Lack of Effect of *Helicobacter pylori* on Symptom Improvement with a Prokinetic Medication, Cisapride, in Patients with Non-Ulcer Dyspepsia

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Objective: *This study was undertaken to determine whether H. pylori infection has an effect on the improvement of dyspeptic symptoms in response to a prokinetic agent, cisapride, in patients with non-ulcer dyspepsia (NUD).*
Material and Method: *35 NUD patients (16 M, 19 F) who had no underlying medical condition and negative upper endoscopy were included in the present study. Each patient received a 2-wk treatment of cisapride (Prepulsid®, 10 mg, tid ac). H. pylori infection was determined using a rapid urease test (CLO test®). Gastric emptying (GE) scintigraphy and dyspeptic symptom scores were evaluated before and at the end of the treatment. GE was evaluated in 22 healthy volunteers as normal controls.*
Results: *Half time (T1/2) GE of NUD patients was 90.9 $\pm$ 28 min which was significantly longer than controls (77.6 $\pm$ 14 min; $p < 0.05$) and was shortened to 73.6 $\pm$ 22 min ($p < 0.0001$) at the end of the treatment. Cisapride significantly improved total dyspeptic symptom scores [7 (2-18) to 3 (0-11), $p < 0.0001$]. The symptom score improvement was not affected by H. pylori infection [H. pylori positive: 6 (2-18) to 2.5 (0-9), $p < 0.0001$; H. pylori negative: 9 (4-16) to 3 (0-11), $p < 0.0001$] or GE status [delayed GE: 10 (5-16) to 3 (1-5), $p < 0.05$; non delayed GE: 6 (2-18) to 2 (0-11); $p < 0.0001$].*
Conclusions: *Cisapride improves dyspeptic symptoms regardless of H. pylori and GE status. These results suggest that gastric emptying and H. pylori infection are not essential to determine prior to prescribing a prokinetic agent, cisapride, in patients with NUD.*

Keywords: *Cisapride, Gastric emptying, Helicobacter pylori, Dyspepsia*

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Dyspepsia is a common gastrointestinal disorder affecting more than 25% of the general population[1]. It is characterized by pain or discomfort centered in the upper abdomen[2]. It may be associated with upper abdominal fullness, early satiety, bloating, and postpandial nausea. More than half of the patients with dyspepsia have no evidence of organic cause and are labeled as functional dyspepsia or non-ulcer dyspepsia (NUD)[3]. Although the pathogenesis of NUD has not been well characterized, gastrointestinal motility disorder[4-10] and visceral hypersensitivity[11-14] have been proposed to have pathogenetic roles in patients with NUD. Antral hypomotility[7,8], defective postprandial fundic relaxation[10,15,16], and increased perception of the stomach have been described in NUD patients[17]. Although delayed gastric emptying has been reported in 30-60% of NUD patients[18-21], it has poor correlation with dyspeptic symptoms[6].

H. pylori infection is common in NUD patients. A previous study reported *H. pylori* infection rate in NUD patients to vary from 28 to 84%[22] and most studies indicated that symptoms are not different between those with and without *H. pylori*[23]. Studies have shown that *H. pylori* infection has no significant

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effect on gastric emptying[24-27] but associates with impaired proximal stomach relaxation in asymptomatic subjects[28] and visceral hypersensitivity in IBS patients[29]. Thus, NUD patients with *H. pylori* infection may represent a homogenous group of patients, who may respond to prokinetic medication differently from patients without *H. pylori* infection. However, there is little information available regarding the effect of *H. pylori* infection on the treatment outcome of medication that affects gastric motility and gastric perception in NUD.

Cisapride is a prokinetic agent, which selectively enhances cholinergic neurotransmitter release in the myenteric plexus of the gut[30]. It also appears to act via the serotonergic receptor. Studies have shown that cisapride affects both gastric motility and visceral perception. It enhances gastric accommodation in response to a meal and increases perception in response to gastric distention during fasting[31]. The efficacy of cisapride in relieving the symptoms of nonulcer dyspepsia is well established[32-34]. However, whether cisapride improves dyspeptic symptoms differently in patients with and without *H. pylori* infection has not been well explored. Therefore, the present study was designed to determine the efficacy of 2 weeks of cisapride therapy on symptoms and gastric emptying in NUD patients with and without *H. pylori* infection.

