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CASE REPORT

EFFECT OF GASTROINTESTINAL BLEEDING ON THE SENSITIVITY OF DIAGNOSTIC TESTS FOR *HELICOBACTER PYLORI* INFECTION

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Background– **Bleeding duodenal ulcer (BDU) may reduce the positive rate of urease test. This study evaluates if bleeding can affect other diagnostic tests for *H. pylori.***

Methods– **In this study, during 1997–99, 60 patients with BDU (group 1) and 60 patients with non-bleeding duodenal ulcer (NBDU) (group 2) were enrolled. All patients were endoscopied and three-biopsy specimen, urea breath test (UBT) and serologic assay for anti-*H. pylori* antibody (IgG) were performed. Any patient with positive anti-*H. pylori* antibody was considered as an infected patient.**

Results– **There were 59 (98%) and 58 (96%) infected patients in group 1 and group 2 respectively. The positive rates for urease, biopsy and UBT in group 1 were 50 %, 75% and 95% while these rates were 90%, 90% and 96% in group 2, respectively. The patients in group 1 were divided into subgroups based on the presence (1a) or absence (1b) of blood in the antrum. The positive rate for urease, biopsy and UBT were 50% vs. 70%, 75% vs. 80%, and 95% vs. 93% in subgroup 1a and 1b, respectively. There was significant ($p < 0.05$) difference between BDU patients and NBDU patients in urease test results while for other tests, there were not any significant differences. Also, there was not any significant difference in subgroups 1a and 1b in their test results for *H. pylori*.**

Conclusion– **BDU significantly reduces true positive rate of urease test while its effect on positive rate of other tests in negligible. We recommend using other diagnostic tests for *H. pylori* infection in the case of BDU rather than urease test.**

Keywords ● *H. pylori* ● PUD ● GI bleeding

Introduction

H. pylori has been considered as an important etiologic factor in peptic ulcer disease (PUD). Since the discovery of this organism,[1] *H. pylori* eradication has been discussed as a means of treating patients with bleeding ulcer.[2] Other studies have shown the important role of *H. pylori* eradication in preventing bleeding in PUD.[3,4] *H. pylori* has been reported to be present in almost all patients with bleeding PUD.[5,6] Both invasive and non-invasive tests are used in the diagnosis of *H. pylori*. The present study was performed to determine the effect of GI bleeding on the sensitivity of these tests in diagnosing *H. pylori* infection.

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Patients and Methods

A total of 120 patients (mean age 51.4 ± 11.2 years) admitted to Sina Hospital, Tehran with duodenal ulcer, were enrolled in this case control study from 1997 to 1999. Sixty patients had GI bleeding in the form of hematemesis or melena (group 1) and 60 patients with non-bleeding duodenal ulcer (NBDU, group 2).

Inclusion criteria included upper GI bleeding and duodenal ulcer on endoscopy. Exclusion criteria were: 1) use of NSAIDs two weeks prior to GI bleeding; 2) history of anti-*H. pylori* therapy; 3) use of proton pump inhibitors (omeprazole) in the past 1 month; 4) bleeding from sites other than the peptic ulcer including esophageal varices or erosive gastritis; and 5) previous gastric surgery.

Endoscopy was performed for all patients within 24-hours of bleeding and presence of fresh or coagulated blood in the gastric antrum was assessed. Meanwhile, biopsy specimens were taken from the gastric antrum 2 cm proximal to the pyloric rim. The patients in group 1 were divided into 2 subgroups according to presence (1a) or absence (1b) of blood in the antral region.

Diagnostic tests included urease test, ureas breath test (UBT) and serologic assay for anti-*H. pylori* antibody (IgG). Any patient with positive anti *H. pylori* antibody was considered to be infected. The first biopsy specimen was sent for rapid urease test (RUT) and observed for 24-hours color change. The second biopsy was sent for pathology. UBT was performed 1 week after endoscopy. Before antibiotic therapy, all blood samples were tested for IgG anti *H. pylori* antibodies.

