AMERICAN HEALTH CONSULTANTS® A Medical Economics Company

The Practical Journal for Primary Care Physicians

Primary Care Reports™

Volume 6, Number 1 **January 10, 2000**

Diagnosis and Management of Nonulcer Dyspepsia

Author: **Nicholas J. Talley, MD,** Professor of Medicine, Department of Medicine, University of Sydney, Nepean Hospital, Australia.
Peer Reviewer: **Jonathan C. Saxe, MD,** Associate Professor of Clinical Medicine, Wright State University, Dayton, Ohio.

Editor's Note—

The term dyspepsia is currently considered to encompass patients with epigastric pain or discomfort.[1,2] Those patients who have predominant heartburn or acid regurgitation, the classic symptoms of gastroesophageal reflux disease (GERD), should not be considered to have dyspepsia even if they also suffer from epigastric pain or discomfort; these patients have GERD until proven otherwise. Only a minority of patients with dyspepsia are found to have a definite structural explanation for the symptoms, such as peptic ulcer disease, after appropriate testing. Hence, most patients with dyspepsia end up with a label of nonulcer (or functional) dyspepsia following investigations.[1,2] There is increasing evidence that nonulcer dyspepsia is a heterogeneous condition, but conceptually two broad clinical subsets exist: one group has predominant pain (referred to now as ulcer-like dyspepsia) while another group has predominant bloating, fullness, nausea or early satiety rather than pain (and are referred to as dysmotility-like dyspepsia).[2]

Epidemiology

Dyspepsia is remarkably common in the general population. Studies from the United States suggest that one in four persons experience recurrent upper abdominal pain or discomfort each year.[3] Only a minority of subjects with dyspepsia seek medical care, or in other words become patients.[3] While dyspepsia and nonulcer dyspepsia are common conditions, the natural history remains relatively poorly defined. There is a turnover of symptoms; approximately one-third of patients with dyspepsia lose their symptoms over a 12-month period, which is balanced by a similar number of other subjects who experience the symptoms in the population, leading to a stable prevalence from year to year.[3] However, most patients reporting the onset of symptoms are relapsers rather than new cases. The incidence of nonulcer dyspepsia is probably less than 1% per year. Factors that explain the onset and disappearance of symptoms in the general population remain undefined. The relatively high disappearance rate presumably explains in part the placebo response in this condition, which in clinical trials has been

observed to be approximately 20-40%.[4]

Nonulcer dyspepsia does not cause any known mortality. Older studies suggested that the risk of peptic ulcer disease was not increased in nonulcer dyspepsia.[5] However, recent randomized, controlled trials of *Helicobacter pylori* eradication therapy in the condition have reported the incidence of peptic ulcer disease to be approximately 5% over 12 months of follow-up.[6,7] This is not confined to patients who remain *H. pylori* positive and presumably in part reflects the background use of nonsteroidal anti-inflammatory drugs including low-dose aspirin. However, this rate of peptic ulcer disease has implications for management, as discussed later.

Etiology and Pathophysiology

The cause and pathophysiology of nonulcer dyspepsia remains inadequately defined. It is likely to be a multi-factorial condition. However, new pathophysiological information has come to light in recent years that has provoked changes in patient management.

Gastric Acid

It has been confirmed that acid secretion overall is not increased in patients with nonulcer dyspepsia compared with healthy controls.[8] However, in a Scottish study, *H. pylori*-positive infected nonulcer dyspepsia patients who received gastrin releasing peptide, which simulates the postprandial state, had an abnormally increased acid secretion compared with controls.[8] Unfortunately, *H. pylori*-negative nonulcer dyspeptic patients were not assessed in this study and the results remain to be confirmed.

