PREVALENCE OF HELICOBACTER PYLORI IN ENDOSCOPISTS

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N. Tözün, M.D.* / A. Durademir, Ph.D.* / E.Avşar, M.D.****
O. Özdoğan, M.D.**** / C. Kalaycı, M.D.* / E. Tankurt, M.D.**
N.B. Ulusoy, M.D.* / N. Bekiroğlu, Ph.D.*****

* *Professor, Sub-department of Gastroenterology, Department of Internal Medicine, Faculty of Medicine, Marmara University, Istanbul, Turkey.*
** *Associate Professor, Sub-department of Gastroenterology, Department of Internal Medicine, Faculty of Medicine, Dokuz Eylül University, İzmir, Turkey.*
*** *Specialist, School of Nursing, Marmara University, Istanbul, Turkey.*
**** *Specialist, Sub-department of Gastroenterology, Department of Internal Medicine, Faculty of Medicine, Marmara University, Istanbul, Turkey.*
***** *Lecturer, Department of Biostatistics, Faculty of Medicine, Marmara University, Istanbul, Turkey.*

ABSTRACT

Objective: Fecal-oral spread is the proposed route of transmission of Helicobacter pylori (H pylori) infection in humans. Endoscopy staff are at higher risk of acquisition of H pylori infection by body exposure to secretions via contaminated endoscopes. The objective of this study was to determine the prevalence of H pylori seropositivity among the doctors, nurses and staff working in various endoscopy units in Istanbul.

Methods: Twenty-two endoscopists and nurses were entered into the study. Eighteen intensive care unit (ICU) nurses, 22 administrative personnel from the hospital and 22 healthy volunteers served as controls. IgG antibodies against H pylori were determined by ELISA.

Results: Nineteen of 22 (86.4%) endoscopists and nurses, 13 of 18 (72.2%) ICU nurses, 14 of 22 (63.7%) administrative staff, 14 of 22 (63.7%) healthy controls were seropositive for H pylori antibodies. There was no statistically significant difference between H pylori antibody prevalence in the four groups. Moreover, no correlation was noted between H pylori prevalence and the number of endoscopic procedures, the duration of exposure, peptic ulcer history or dyspeptic complaints.

Conclusion: In an area of high H pylori endemicity, where acquisition occurs at a relatively earlier age, neither endoscopy nor ICU care seem to increase the acquisition of H pylori by close contact with patients.

Key Words: Helicobacter Pylori, endoscopy, H pylori antibodies.

INTRODUCTION

Helicobacter Pylori has become a major interest for the gastroenterologists following the wide acceptance of its role in the etiology type B gastritis, and its strong association with peptic ulcer disease. More recent studies have focused on its possible impact in gastric cancer and MALT lymphoma. Its contribution to non ulcer dyspepsia is controversial (1-4).

Epidemiological surveys have shown a high prevalence of H pylori in developing countries or in low socioeconomic communities (5,6). The mode of transmission of this worldwide infection is still under debate. The possibility of oral-fecal or oral-oral spread of H pylori has been raised by many studies (6,7). Endoscopic procedures constitute a potential hazard for H pylori transmission from person to person even when disinfection is adequately performed. Contaminated endoscopes, biopsy forceps, pH catheters or cannulas may lead to cross infection with H pylori (8,9). The aim of this study was to estimate the prevalence of H pylori antibodies amongst endoscopy staff in various gastroenterology units in Turkey where a high prevalence of H pylori infection has been documented in various studies.

PATIENTS AND METHODS

This study group consisted of 84 subjects: 22 endoscopy unit staff (10 doctors, 12 nurses); 18 ICU nurses, 22 administrative personnel and 22 healthy volunteers. Mean age was 39.7 ± 5.3 years amongst doctors, 29.8 ± 5.9 years amongst endoscopy nurses, 26 ± 3.3 years in ICU nurses, 31 ± 5.9 years in

administrative personnel and 34.7 ± 7.9 years in healthy controls. A questionnaire was given to all subjects to obtain information concerning the number of endoscopic procedures, duration of employment in the endoscopy unit, preventive measures against contamination where relevant, alcohol consumption and smoking habits, socioeconomic status (income, housing, running water at home), history of peptic ulcer disease or dyspeptic complaints.

