Detection of *H. pylori* infection and cagA strains seropositivity in adult dyspeptic patients in east Azerbaijan, northwest of Iran

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**ABSTRACT**

**Background:** *Helicobacter pylori* (*H. pylori*) bacteria colonize human stomach mucosa and may establish acute or chronic gastric inflammation. Cytotoxic–associated gene A (cag A) is associated with higher grades of gastric inflammation and carcinoma. In the present study we determine cag A seropositive strain in dyspeptic patients with *H. pylori* infection.

**Patients and methods:** Six hundred adult dyspeptic patients examined for anti *H. Pylori* and anti-cag A antibodies by enzyme–linked immunoassay (ELISA) method. All cases resided in east Azarbijan in northwest of Iran and were enrolled in a 5–year period (2003–2008).

**Results:** A total of 85.5% of dyspeptic patients were positive for *H. pylori* infection. Anti–cag A antibody was detected in 35.6% of patients with *H. pylori* infection.

**Conclusion:** Screening of *H. pylori* infection by ELISA method revealed that the vast majority of (85.5%) dyspeptic patients are seropositive for *H. pylori*. Determining of photogenic strains of *H. pylori* by anti–cag A antibody could be diagnostic in severe gastric infections.

**Keywords:** *Helicobacter pylori*; Cytotoxic–associated gene A (Cag A); Gastric inflammation. *(Iranian Journal of Clinical Infectious Diseases 2010;5(4):228-230)*.

**INTRODUCTION**

*Helicobacter pylori* (*H. pylori*) colonizes human stomach mucosa where it induces acute or chronic gastric inflammation. *H. pylori* infection increases the risk of peptic ulcers, stomach adenocarcinoma and lymphoproliferative disease of stomach mucosa (1,2).

*H. pylori* heterogenic are associated with a variety of clinical manifestations. Cytotoxic associated gene A (cag-A), one of the critical pathogenic genes of *H. pylori*, has close relationship with peptic ulcers. This gene encodes a toxic vocalizing protein, Vag A, in about 50% of *H. pylori* infections (1,2). P30 and P33 are the other pathogenic genes which participate in *H. pylori* pathogenicity. Cag A gene's length is 40 KD and most of the ulcerogenic strains of *H. pylori* have this gene which increases the risk of peptic ulcers, gastric atrophy and gastric adenocarcinoma (3).

In the present study, cag-A positive *H. pylori* strains have been evaluated in adult dyspeptic patients.

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PATIENTS and METHODS

Six hundred dyspeptic patients for whom gastric disorder has been confirmed by clinical examinations and endoscopy, enrolled in this study during a five year period (2003-2008). Anti-H. pylori IgG and anti–cag A antibody were analyzed by ELISA method (Padten and Diapro Kits) using six standards: 0, 15, 30, 60 and 100 unit (arbu/ml).

Data were entered and analyzed using SPSS software (version 14, SPSS Inc., Chicago, USA).

RESULTS

Six hundred dyspeptic adults (280 females and 320 males) aged 25-75 years old (mean: 43.2±12.1 years) and 200 controls with no signs of dyspepsia (mean: 42.1±15.2 years) were enrolled.

Anti-H. pylori IgG was positive in 85.5% (n=513) of patients and 81% (n=162) of controls. Totally, anti-cag A was positive in 30.5% of patients and 28% of controls. The difference did not reach a statistically significant level. Meanwhile, cag A-IgG was positive in 183 cases (30.5%) and 56 controls (28%).

Of 513 H. pylori-positive patients, 183 (35.6%) were also positive for cag A-IgG, however, this figure was 34.6% (56 of 162) in controls.

All H. pylori seronegative patients and controls were negative for cag A.

DISCUSSION

Frequency of cag A positive H. pylori strains was 35.6% and 34.6% among cases and controls, respectively.

Invasive and noninvasive methods have been developed for diagnosis of H. pylori infection. Serologic tests are among the best noninvasive methods. Because of the long half-life of H. pylori IgG it could be a good indicator of infection severity. Serologic detection of cag A could be very important in prognosis of H. pylori infection (4). Cag A strain is a pathologic marker that is associated with strong immunologic response (5,6), hence, detection of this gene not only in H. pylori infected patients but also in asymptomatic cases, plays a critical role in treatment follow up and prevention of gastric ulcers and carcinomas. Frequency of cag A seropositivity has been variable in different societies: 50% in Turkish population (2), 40.2% in Iranian GERD patients and 43% in normal cases (7). In a study in Italy, frequency of cag A seropositivity was 86.1% in patients with duodenal ulcers, 96.4% in peptic ulcers and 52.4% in normal controls (8). In a study from China, H. pylori IgG in patients and controls was 88.9% and 45%, and cag A seropositivity was 78.1% and 31.3%, respectively (9).

European and American studies showed that 50% of H. pylori strains contain vag A gene and cag A (1).

Meta analysis of 21 study reports showed that specificity and sensitivity of ELISA tests were 79% and 85%, respectively (2). New commercial kits have higher sensitivity and specificity (98%) therefore, they could be more suitable to diagnose H. pylori infection. On the other hand, detection of pathogenic strains, cag A and vag A, with ELISA method and other genes which are associated with H. pylori pathogenicity, P 120 (cag A), P30 (OMP) and P33, could be helpful.

ACKNOWLEDGEMENT

We wish to thank our colleagues in Drug Applied Research Centre, Liver and Gastrointestinal Disease Research Center in Tabriz University of Medical Sciences.

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