There are conflicting data on whether acid infusion into the stomach or duodenum can induce symptoms. Overall, it appears unlikely that acid infusion into the stomach induces dyspepsia, but increased acid exposure in the duodenum may be of more relevance. A recent study showed that nausea could be induced by duodenal acid infusion in those patients who had duodenal dysmotility (presumably increasing acid exposure time because of reduced clearance). These results suggest that both abnormal acid exposure and abnormal neuromuscular function may together be a mechanism capable of causing symptoms.[9]

Abnormal Gastric Sensation

Mechanosensory stimulation by inflation of balloons in the gastric fundus has shown that patients with nonulcer dyspepsia as a group have abnormal sensory thresholds; they sense the balloon at lower pressures and/or volumes compared with healthy controls.[10-12] Although only small numbers of patients have been studied, approximately 50% appear to have this abnormality. It remains less certain whether the abnormality is localized to the gastric mucosa or reflects sensitisation of the spinal cord or even higher up in the central nervous system. A number of new drugs are currently in development that aim to block abnormal gut sensation, although these are not yet available.

Disturbed Gastric Emptying

It has been observed that one-quarter to one-half of patients with nonulcer dyspepsia have a delay in gastric emptying, although usually this abnormality is relatively modest.[13,14] Typically, these patients have underlying antral hypomotility that accounts for the delay in emptying. Drugs are available that will accelerate gastric emptying but a correlation between symptom relief and increased gastric emptying per se is, at best, weak. Hence, this abnormality alone is unlikely to account for symptoms in those affected.

Abnormal Relaxation of the Gastric Fundus

In health, the gastric fundus relaxes on ingestion of a meal, allowing normal distribution of food in the stomach and promoting controlled emptying of chyme into the small intestine. Recently, it has been observed that this mechanism is impaired in about 40% of patients with nonulcer dyspepsia.[15-17] Lack of relaxation of the fundus is associated in particular with the inability to finish a normal sized meal (early satiety).[15] Drugs inducing fundic relaxation can result in symptom improvement, and this is an exciting new development as described below.

Psychological Distress

The relationship between anxiety and depression as well as life event stress and nonulcer dyspepsia continues to be

Primary Care Reports™, ISSN 1040-2497, is published bi-weekly by American Health Consultants, 3525 Piedmont Rd., NE, Bldg. 6, Suite 400, Atlanta, GA 30305.

VICE PRESIDENT/GROUP PUBLISHER:
Donald R. Johnston.

EXECUTIVE EDITOR: Glen Harris.

MARKETING PRODUCT MANAGER:
Schandale Kornegay.

ASSOCIATE MANAGING EDITOR: Robin Mason.

COPY EDITOR: Neill Larmore.

GST Registration Number: R128870672.

POSTMASTER: Send address changes to ***Primary Care Reports™,*** P.O. Box 740059, Atlanta, GA 30374.

Periodical rate postage paid at Atlanta, GA.

Back issues: $23. Missing issues will be fulfilled by Customer Service free of charge when contacted within one month of the missing issue's date.

Subscriber Information

Customer Service: 1-800-688-2421.

E-Mail Address: customerservice@ahcpub.com

Editorial E-Mail Address: robin.mason@medec.com

World-Wide Web: http://www.ahcpub.com

Subscription Prices

United States
$299 per year (Student/Resident rate: $150).

Multiple Copies
1-9 additional copies: $269 each; 10 or more copies: $239 each.

Canada
Add GST and $30 shipping

Elsewhere
Add $30 shipping

For 50 AMA/AAFP Category 1/Prescribed hours, add $100.

Accreditation

American Health Consultants (AHC) designates this continuing medical education (CME) activity for up to 50 hours in Category 1 credit toward the AMA Physician's Recognition Award. Each physician should claim only those hours of credit that he/she actually spent in the educational activity.

AHC is accredited by the Accreditation Council for Continuing Medical Education (ACCME) to provide CME for physicians.

This CME activity was planned and produced in accordance with the ACCME Essentials.

This program has been reviewed and is acceptable for up to 50 prescribed hours by the American Academy of Family Physicians. Term of approval is for one year from beginning distribution date of January 1, 1999, with option to request yearly renewal.

Questions & Comments

Please call **Robin Mason,** Associate Managing Editor, at (404) 262-5517 or e-mail: robin.mason@medec.com between 8:30 a.m. and 4:30 p.m. ET, Monday-Friday.