Blood was collected from the subjects and stored at -20°C until assayed. Antibodies against H pylori were determined by ELISA using a commercial kit (Biomerica GAP IgG, USA). Briefly, microtiter plates were coated with purified H pyori antigen. Patients' sera were diluted up to 1/200 and added to antigen coated wells. Excess IgG antibodies against H pylori were then washed with phosphated saline after the antibodies in the patients' serum had bonded to H pylori antigens. Enzyme labelled human globulin antiserum (Anti-Human IgG-HRP conjugate) and a chromogenic substrate were subsequently added and the colour was evaluated in a Spectrophotometer at 450 nM. Sera were assayed in duplicate. The sensitivity of ELISA for this assay was 99.4 % and the specificity 93.5%. Statistical analysis was performed using the Chi-Square test.

RESULTS

Nineteen of 22 (86.4%) endoscopy staff, 13 of 18 (72.2%) ICU nurses, 14 of 22 (63.7%) administrative staff and 14 of 22 (63.7%) healthy controls were found to be seropositive for H pylori antibodies (Table I). There was no statistically significant difference between the four groups analysed.

Seropositivity to H pylori was not affected by sex, profession, age, duration of exposure to body secretions in the endoscopy unit or ICU, dyspeptic complaints or history of peptic ulcer.

DISCUSSION

The epidemiology of H pylori shows great variations between the western and the developing countries, prevalence increasing with age in the former group. Studies from Turkey have reported an approximately 68-86 % of H pylori seropositivity amongst the healthy persons or blood donors (14,15).

The mode of transmission of this bacterium is still obscure but there is compelling evidence that H pylori spread is by close human contact via the oral-oral or oral-fecal route (6).

There are a few studies which show that H pylori can survive in the environment. Endoscopy and motility units as well as ICU's where there is close contact with patient's secretions constitute a potential reservoir for H pylori transmission. Regurgitation of gastric contents during endoscopy may contaminate the mouth with H pylori and facilitate transmission. Dentists have however not been found to be at high risk of H pylori acquisition despite their contact with patient's saliva (16).

Previous studies have shown an increased seropositivity rate of H pylori in endoscopists. In the study of Mitchell et al 52 % of gastroenterologists and 21 % of age matched blood donors were found to be H pylori positive (11). Similarly Reiff et al found high H pylori prevalence among gastroenterologists in their studies (12). Wilhoite et al showed a significantly higher prevalence of H pylori antibodies in nurses and nursing aids as compared with age and sex matched blood donors. These authors concluded that longer duration of exposure to H pylori contributed to increased prevalence (17). In countries with a high prevalence of H pylori positivity the prevalence of H pylori in the high risk group may not be similar to those of in the western countries. The discrepancy between various reports from western and eastern countries may also derive from the heterogenous study population.

In contrast to previous reports, we were not able to demonstrate a significant difference between endoscopy and ICU doctors and nurses and age and sex matched normal controls. This may be due to early acquisition of the agent in our country and is in agreement with other epidemiological data from Turkey. Years of experience, alcohol and cigarette smoking and dyspeptic complaints were not predictors of H pylori seropositivity in each of the various groups. Socioeconomic state did not appear

Table I. Prevalence of H.pylori Antibodies Amongst Endoscopy Staff, ICU Nurses, Administrative Personnel and Healthy Volunteers.

	n	H.pylori (+)	H.pylori (-)
Endoscopy staff	22	19 (86.4 %)	3 (13.6 %)
ICU nurses	18	13 (72.2 %)	5 (27.8 %)
Administrative Personnel	22	14 (63.7 %)	8 (36.3 %)
Healthy persons	22	14 (63.7 %)	8 (36.3 %)

to influence the prevalence of H pylori infection because of early acqusition of H pylori in overcrowded primary schools.