Material and Method

Patients and study protocol

Patients who had dyspepsia which was defined as pain or discomfort centered in the upper abdomen for at lease 3 months were included into the present study. All patients had at least 2 of these dyspeptic symptoms; early satiety, bloating, upper abdominal pain/epigastric pain, abdominal distension, prolonged digestion, belching, heartburn, nausea, vomiting, and regurgitation. Esophagitis, gastric mucosal erosion, ulceration, and malignancy were excluded by upper gastrointestinal endoscopy. No patient had evidence of gall-stones on ultrasonography nor was suffering from chronic systemic disease. Patients who were pregnant or lactating, alcoholism, had a history of previous abdominal surgery, taking drugs which can cause gastritis or dyspeptic symptoms, taking antibiotics or proton pump inhibitor within 1 month before the study, or had abnormal bowel habits were excluded. All medications were stopped at least 7 days prior to the study. Written informed consent was obtained from every patient. The present study protocol was approved by the Medical Ethics Committee of the Faculty of Medicine, Chulalongkorn University, Bangkok, Thailand.

All patients were evaluated initially for the presence of dyspeptic symptoms including early satiety, bloating, upper abdominal pain/epigastric pain, abdominal distention, prolonged digestion, belching, heartburn, nausea, vomiting, and regurgitation, using a symptom questionnaire. Each symptom was scored by a gastroenterologist on a scale from 0 to 3, where 0 = no symptom; 1 = mild, symptomatic but not interfering with normal activities; 2 = moderate, symptomatic and interfering with normal activities; 3 = severe, symptomatic with inability to perform normal activities. Symptom scores were evaluated initially (day 0) and at the end of study (day 14).

Gastric emptying time was assessed by radionuclide scintigraphy technique in patients who satisfied the inclusion criteria before and at the end of 14 days' treatment with Cisapride (Prepulsid®; Janssen-Cilag LTD, 10 mg 3 times daily, 15-30 minutes orally before meals).

H. pylori infection was determined by a rapid urease test (CLO test®, Ballard Medical Products, Utah, USA). Two biopsies were taken, one at the antrum and another from the body of the stomach and embedded immediately into the yellow CLO test gel. The test was considered positive if the color of the gel changed from yellow to orange or red within 24 hours.

Assessment of gastric emptying

Gastric emptying time was measured by radionuclide scintigraphy. A standard meal composed of cooked rice 100 gm, 2 eggs (labeled with 0.5 mCi of Tc-99m Phytate and cooked by microwave) and 125 ml of water, equivalent to 29.6 gm of carbohydrate, 26.8 gm of protein, 22.1 gm of fat and 219.5 gm of water. The total caloric content of the meal was 417 kcal. This standard meal was tested for stability by incubation with gastric juice at 37°C for 3 hours. The percent bound was 90%.

After an overnight fast, each subject reported to the Division of Nuclear Medicine, Chulalongkorn University, Bangkok, Thailand at 8.00 am the next morning. The test meal was prepared and was consumed by the subject with 125 ml of water within 10 minutes. After meal ingestion, two consecutive, 30-second scintigraphic images were taken for both anterior and posterior view in the standing position at 0, 10, 20, 40, 60, 80, 100 and 120 minutes. A gamma camera, using low energy, LFOV, general purpose collimeter, set peak

energy at 140keV window, was used. The region of interest of the stomach for each scintigraphic image was drawn manually by the same radiologist using computer software. The geometric mean count at each time was the square root of [anterior count x posterior count]. Gastric emptying was derived from the time-activity curve. T1/2 gastric emptying was the time needed for 50% of the study material to be emptied from the stomach.

Data analysis

Gastric emptying time before and at the end of treatment were compared by using a student's paired t-test. Gastric emptying time between normal controls and NUD patients were compared by using an unpaired t-test. Symptom scores before and after treatment were compared by Wilcoxon-sign rank test. Correlation between the improvement of gastric emptying time and the improvement of total symptom scores was determined by Pearson correlation. A p value < 0.05 was considered statistically significant. All tests were two tailed. Results were expressed as mean $\pm$ SD or median (range) as appropriate, except stated otherwise.

Results

Patient characteristics

Forty-five patients fulfilled the inclusion criteria and 35 patients (16 M:19 F) completed the 14 days treatment period. All patients who completed the studies had $\geq$ 6 months duration of dyspeptic symptoms. Ten patients were excluded from the study (2 patients did not adhere to the protocol and 8 patients lost to follow up). Gastric emptying scintigraphiy results from 22 healthy volunteers with no history of dyspepsia, no medical condition, and on no medication, were used as normal controls. The demographic characteristics of the patients and healthy volunteers are shown in Table 1.

Gastric emptying

T1/2 gastric emptying of NUD patients was 90.9 ± 28.5 min, which was significantly longer than that of the normal volunteers (77.6 ± 14.2 min; $p < 0.05$). Seven patients (20%) had T1/2 gastric emptying longer than mean + 2SD of normal controls and were considered as having delayed gastric emptying.