Statement of Financial Disclosure

American Health Consultants does not receive material commercial support for any of its continuing medical education publications. In order to reveal any potential bias in this publication, and in accordance with Accreditation Council for Continuing Medical Education guidelines, we disclose that Dr. Talley (author) and Dr. Saxe (peer reviewer) report no consultant, stockholder, speaker's bureau, research, or other financial relationships with companies having ties to this field of study.

of interest.[18] Overall, there is reasonable evidence that patients with nonulcer dyspepsia are more anxious and depressed than controls although it has also been suggested that this may reflect selection bias (those who present for medical care with nonulcer dyspepsia may have more psychological distress than nonpatients; psychological factors may, therefore, drive health care seeking and this may explain the apparent association). There is some limited evidence that centrally acting drugs (e.g., the tricyclic antidepressants) are of value in nonulcer dyspepsia, but this observation could be just as well explained by peripheral rather than central mechanisms of action.[19]

Helicobacter pylori

H. pylori infection (and the associated histological gastritis) occurs in up to 50% of patients with nonulcer dyspepsia, although the prevalence depends on age, socioeconomic status, and ethnic background. It has been controversial whether *H. pylori* is causally linked to nonulcer dyspepsia.[20] Clinical studies have suggested that *H. pylori* infection may be more prevalent in nonulcer dyspepsia than age-matched controls, although the data have not been particularly convincing.[20] There is no evidence that specific symptoms are linked to *H. pylori* infection in nonulcer dyspepsia.[21] (*See Figure 1.*) It has been postulated that the infection may set the scene for dyspepsia later in life because of the neuromodulatory influences of inflammatory mediators released in response to the infection.[20] However, the benefit of eradication of the infection in adults has been relatively disappointing, as described below.

Diet

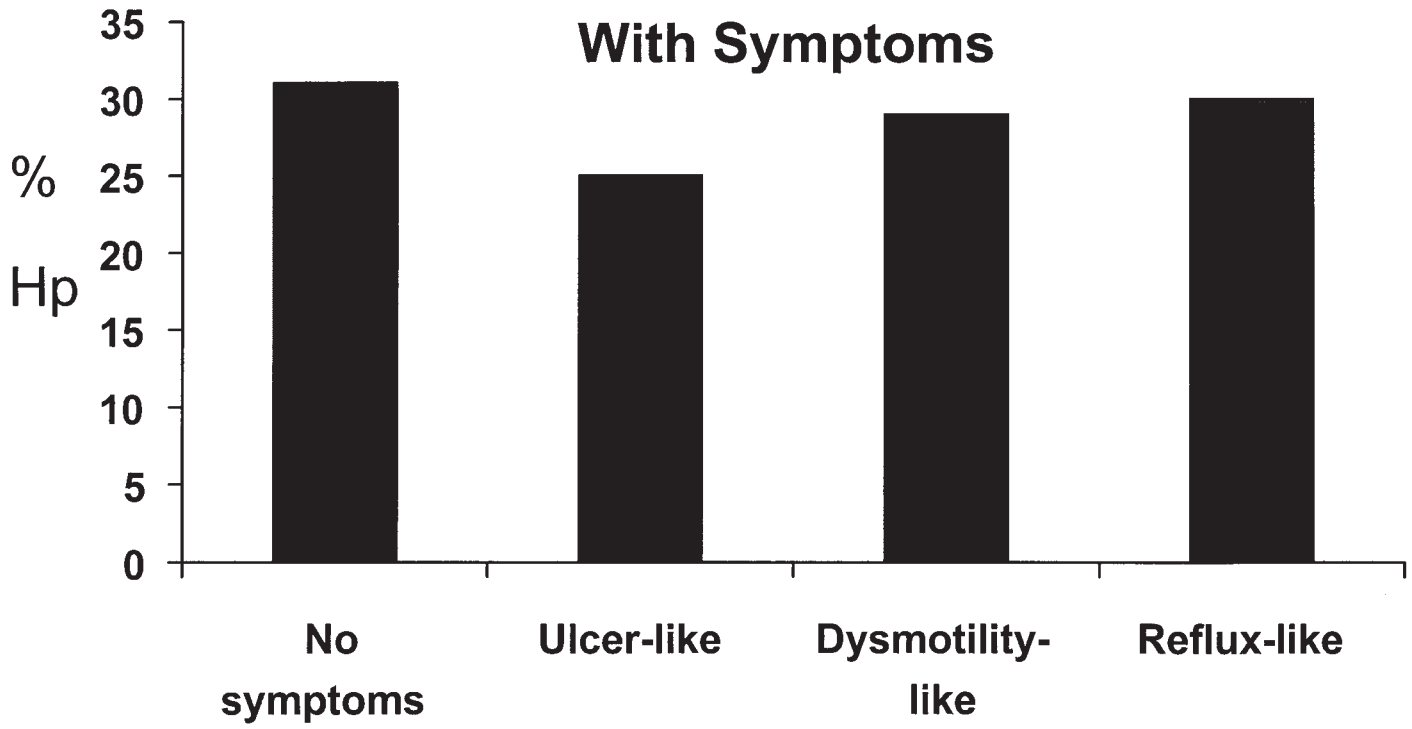
While many patients relate symptoms of dyspepsia to food ingestion, the influence of dietary components has been a neglected field. There is evidence that a high fat intake can induce symptoms.[22] The role of food intolerance and food allergy is likely to be small but remains relatively undefined.