In conclusion, working in the endoscopy or ICU unit does not appear to increase the seroprevalence of H pylori infection in Turkey.

REFERENCES

1. *Tytgat GNJ, Lee A, Graham DY, Dixon MF, Rokkas T. The role of infectious agents in peptic ulcer disease. Gastroenterol Int 1993;6:76-89.*
2. *Helicobacter pylori: Causal agent in peptic ulcer disease? Working party report to the World Congress of Gastroenterology, Sydney 1990. J Gastroenterol Hepatol 1991;6:103-140.*
3. *Axon ATR. Helicobacter pylori in recent advances in gastroenterology. In: Pounder RE, ed. UK: Churchill Livingstone, 1992:27-48.*
4. *Parsonnet J, Hansen S, Rodrigez L, Gelb AB, Warnke RA, Jellum E. Helicobacter pylori infection and gastric lymphoma. N Eng J Med 1994;330:1267-1271.*
5. *Graham DY, Malaty HM, Evans DG, Klein PD, Adam E. Epidemiology of Helicobacter pylori in an asymptomatic population in the United States. Gastroenterology 1991;100:1495-1501.*
6. *Megraud F. Epidemiology of Helicobacter pylori infection. Gastroenterol Clin North Am 1993;22:73-88.*
7. *Drumm B, Perez GI, Blaser MJ, Shermon PM. Intrafamilial clustering of Helicobacter pylori infection. N Eng J Med 1991;6:359-365.*
8. *Karim QN, Rao GG, Taylor M, Baron JH. Routine cleaning and the elimination of Campylobacter pylori from endoscopic biopsy forceps. J Hosp Infect 1989;13:87-90.*
9. *Langenberg W, Rauws EA, Qudbier JH, Tytgat GNJ. Patient-to-patient transmission of Campylobacter pylori infection by fiberoptic gastroduodenoscopy and biopsy. J Infect Dis 1989;161:507-511.*
10. *Gullini S, Boccini S, Contarini D, Macario F, Basso O. Is transmission of Campylobacter pylori by endoscopic examination possible. Endoscopy 1988;20:162.*
11. *Mitchell HM, Lee A, Carrick J. Increased incidence of Campylobacter pylori infection in gastroenterologists: Further evidence to support person-to-person transmission of C.pylori. Scand J Gastroenterol 1989;24: 396-400.*
12. *Reiff A, Jacobs E, Kist M. Seroepidemiological study of the immune response to Campylobacter pylori in potential risk groups. Eur J Clin Microbiol Infect Dis 1989;8:592.*
13. *Schembri MA, Lambert JR, Lin SK, Nicholson L, Korman MG, Coulepis A. Helicobacter pylori prevalence in endoscopy staff. Microb Ecol Health Dis 1991;4:194.*
14. *Özden A, Dumlu Ş, Dönderici Ö, et al. Seroepidemiology of Helicobacter pylori in Türkiye. Gastroenteroloji 1992;3:664-668.*
15. *Avşar E, Kalaycı C, Avcı GŞ, Soyoğul Ü, Tözün N. Epidemiology of Helicobacter pylori in Türkiye. Abstracts of X th National Congress of Gastroenterology, September 3-7 1993, Bursa, Türkiye: Uludağ Universitesi Basımevi, 1993:73.*
16. *Lin SK, Lambert JR, Schembri M. Prevalence of Helicobacter pylori in practising dental staff and dental students. Gastroenterology 1992;102: A113.*
17. *Wilhoite SL, Donald AF, Soike DR, Kalbfleich JH, Thomas E. Increased prevalence of Helicobacter pylori antibodies among nurses. Arch Intern Med 1993;153:708-712.*