After 2 weeks of cisapride treatment the T1/2 gastric emptying of 35 NUD patients decreased significantly from 90.9 ± 28 min to 73.6 ± 22 min ($p < 0.0001$), which was comparable to the T1/2 gastric emptying time of the normal volunteers ($p > 0.05$). In delayed gastric emptying patients, cisapride significantly decreased T1/2 the gastric emptying time from 133.8 ± 27 min to 99.8 ± 27 min ($p < 0.05$) while in non delayed gastric emptying patients cisapride also decreased the T1/2 gastric emptying time from 80.2 ± 16 min to 67.0 ± 14 min ($p < 0.001$). When the degree of changes in T1/2 gastric emptying times after 2 weeks of cisapride treatment was expressed as [GET-1/2 (wk0) - GET-1/2 (wk2)]/GET-1/2 (wk0), there was no significant difference in the degree of T1/2 gastric emptying improvement between delayed and non-delayed gastric emptying patients ($p > 0.05$).

Effect of cisapride on dyspeptic symptoms

Baseline total dyspeptic symptom scores between delayed and non delayed gastric emptying patients were not significantly different (10 (5-16) vs 6 (2-18), $p > 0.05$). Symptom scores generally improved at the end of cisapride treatment compared to baseline as shown in Fig. 1 and 2. All symptoms were significantly improved except heartburn. Total dyspeptic symptom score, the sum of all symptom scores, was 7 (2-18) at week 0 significantly decreased to 3 (0-11) at the end of week 2 ($p < 0.0001$). In NUD patients with delayed gastric emptying, cisapride significantly improved total dyspeptic symptom scores from 10 (5-16) to 3 (1-5) ($p < 0.05$). This was similar to the improvement of symptoms in the non delayed gastric emptying patients (total symptom score improved from 6 (2-18) to 2 (0-11); $p < 0.0001$).

When the degree of total dyspeptic symptom score improvement after 2 weeks of treatment was expressed as [(symptom score (wk0) - symptom score (wk2)]/symptom score (wk0), there was no significant difference in the degree of symptom score improvement between NUD patients with delayed and non delayed gastric emptying (0.65 ± 0.19 and 0.50 ± 0.14, respectively, $p > 0.05$). There was no significant correlation between the degree of symptom score improvement and the degree of T1/2 gastric emptying improvement ($r = 0.27$, $p = 0.12$).

Table 1. Dermographic characteristics of healthy controls and NUD patients

Characteristics	Healthy Control	Nonulcer dyspepsia
No of patients	22	35
Sex (M:F)	10:12	16:19
Age (Years; mean $\pm$ SD)	28.3 ± 9.45	34.9 ± 9.32
Duration of symptoms (months)	-	24 (6-120)

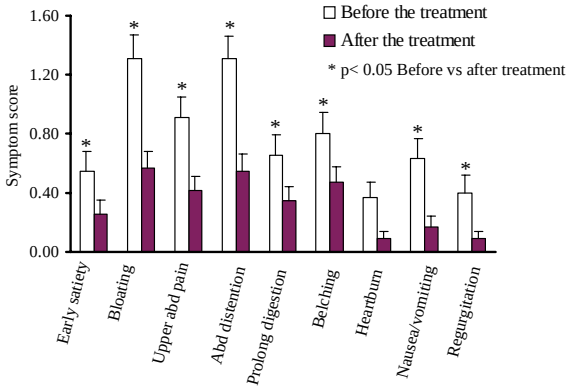

Fig. 1 Symptom score improvement before and after 2 wk cisapride treatment (Data express as mean ± SEM)

H. pylori, gastric emptying, and symptom score

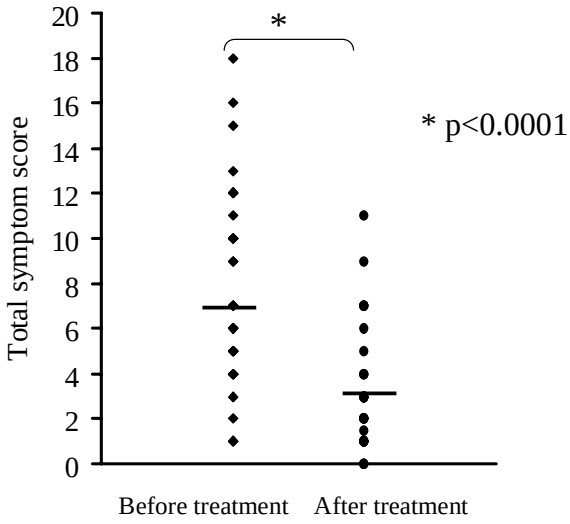

Fig. 2 Total symptom score improvement before and after 2 wk cisapride treatment (small horizontal bar represent median)