Clinical Features

Patients with nonulcer dyspepsia have, by definition, chronic or recurrent epigastric pain or discomfort. Most patients have multiple symptoms, although they can usually identify the most bothersome (or predominant) complaint. Symptoms are not always related to meals. A small proportion of patients are woken by pain at night, contrary to classical teaching. Peptic ulcer cannot be distinguished from nonulcer dyspepsia by symptom patterns alone.[23]

Pain that is severe or very severe, lasts for hours and

Figure 1. Seroprevalence of *H. pylori* in Dyspepsia Subgroups Among Blood Donors



Note the similar prevalence of infection among all groups.

Source: Holtman G, et al. Dyspepsia in healthy blood donors. Pattern of symptoms and association with *Helicobacter pylori. Dig Dis Sci* 1994;39:1090-1098.

episodically needs to be carefully evaluated; this classical pattern suggests biliary pain rather than nonulcer dyspepsia and may be due to gallstones or, rarely, biliary dyskinesia.[1] Patients who present with epigastric pain or discomfort relieved by defecation, or associated with an increase or decrease in stool consistency or stool frequency, are likely to have irritable bowel syndrome rather than nonulcer dyspepsia, and these patients should be managed accordingly.[2] Weight loss can occur in nonulcer dyspepsia although this is then usually associated with a significant underlying gastric motility disturbance; other causes of weight loss also need to be considered in this clinical setting (e.g., pancreatic disease and eating disorders).

Physical examination is essentially normal in nonulcer dyspepsia. There may be mild epigastric tenderness that is of no diagnostic value. Abdominal wall pain needs to be distinguished; these patients characteristically have pain that is increased by tensing the abdominal wall muscles.

Diagnosis

In order to make a firm diagnosis, an esophagogastroduodenoscopy is required.[1] This test should be conducted when patients are off antisecretory therapy; recent use of antisecretory drugs may mask current peptic ulcer disease or reflux esophagitis and lead to misdiagnosis. An upper GI x-ray is less satisfactory but remains a common substitute. Any patient with alarm (red flag) features (e.g., age > 45 years at onset, weight loss, dysphagia, vomiting, anemia or bleeding) deserves prompt endoscopy.[1]

The clinical features alone are unfortunately insufficient to allow a firm diagnosis of nonulcer dyspepsia. However, in the patient who has a typical history, the provisional diagnosis can be considerably strengthened by noninvasively testing for *H. pylori* (for example, by ordering a locally validated serology test). *H. pylori*-negative patients are extremely unlikely to have peptic ulcer disease (or gastric cancer). Similarly, patients not ingesting traditional nonsteroidal anti-inflammatory drugs (NSAIDs) are at low risk for ulcer disease. Thus, younger patients who have no alarm features, a typical history, and who are *H. pylori* negative and not ingesting NSAIDs can be given a provisional diagnosis of nonulcer dyspepsia with reasonable certainty, and treated accordingly. Furthermore, if the patient fits the other criteria above but is infected with *H. pylori*, then currently the American Gastroenterological Association recommends a strategy of treating the infection empirically; this abolishes most active ulcers and the ulcer diathesis, and is safe and costeffective compared with endoscopy (unless endoscopy is very inexpensive).[1,23,24]