Data was analyzed by Chi-square test and *p* Values below 0.05 were considered as significant.

Results

According to serology, 59 (98%) and 58 (96%) patients were *H. pylori*-positive in group 1 and group 2, respectively. RUT was positive in 30 (50%) patients in group 1 and 54 (90%) patients in group 2. Biopsy revealed presence of *H. pylori* in 45 (75%) patients in group 1 and 54 (90%) patients in group 2. UBT was positive in 57 (95%) and 58 (96%) patients in group 1 and group 2, respectively.

Patients in group 1 were divided into 2 subgroups—1a (20 patients) and 1b (40 patients)—according to presence or absence of blood in the gastric antrum, respectively. Urease test was positive in 10 (50%) and 32 (85%) patients in group 1a and 1b, respectively. Histology was positive for *H. pylori* in 14 (70%) and 38 (95%) patients in group 1a and 1b, respectively. UBT revealed *H. pylori* in 15 (75%) and 37 (92.5%) patients in group 1a and 1b.

The results were compared in group 1 and group 2 and analyzed by Chi-square test. A significant difference was found using urease test when *p* value was less than 0.05, whereas these differences were not significant for tests. Also a significant difference did not exist in the 1a and 1b subgroups. There was a significant ($p < 0.05$) difference in urease test results between BDU and NBDU patients, while for other tests, there were not any significant differences. Also, there was no significant difference in subgroups 1a and 1b with any diagnostic tests.

Discussion

The current study shows that *H. pylori* is detected more frequently by UBT and serology. IgG antibody screening had a sensitivity of almost 100%. However, serology is not suitable for assessing *H. pylori* eradication.[7] UBT had a high (more than 90 %) sensitivity rate in both groups.

Histologic findings were also sensitive but a statistically significant relationship was not present in either group. Compared to RUT, UBT was more sensitive in patients with GI bleeding, especially in patients with blood in gastric antrum.

Among the diagnostic tests used, only RUT had higher sensitivity in patients without bleeding as compared to patients with bleeding. This may be due to the depressive effect of blood on the sensitivity of this test. Blood did not affect the sensitivity of the other tests.

It is concluded that bleeding duodenal ulcer significantly reduces the true positive rate of urease test, while its effect on the other diagnostic tests is negligible. We recommend the use of other tests, rather than urease test, in the diagnosis of *H. pylori* infection in cases with active bleeding duodenal ulcer.

References

1 Marshall BJ, Warren JR. Unidentified curved bacilli in the stomach of patients with gastritis peptic ulceration. *Lancet*. 1984; **1:** 1311–5.

2 Graham DY, Lew GM, Klein PD, et al. Effect of treatment of *Helicobacter pylori* infection on the long-term recurrence of gastric ulcer on duodenal ulcer. A randomized controlled study. *Ann Intern Med*. 1992; **116:** 705–8.

3 Jaspersen D, Koerner T, Schorr W, et al. Helicobacter pylori eradication reduces the rate of rebleeding in ulcer hemorrhage. *Gastrointest Endosc*. 1995; **41:** 5–7.

4 Rokkas T, Karameris A, Maverogeorgis A, et al. Eradication of *Helicobacter pylori* reduces the possibility of rebleeding in peptic ulcer disease. *Gastrointest Endosc*. 1995; **41:** 1–4.

5 Laine LA. *Helicobacter pylori* and complicated ulcer disease. *Am J Med*. 1996; **100:** 52–9.

6 Hosking SW, Yung MY, Chung SC, et al. Differing prevalence of *Helicobacter pylori* bleeding and non bleeding ulcers. *Gastroentrology*. 1992; **102:** A85.

7 Cutler AF, Prasad VM. Long-term follow-up of *Helicobacter pylori* serology after successful eradication. *Am J Gastroentrol*. 1996; **91:** 85–8.