There were 20 and 15 patients who had CLO test® positive and negative, respectively. In the *H. pylori* positive group, 4 patients had delayed gastric emptying and 16 had non-delayed gastric emptying. The prevalence of *H. pylori* infection in delayed and non delayed gastric emptying patients was identical (57.14% vs 57.14%). Total symptom scores at baseline were 6 (2-18) and 9 (4-16) in *H. pylori* positive and negative patients, respectively ($p > 0.05$). After 2 weeks of cisapride treatment, these scores significantly decreased to 2.5 (0-9, $p < 0.0001$) and 3 (0-11, $p < 0.0001$) in *H. pylori* positive and negative patients, respectively (Fig. 3).

T1/2 gastric emptying time was decreased significantly in both *H. pylori* positive and negative patients after cisapride treatment. In *H. pylori* positive patients, T1/2 GET was decreased from 89.1 ± 22 min to 70.9 ± 14 min ($p < 0.0001$), whereas in *H. pylori* negative patient, it was decreased from 93.3 ± 36 min to 77.2 ± 29 min ($p < 0.0001$), as shown in Fig. 4. There was no significant difference in baseline gastric emptying time, baseline symptom score, the degree of gastric emptying improvement, and the degree of symptom score improvement between *H. pylori* positive and negative patients, respectively ($p > 0.05$).

Side effect of cisapride

There was no serious side effect found in the present study. Only 1 patient reported having loose stool.

Discussion

NUD is a common disorder, which accounts for 15-30% of patients referred to gastroenterologists[35]. Several mechanisms have been proposed for the pathogenesis of NUD. The role of delayed gastric emptying and *H. pylori* gastritis in non-ulcer dyspepsia have been postulated but remain inconclusive. In clinical practice, prokinetic medication is usually prescribed in NUD patients. Studies have shown that not all patients respond to the treatment[36]. Which

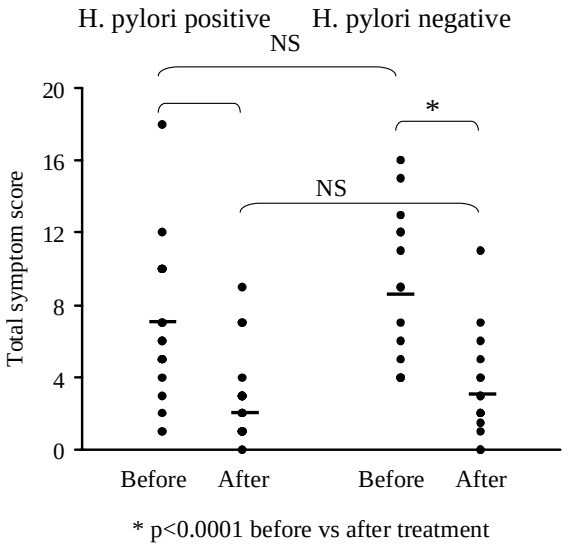

Fig. 3 Improvement of dyspeptic symptom in response to 2 wk cisapride treatment in patients with and without *H. Pylori* infection (small horizontal bar represent median)

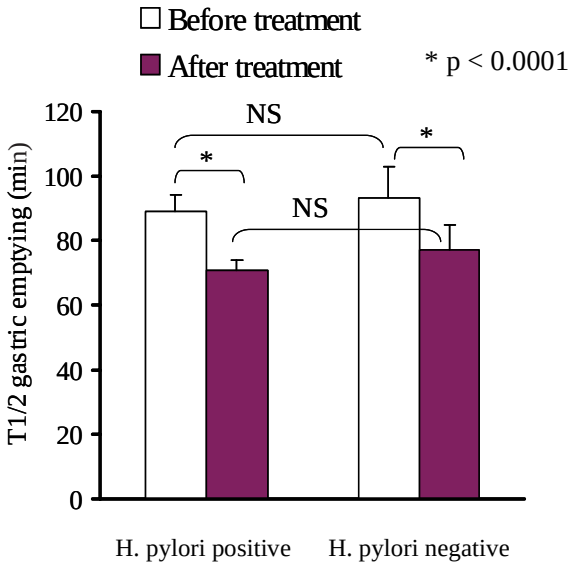

Fig. 4 Improvement of gastric emptying in response to 2 wk cisapride treatment in patients with and without delayed gastric emptying (Data express as mean ± SEM)

factors affect the treatment outcome have not been well explored. The authors tried to determine the effect of *H. pylori* infection on the treatment outcome of NUD patients when treating with a prokinetic medication, cisapride. In the present study, CLO test® was used to determine *H. pylori* infection. Previous studies have shown that CLO test® has a high sensitivity of 91-98% and specificity of 100% for diagnosis of *H. pylori* infection compared to other methods[42]. The present study demonstrated that cisapride significantly improved dyspeptic symptoms in NUD patients and the improvement was not affected by *H. pylori* or gastric emptying status.