Differential Diagnosis

There are three key structural conditions that need to be considered in the patient who presents with nonulcer dyspepsia. Peptic ulceration is an important cause of episodic dyspepsia. However, the vast majority of patients with an ulcer are either *H. pylori* positive or ingest NSAIDs, or have both risk factors.[1] The new COX-2 specific NSAIDs do not cause ulceration.[25] An increasing number of peptic ulcers are being identified that are *H. pylori* negative and NSAID negative, but overall the prevalence of this condition is very low and the clinical importance of these ulcers remains undefined.

The second condition that can be confused with nonulcer dyspepsia is gastroesophageal reflux disease. Upper GI x-ray is inadequate for documenting GERD; a hiatal hernia (unless very large or a rolling type) is of little relevance.[1] Esophagogastroduodenoscopy will only identify one-third to one-half of cases of true gastroesophageal reflux disease, although if esophagitis is present (based on the finding of mucosal breaks) this is unequivocal evidence of GERD. Most of the remaining endoscopy negative patients can be identified by taking an adequate history (they suffer with predominant heartburn), although some misclassification with nonulcer dyspepsia is inevitable.[26] Routinely, 24-hour esophageal pH testing should not be considered but, in difficult cases, this test can be helpful.

The third condition that is of concern to both patients and physicians is gastric cancer. This is relatively rare in the United States but in older patients always requires exclusion. For this reason, endoscopy is recommended for all patients older than 45 years of age presenting with dyspepsia initially.[1] Unfortunately, most patients with gastric cancer have advanced incurable disease; they also typically have alarm features such as weight loss, dysphagia, recurrent vomiting, bleeding, or anaemia, and so can often be reasonably readily identified in practice.[27]

Management

Once a diagnosis of nonulcer dyspepsia has been made, reassurance and explanation are key initial steps in management.[28] Many patients have presented to see their physician because of anxiety or a fear of serious disease, and will continue to consult unless this fear is allayed.[29] Patients appreciate being given a firm diagnostic label, and no patient with nonulcer dyspepsia should be denied this type of reassurance.[2]

It is useful to next carefully review the patients symptomatology and try to ascertain what symptom is most bothersome or predominant.[2] If epigastric pain is predominant (ulcer-like dyspepsia), there is increasing evidence that potent acid suppression (preferably with a full dose proton pump inhibitor) is of value in this subset of cases.[30,31] On the other hand, if the predominant symptom is bloating, nausea, early satiety or fullness, then patients do not respond to acid suppression any better than placebo.[30] This group of patients should be considered for a prokinetic initially.[32] Cisapride is the current drug of choice because unlike metoclopramide it does not have central nervous system side effects. However, cisapride has been associated with prolongation of the QT interval and rarely sudden death, usually in patients receiving other drugs that increase the blood levels of cisapride (e.g., erythromycin, clarithromycin, antifungals, nefazodone, anti-retrovirals), or in

patients with severe underlying cardiac disease or electrolyte disturbances.

If treatment fails with one of these first-line pharmacological approaches after 4-8 weeks, it may be worthwhile switching between antisecretory and prokinetic therapy for a period as sometimes patients will respond to this change.[1,2] If treatment is successful, it should be stopped after 4-8 weeks and the patients clinical course observed. Many patients will only require short intermittent courses of therapy to adequately control their chronic symptomatology.[33]

