Body Mass Index – BMI > 30) (Table 2). Statistically, it was found to be significant. Socioeconomic status and previous medical history did not have any effect on *H. pylori* infection. Six IgG positive students (54.55%) did not have breakfast and 9 (81.82%) drank carbonated beverages such as Pepsi, Coke, and so on. Seven (63.64%) IgG positive students ate spicy food.

In a study carried out in Al Madina, Saudi Arabia, seroprevalance of *H. pylori* was found to be 28.3% [13]. Malaty et al., reported 32% positivity in asymptomatic children in Houston, Texas, USA [14].

4. CONCLUSION

Obesity, stress, not eating on time, eating outside, skipping breakfast, drinking carbonated beverages, and eating spicy foods have been found to have high probability of suffering from *H. pylori* infection. Socioeconomic status and pervious history of disease did not have any significant effect on infection outcomes. Controlling weight and stress, eating on time, eating at home, and having breakfast every day, stopping intake of carbonated drinks (Pepsi, Coke, Cola, etc.), and stopping the intake of spicy foods are recommended steps to decrease *H. pylori* infection. The prevalence of *H. pylori* was found to be high in university students and is a cause of concern regarding their health. The students were counseled and were instructed to get medical intervention from a healthcare center. Further large-scale studies need to be performed to plan action against this disease causing organism and to improve the health of students.

Acknowledgment
This study was supported by a grant (FR6 – 73) from the Deanship of Scientific Research, Jazan University, under the Future Researcher 6 program. The data were presented as a poster at the Ninth Scientific Forum for Jazan University Students held on 4th of April, 2019 at Prince Sultan Cultural Center, Jazan.

Author Contributions
All authors contributed equally. The final manuscript was read and approved by all the authors.

Conflict of Interest
None.

References

1. Marshall BJ. History of the discovery of *H. pylori.* In "*Camplyobacter pylori* in Gastritis and Peptic Ulcer Disease." Editor - Blaser MJ; New York: Igaku-Shoin (1989), pp. 7-21.
2. Marshall BJ. The discovery that *Helicobacter pylori*, a spiral bacterium, caused peptic ulcer disease. In "*Helicobacter* Pioneers." Editor – Marshall B; Singapore: Blackwell Science Asia (2002), pp. 165-202.
3. Marshall BJ, Warren JR. Unidentified curved bacilli in the stomach of patients with gastritis and peptic ulceration. Lancet. 1984; 1(8390):1311-4.
4. Soad MJ. The pattern of CagA and VacA proteins in *Helicobacter pylori* seropositive asymptomatic children in western Saudi Arabia. Saudi Med J. 2005; 26(9):1372-7.
5. Al-Mueilo SH. Gastroduodenal lesions and *Helicobacter pylori* infection in hemodialysis patients. Saudi Med J. 2004; 25(8):1010-4.
6. Khuroo MS. *Helicobacter pylori*: the unique organism. Ann Saudi Med. 2002; 22(3-4):192-201.
7. Al-Akwaa AM. Prevalence of *Helicobacter pylori* infection in a group of morbidly obese Saudi patients undergoing bariatric surgery: a preliminary report. Saudi J Gastroenterol. 2010; 16(4):264-7.
8. Marie MAM. Seroprevalence of *Helicobacter pylori* infection in large series of patients in an urban area of Saudi Arabia. Korean J Gastroenterol. 2008; 52:226-9.
9. Daad HA, Eltahawy AT. *Helicobacter pylori* infection at a University hospital in Saudi Arabia: prevalence, comparison of diagnostic modalities and endoscopic findings. Indian J Pathol Microbiol. 2005; 48(2):181-5.
10. Khan MA, Ghazi HO. *Helicobacter pylori* infection in asymptomatic subjects in Makkah, Saudi Arabia. J Pak Med Assoc. 2007; 57(3):114-7.
11. Al Sayed AA, Anand PS, Kamath KP, Patil S, Preethanath RS, *et al*. Oral cavity as an extragastric reservoir of *Helicobacter pylori*. ISRN Gastroenterol. 2014; 2014:16 pages. Article ID 261369. doi:10.1155/2014/261369
12. Baggett HC, Parkinson AJ, Muth PT, Gold BD, Gessner BD. Endemic iron deficiency associated with *Helicobacter pylori* infection among school aged children in Alaska. Pediatrics. 2006; 117:e396.
13. Hanafi MI, Mohamed AM. *Helicobacter pylori* Infection: seroprevalence and predictors among healthy individuals in Al Madinah, Saudi Arabia. J Egypt Public Health Assoc. 2013; 88:40-45.
14. Malaty HM, Haveman T, Graham DY, Fraley JK. *Helicobacter pylori* infection in asymptomatic children: impact of epidemiological factors on accuracy of diagnostic tests. J Pediatr Gastroenterol Nutr. 2002; 35:59-63.