The present study also demonstrated that NUD patients had gastric half emptying time longer than normal controls and 20% of them had significantly delayed gastric emptying. In addition, 57% of them had *H. pylori* infection and *H. pylori* infection had no significant effect on the baseline dyspeptic symptom scores, basline gastric emptying, and improvement of gastric emptying after cisapride treatment. The prevalence of delayed gastric emptying in the present study was slightly less than that of previous studies which showed that approximately 30-60% of nonulcer dyspeptic patients had significant delayed gastric emptying[14,18-20]. These may be explained by the different meal (rice meal with eggs) used in the present study. There have been reports that *H. pylori* infection has no influence on gastric emptying[24,25-28]. The present result confirmed these findings and the authors also found that, there was no significant association between baseline gastric half emptying and severity of symptoms.

In both delayed and non-delayed gastric emptying patients, cisapride could improve gastric emptying and dyspeptic symptoms significantly. There was no significant association between baseline gastric emptying and symptom scores or gastric emptying improvement after the treatment. The degree of symptom score and gastric emptying time improvement was also not different between patients with delayed and non-delayed gastric emptying. These results suggest that gastric emptying study can not identify the subgroup of NUD patients who will respond to prokinetic therapy. Thus, gastric emptying study has a limited role for guiding the management of NUD patients. The finding that improvement of gastric emptying was not associated with symptom improvement is comparable to previous reports[19,37].

After 2 weeks of cisapride treatment, the symptom scores and gastric emptying were improved significantly in both *H. pylori* positive and *H. pylori* negative patients. The degree of symptom scores and gastric emptying time improvement was not different between *H. pylori* positive and negative patients. The findings support the results from previous studies[38], which demonstrated that the histological gastritis did not influence the effect of cisapride on the symptoms of non ulcer dyspepsia. The present results suggest that identification and eradication of *H. pylori* infection before prescribing cisapride, a prokinetic medication yields no additional beneficial effect in clinical practice. Additionally, the authors also found that *H. pylori* infection in NUD patients did not influence the effect of cisapride on gastric emptying improvement.

Impaired gastric accommodation to meals has been shown to be associated with early satiety in NUD patients[39]. *H. pylori* infection has been shown to cause impaired gastric accommodation. Studies by Saslow SB et al have shown that asymptomatic subjects with *H. pylori* infection had impaired gastric accommodation[28] compared to normal controls. Thus, *H. pylori* infection affects stomach motor functions, mainly on gastric accommodation. Although impaired gastric accommodation is also present in NUD patients with no *H. pylori* infection[16], the underlying mechanism of the impairment and whether it is different from that with *H. pylori* infection is not well established. Recent studies demonstrated that visceral perception[40,41], gastric compliance[40], and fundic

relaxation[40] in response to a meal are not different between dyspeptic patients with and without *H. pylori* infection. These results suggest that, although dyspeptic patients with and without *H. pylori* infection are different in the etiology, they share a common pathophysiology.

Cisapride is a gastrointestinal prokinetic drug with $5HT_4$ partial agonist. It accelerates gastric emptying[18,36], enhances gastric perception to distension, and enhances gastric accommodation[31]. Several double-blind placebo-controlled trials showed that cisapride was effective in improving symptoms of NUD patients[18,32,33]. Its effect on enhancing gastric perception suggests that cisapride may not be a preferred treatment for NUD patients with gastric visceral hypersensitivity but may be a preferred treatment in NUD patients with impaired gastric accommodation[31]. The results that cisapride improves dyspeptic symptoms regardless of *H. pylori* status in the present study may be explained by the hypothesis that NUD patients with and without *H. pylori* infection have similar pathophysiology, especially impaired gastric accommodation. Although cisapride is not available in the USA, it still is available in many countries worldwide.

In conclusion, NUD patients had gastric half emptying time longer than the normal controls. Cisapride could improve symptoms and gastric emptying regardless of baseline *H. pylori* and gastric emptying status. The present results suggest that gastric emptying and *H. pylori* status need not be determined before prescribing a NUD patient with cisapride, a prokinetic medication.