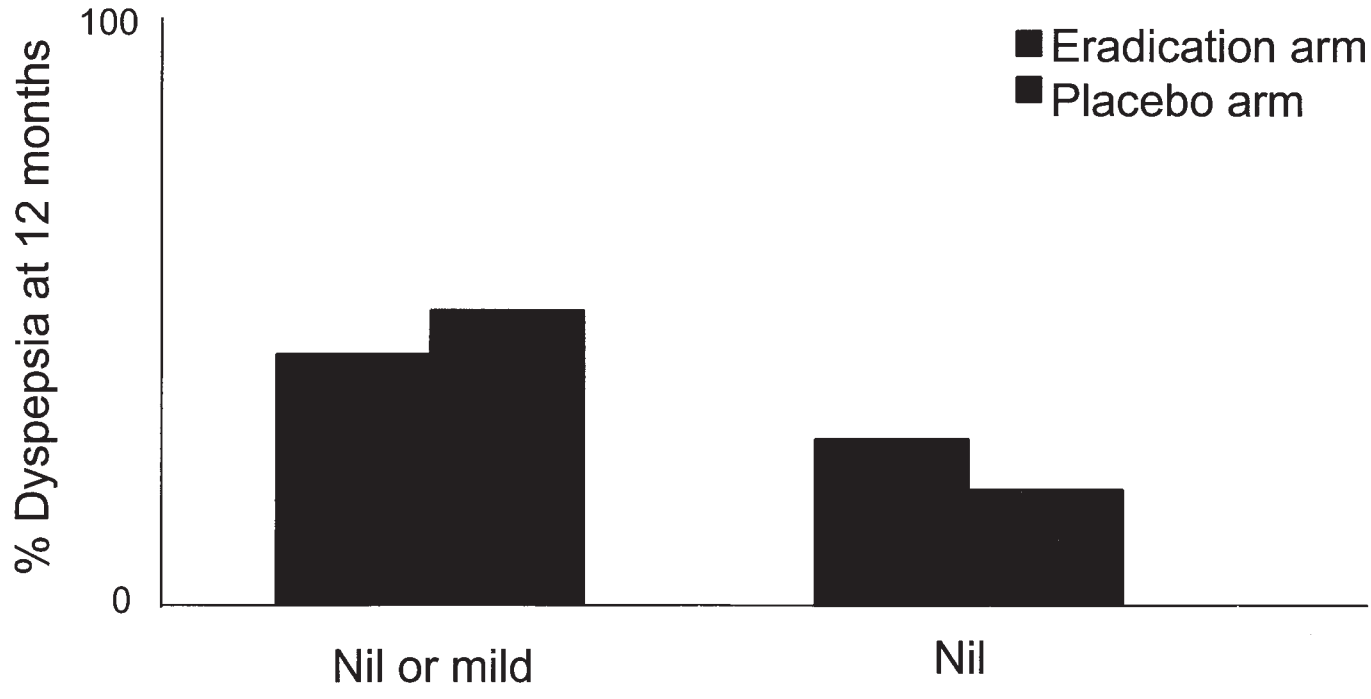
Some patients will fail to respond to this approach. Recent evidence suggest that a subset of these patients with postprandial distress have a failure of fundic relaxation. Cisapride does relax the fundus.[34] Another class of drugs that appears to relax the fundus are the serotonin type 1A receptor agonists. The antimigraine drug sumitriptan and the anxiolytic buspirone in small studies both appear to be useful for inducing fundic relaxation and reducing postprandial symptoms in some patients.[35,36] Clonidine may also be of value in this group of patients anecdotally. However, none of these new treatments is currently firmly established to be of benefit.

In patients with resistant symptoms, the diagnosis needs to be reconsidered. Atypical GERD, depression and rare causes of dyspepsia (e.g., pancreatic cancer, celiac disease, metabolic conditions) should be excluded. Next, consideration should be given to a trial of antidepressant therapy. There is some evidence that a low-dose tricyclic antidepressant can be of value for some patients with nonulcer dyspepsia, although adequate controlled trials are as yet unavailable.[19] For example, amitryptiline can be started at the dose of 10-20 mg before bed and if necessary slowly titrated up. If successful, therapy should be continued for a period of approximately six months and then tapered off.

The value of therapy to eradicate *H. pylori* in nonulcer dyspepsia has recently been carefully evaluated in large, randomized, double-blind, placebo-controlled clinical trials.[6,7,37,39] Most of the high-quality trials have been negative (*see Figure 2*). However, it remains conceivable that perhaps 5% of patients with nonulcer dyspepsia do respond to *H. pylori* eradication therapy (the trials have not been large enough to detect this effect size). Furthermore, *H. pylori* eradication does prevent the development of peptic ulceration in at least some patients with nonulcer dyspepsia, and, therefore, may have other value. Overall, however, eradication therapy appears to induce symptom relief that is similar to placebo, and if this treatment is considered patients need to be appropriately informed.