References

1. Heading R. Prevalence of upper gastrointestinal symptoms in the general population: A systematic review. Scand J Gastroenterol 1999; 34: 3.
2. Talley NJ, Stanghellini V, Heading RC, Koch KL, Malagelada JR, Tytgat GNJ. Functional gastroduodenal disorders. Gut 1999; 45: II37-42.
3. Talley NJ, Silverstein MD, Agreus L, Nyren O, Sonnenberg A, Holtmann G. AGA technical review: Evaluation of dyspepsia. Gastroenterology 1998; 114: 582-95.
4. Scott Scott AM, Kellow JE, Shuter B, Cowan H, Cobertt AM, Riley JW, et al. Intragastric distribution and gastric emptying of solids and liquids in functional dyspepsia. Dig Dis Sci 1993; 38: 2247-54.
5. Caballero-Plasencia AM, Muros-Navarro MC, Martin-Ruiz JL, Valenzuela-Barranco M, Delos-Reyes-Garcia MC, Casado-Caballro FJ, et al. Dyspeptic symptoms and gastric emptying of solids in patients with functional dyspepsia. Scand J Gastroenterol 1995; 30: 745-51.
6. Malagelada JR. Gastrointestinal motor disturbances in functional dyspepsia. Scand J Gastroenterol 1991; 26(Suppl 1820): 29-32.
7. Camilleri M, Brown ML, Malagelada JR. Relationship between impaired gastric emptying and abnormal gastrointestinal motility. Gastroenterology 1986; 91: 94-9.
8. Rees WD, Miller LJ, Malagelada JR. Dyspepsia, antral motor dysfunction, and gastric stasis of solids. Gastroenterology 1980; 78: 360-5.
9. Salet GA, Samsom M, Roelofs JM, van Berge H, Smout AJ, Akkermans LM. Responses to gastric distension in functional dyspepsia. Gut 1998; 42: 823-9.
10. Undeland KA, Hausken T, Gilja OH, Aanderud S, Berstad A. Gastric meal accommodation studied by ultrasound in diabetes. Relation to vagal tone. Scand J Gastroenterol 1998; 33: 236-41.
11. Bradette M, Pare P, Douville P, Morin A. Visceral perception in health and functional dyspepsia. Crossover study of gastric distension with placebo and domperidone. Dig Dis Sci 1991; 36: 52-8.
12. Lemann M, Dederding JP, Flourie B, Franchisseur C, Rambaud JC, Jian R. Abnormal perception of visceral pain in response to gastric distension in chronic idiopathic dyspepsia. The irritable bowel syndrome. Dig Dis Sci 1991; 36: 1249-54.
13. Mearin F, Cucala M, Azpiroz F, Malagelada JR. The origin of symptoms on the brain gut axis in functional dyspepsia. Gastroenterology 1991; 101: 999-1006.
14. Troncon LE, Thompson DG, Ahluwalia NK, Barlow J, Heggie L. Relations between upper abdominal symptoms and gastric distension abnormalities in dysmotility-like functional dyspepsia and after vagotomy. Gut 1995; 37: 17-22.
15. Gilja OH, Hausken T, Wilhelmsen I, Berstad A. Impaired accommodation of proximal stomach to a meal in functional dyspepsia. Dig Dis Sci 1996; 41: 689-96.
16. Thumshirn M, Camilleri M, Saslow SB, Williams DE, Burton DD, Hanson RB. Gastric accommodation in non-ulcer dyspepsia and the roles of Helicobacter pylori infection and vagal function. Gut 1999; 44: 55-64.
17. Marzio L, Falcucci M, Grossi L, Ciccaglione FA, Malatesta MG, Castellano A, et al. Proximal and distal gastric distension in normal subjects and H. pylori-positive and -negative dyspeptic patients and correlation with symptoms. Dig Dis Sci 1998; 43: 2757-63.
18. Jian R, Ducrot F, Ruskone A, Chaussade S, Rambaud JC, Modigliani R, et al. Symptomatic, radionuclide and therapeutic assessment of chronic idiopathic dyspepsia. A double-blind placebo-controlled evaluation of cisapride. Dig Dis Sci 1989; 34: 657-64.
19. Wegener M, Borsch G, Schaffstein J, Reuter C, Leverkus F. Frequency of idiopathic gastric stasis and

intestinal transit disorders in essential dyspepsia. J Clin Gastroenterol 1989; 11: 163-8.
20. Stanghellini V, Tosetti C, Paternico A, Barbara G, Morselli-Labate AM, Monetti N, et al. Risk indicators of delayed gastric emptying of solids in patients with functional dyspepsia. Gastroenterology 1996; 110: 1036-42.
21. Waldron B, Cullen PT, Kumar R, Smith D, Jankowski J, Hopwood D, et al. Evidence for hypomotility in non-ulcer dyspepsia: a prospective multifactorial study. Gut 1991; 32: 246-51.
22. Tytgat GN, Noach LA, Rauws EA. Is gastroduodenitis a cause of chronic dyspepsia? Scand J Gastroenterol Suppl 1991; 182: 33-9.
23. Borsch G, Schmidt G, Wegener M, Sandmann M, Adamek R, Leverkus F, et al. Campylobacter pylori: prospective analysis of clinical and histological factors associated with colonization of the upper gastrointestinal tract. Eur J Clin Invest 1988; 18: 133-8.
24. Chang CS, Chen GH, Kao CH, Wang SJ, Peng SN, Huang CK. The effect of Helicobacter pylori infection on gastric emptying of digestible and indigestible solids in patients with nonulcer dyspepsia. Am J Gastroenterol 1996; 91: 474-9.
25. Goh KL, Paramsothy M, Azian M, Parasakthi N, Peh SC, Bux S, et al. Does Helicobacter pylori infection affect gastric emptying in patients with functional dyspepsia? J Gastroenterol Hepatol 1997; 12: 790-4.
26. Perri F, Clemente R, Festa V, Annese V, Quitadamo M, Rutgeerts P, et al. Patterns of symptoms in functional dyspepsia: role of Helicobacter pylori infection and delayed gastric emptying. Am J Gastroenterol 1998; 93: 2082-8.
27. Wegener M, Borsch G, Schaffstein J, Schulz-Flake C, Mai U, Leverkus F. Are dyspeptic symptoms in patients with Campylobacter pylori-associated type B gastritis linked to delayed gastric emptying? Am J Gastroenterol 1988; 83: 737-40.
28. Saslow SB, Thumshirn M, Camilleri M, Locke GR 3rd, Thomforde GM, Burton DD, et al. Influence of H. Pylori infection on gastric motor, and sensory function in asymptomatic volunteers. Dig Dis Sci 1998; 43: 258-64.
29. Gerards C, Leodolter A, Glasbrenner B, Malfertheiner P. H. Pylori infection and visceral hypersensitivity in patients with irritable bowel syndrome. Dig Dis 2001; 19: 170-3.
30. Tack J, Coremans G, Janssens J. A risk-benefit assessment of cisapride in the treatment of gastrointestinal disorders. Drug Saf 1995; 12: 384-92.
31. Tack J, Coulie B, Janssens J. The influence of cisapride on gastric tone and the perception of gastric distention. Aliment Pharmacol Ther 1998; 12: 761-6.
32. McCallum RW, Prakash C, Campoli-Richards DM, Goa KL. Cisapride. A preliminary review of its pharmacodynamic and pharmacokinetic properties, and therapeutic use as a prokinetic agent in gastrointestinal motility disorders. Drugs 1988; 36: 652-81.
33. Wiseman LR, Faulds D. Cisapride. An updated review of its pharmacology and therapeutic efficacy as a prokinetic agent in gastrointestinal motility disorders. Drugs 1994; 47: 116-52.
34. Hausken T, Berstad A. Cisapride treatment of patients with non-ulcer dyspepsia and erosive prepyloric changes. A double-blind, placebo-controlled trial. Scand J Gastroenterol 1992; 27: 213-7.
35. Krag E. Non-ulcer dyspepsia introduction: epidemiological data. Scand J Gastroenterol Suppl 1982; 79: 6-8.
36. Finney JS, Kinnersley N, Hughes M, O'Bryan-Tear CG, Lothian J. Meta-analysis of antisecretory and gastrokinetic compounds in functional dyspepsia. J Clin Gastroenterol 1998; 26: 312-20.
37. Corinaldesi R, Stanghellini V, Raiti C, Rea E, Salgemini R, Barbara L. Effect of chronic administration of cisapride on gastric emptying of a solid meal and on dyspeptic symptoms in patients with idiopathic gastroparesis. Gut 1987; 28: 300-5.
38. Yeoh KG, Kang JY, Tay HH, Gwee KA, Tan CC, Wee A, et al. Effect of cisapride on functional dyspepsia in patients with and without histological gastritis: a double-blind placebo-controlled trial. J Gastroenterol Hepatol 1997; 12: 13-8.
39. Tack J, Piessevaux H, Coulie B, Caenepeel P, Janssens J. Role of impaired gastric accommodation to a meal in functional dyspepsia. Gastroenterology 1998; 115: 1346-52.
40. Rhee PL, Kim YH, Son HJ, Kim JJ, Koh KC, Paik SW, et al. Lack of association of Helicobacter pylori infection with gastric hypersensitivity or delayed gastric emptying in functional dyspepsia. Am J Gastroenterol 1999; 94: 3165-9.
41. Mearin F, de Ribot X, Balboa A, Salas A, Varas MJ, Cucala M, et al. Does *Helicobacter pylori* infection increase gastric sensitivity in functional dyspepsia? Gut 1995; 37: 47-51.
42. Marshall BJ, Warren JR, Francis GJ, Langton SR, Goodwin CS, Blincow ED. Rapid urease test in the management of Campylobacter pyloridis associated gastritis. Am J Gastroenterol 1987; 82: 200-10.