The value of behavioral therapy and psychotherapy in nonulcer dyspepsia remains inadequately tested. However, some patients will benefit from psychological interventions[2] and the strategy should be considered for patients with recalcitrant symptoms.

Figure 2. Relief of Dyspepsia in the Final Week of the Trial, 12 Months After Eradication Therapy for *H. pylori* or Placebo



Source: Talley NJ, et al. Absence of benefit of eradicating *Helicobacter pylori* in patients with nonulcer dyspepsia. *N Engl J Med* 1999;341:1106-1111.

References

1. Talley NJ, et al. AGA technical review: Evaluation of dyspepsia. American Gastroenterological Association. *Gastroenterology* 1998;114:582-595.
2. Talley NJ, et al. Functional gastroduodenal disorders. *Gut* 1999;45(Suppl 2):37-42.
3. Talley NJ, et al. Onset and disappearance of gastrointestinal symptoms and functional gastrointestinal disorders. *Am J Epidemiol* 1992;136:165-177.
4. Veldhuyzen van Zanten SJO, et al. Drug treatment of functional dyspepsia: A systematic analysis of trial methodology with recommendations for the design of future trials. Report of an international working party. *Am J Gastroenterol* 1996;91:660-673.
5. Janssen HA, et al. The clinical course and prognostic determinants of non-ulcer dyspepsia: a literature review. *Scand J Gastroenterol* 1999;34:546-550.
6. Talley NJ, et al. Absence of benefit of eradicating *Helicobacter pylori* in patients with nonulcer dyspepsia. *N Engl J Med* 1999;341:1106-1111.
7. Blum AL, et al. Lack of effect of treating *Helicobacter pylori* infection in patients with nonulcer dyspepsia. *N Engl J Med* 1998;339:1875-1881.
8. McColl KE. Role of gastric acid in the aetiology of dyspeptic disease and dyspepsia. *Baillieres Clin Gastroenterol* 1998;12:489-502.
9. Samsom M, et al. Abnormal clearance of exogenous acid and increased acid sensitivity of the proximal duodenum in dyspeptic patients. *Gastroenterology* 1999;116:515-520.
10. Schmulson MJ, Mayer EA. Gastrointestinal sensory abnormalities in functional dyspepsia. *Baillieres Clin Gastroenterol* 1998;12:545-556.
11. Marzio L, 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;43:2757-2763.
12. Salet GA, et al. Responses to gastric distension in functional dyspepsia. *Gut* 1998;42:823-829.
13. Perri F, et al. Patterns of symptoms in functional dyspepsia: role of *Helicobacter pylori* infection and delayed gastric emptying. *Am J Gastroenterol* 1998;93:2082-2088.
14. Stanghellini V, et al. Predominant symptoms identify different subgroups in functional dyspepsia. *Am J Gastroenterol* 1999;94:2080-2085.
15. Tack J, et al. Role of impaired gastric accommodation to a meal in functional dyspepsia. *Gastroenterology* 1998; 115:1346-1352.
16. Thumshirn M, et al. Gastric accommodation in non-ulcer dyspepsia and the roles of *Helicobacter pylori* infection and vagal function. *Gut* 1999;44:55-64.
17. Berstad A, et al. Gastric accommodation in functional dyspepsia. *Scand J Gastroenterol* 1997; 32:193-197.
18. Olden KW. Are psychosocial factors of aetiological importance in functional dyspepsia? *Baillieres Clin Gastroenterol* 1998;12:557-571.
19. Mertz H, et al. Effect of amitriptyline on symptoms, sleep, and visceral perception in patients with functional dyspepsia. *Am J Gastroenterol* 1998;93:160-165.
20. Talley NJ, Hunt RH. What role does *Helicobacter pylori* play in dyspepsia and nonulcer dyspepsia? Arguments for and against *H. pylori* being associated with dyspeptic symptoms. *Gastroenterology* 1997;113(Suppl 6):S67-77.
21. Holtmann G, et al. Dyspepsia in healthy blood donors. Pattern of symptoms and association with *Helicobacter pylori*. *Dig Dis Sci* 1994;39:1090-1098.
22. Feinle C, et al. Effects of duodenal nutrients on sensory and motor responses of the human stomach to distension. *Am J Physiol* 1997;273(3 Pt 1):G721-726.
23. Agreus L, Talley NJ. Challenges in managing dyspepsia in general practice. *BMJ* 1997;315:1284-1288.
24. Heaney A, et al. A prospective randomised trial of a "test and treat" policy versus endoscopy based management in