เชื้อเฮลิโคแบคเตอร์ไพโลไรไม่มีผลต่อการตอบสนองต่อยากระตุ้นการเคลื่อนไหวของทางเดินอาหาร (ซิสาไพรด์) ในผู้ป่วยที่มีอาการของ non-ulcer dyspepsia

สุเทพ กลชาญวิทย์, วโรชา มหาชัย, ธวัชชัย ชัยวัฒนรัตน์, พินิจ กุลละวณิชย์

วัตถุประสงค์: *เพื่อจะศึกษาว่า การติดเชื้อเฮลิโคแบคเตอร์ไพโลไร มีผลต่อการตอบสนองต่อยากระตุ้นการเคลื่อนไหวของทางเดินอาหาร (ซิสาไพรด์) ในผู้ป่วย non-ulcer dyspepsia หรือไม่*

วัสดุและวิธีการ: *ผู้ป่วย non-ulcer dyspepsia 35 คน (ชาย 16 คน, หญิง 19 คน) ซึ่งได้ผ่านการตรวจแล้วไม่พบสาเหตุของอาการโดยการส่องกล้องตรวจภายในทางเดินอาหารส่วนบน ได้รับการรักษาด้วยยาซิสาไพรด์ขนาด 10 มิลลิกรัม วันละ 3 ครั้ง ก่อนอาหารเป็นเวลา 2 สัปดาห์ ผู้ป่วยทุกคนได้รับการตรวจหาการติดเชื้อ เฮลิโคแบคเตอร์ไพโลไร ด้วยวิธีทดสอบ CLO และตรวจดูการเคลื่อนผ่านของอาหารผ่านกระเพาะอาหารโดยวิธีซินธิกราฟฟี่ โดยเปรียบเทียบกับผลการตรวจซินธิกราฟฟี่ในอาสาสมัครปกติ 22 คน*

ผลการศึกษา: *การเคลื่อนไหวของอาหารผ่านกระเพาะอาหารในผู้ป่วยใช้เวลานานกว่าอาสาสมัครปกติอย่างมีนัยสำคัญ โดยมีค่าครึ่งเวลาเฉลี่ยเท่ากับ 90.9 $\pm$ 28 นาทีและ 77.6 $\pm$ 14 นาที ตามลำดับ หลังได้รับยาซิสาไพรด์ การเคลื่อนไหวของอาหารผ่านกระเพาะอาหารเร็วขึ้นอย่างมีนัยสำคัญ (73.6 $\pm$ 22 นาที) ยาซิสาไพรด์ทำให้อาการของผู้ป่วยดีขึ้นอย่างมีนัยสำคัญ ซึ่งการดีขึ้นของอาการของผู้ป่วยไม่แตกต่างกันระหว่างผู้ป่วยที่มีการติดเชื้อ หรือไม่มีการติดเชื้อ เฮลิโคแบคเตอร์ไพโลไร รวมทั้งไม่มีความแตกต่างกันระหว่างผู้ป่วยที่มีการเคลื่อนไหวของอาหารผ่านกระเพาะอาหารช้ากว่าปกติหรือปกติ*

สรุป: *ซิสาไพรด์ทำให้อาการดิสเปปเซียดีขึ้นโดยการติดเชื้อเฮลิโคแบคเตอร์ไพโลไร และความผิดปกติของการเคลื่อนผ่านของอาหารผ่านกระเพาะอาหารไม่มีผลต่อการตอบสนองต่อยาซิสาไพรด์ของผู้ป่วย การศึกษานี้บ่งชี้ว่าการตรวจหาการติดเชื้อเฮลิโคแบคเตอร์ไพโลไรและการเคลื่อนผ่านของอาหารผ่านกระเพาะอาหารไม่มีความจำเป็นในผู้ป่วย non-ulcer dyspepsiaที่กำลังจะได้รับยาซิสาไพรด์*