young *Helicobacter pylori* positive patients with ulcer-like dyspepsia, referred to a hospital clinic. *Gut* 1999;45: 186-190.
25. Laine L, et al. A randomized trial comparing the effect of Rofecoxib, a cyclooxygenase 2-specific inhibitor, with that of ibuprofen on the gastroduodenal mucosa of patients with osteoarthritis. *Gastroenterology* 1999; 117:776-783.
26. Dent J, et al. An evidence-based appraisal of reflux disease management—the Genval Workshop Report. *Gut* 1999;44(Suppl 2):S1-S16.
27. Christie J, et al. Gastric cancer below the age of 55: Implications for screening patients with uncomplicated dyspepsia. *Gut* 1997;41:513-517.
28. Fisher RS, Parkman HP. Management of nonulcer dyspepsia. *N Engl J Med* 1998;339:1376-1381.
29. Quartero AO, et al. What makes the dyspeptic patient feel ill? A crosssectional survey of functional health status, *Helicobacter pylori* infection, and psychological distress in dyspeptic patients in general practice. *Gut* 1999;45:15-19.
30. Talley NJ, et al. Efficacy of omeprazole in functional dyspepsia: double-blind, randomized, placebo-controlled trials (the Bond and Opera studies). *Aliment Pharmacol Ther* 1998;12:1055-1065.
31. Jones R, Crouch SL. Low-dose lansoprazole provides greater relief of heartburn and epigastric pain than low-dose omeprazole in patients with acid-related dyspepsia. *Aliment Pharmacol Ther* 1999;13:413-419.
32. Finney JS, et al. Meta-analysis of antisecretory and gastrokinetic compunds in functional dyspepsia. *J Clin Gastroenterol* 1998;26:312-320.
33. Meineche-Schmidt V, et al. Impact of functional dyspepsia on quality of life and health care consumption after cessation of antisecretory treatment. A multicentre 3 month follow-up study. *Scand J Gastroenterol* 1999; 34:566-574.
34. Tack J, et al. The influence of cisapride on gastric tone and the perception of gastric distension. *Aliment Pharmacol Ther* 1998;12:761-766.
35. Tack J, et al. Influence of fundus-relaxing drug on meal-related symptosm in dyspeptic patients with hypersensitivity ot gastric distention. *Gastroenterology* 1999;116: (G1419)A324.
36. Tack J, et al. A placebo-controlled trial of busiprone, a fundus-relaxing drug, in functional dyspepsia: effect on symptoms and gastric sensory and motor function. *Gastroenterology* 1999;116:(G1423)A325.
37. McColl K, et al. Symptomatic benefit from eradicating *Helicobacter pylori* infection in patients with nonulcer dyspepsia. *N Engl J Med* 1998;339:1869-1874.
38. Talley NJ, et al. Eradication of *Helicobacter pylori* in functional dyspepesia: randomised doulbe blind placebo controlled trial with 12 months' follow up. The Optimal Regimen Cures Helicobacter Induced Dyspepsia (ORCHID) Study Group. *BMJ* 1999; 318:833-837.
39. Greenberg PD, Cello JP. Lack of effect of treatment for *Helicobacter pylori* on symptoms of nonulcer dyspepsia. *Arch Intern Med* 1999;159:2283-2288.

Physician CME Questions

1. Which of the following criteria would match a younger patient who is given a provisional diagnosis of nonulcer dyspepsia?
   a. Younger patients who have no alarm features
   b. Younger patients with a typical history
   c. Younger patients who are *H. pylori* negative
   d. Younger patients who are not ingesting NSAIDS
   e. All of the above

2. Which of the following structural conditions need to be considered in a patient who presents with nonulcer dyspepsia?
   a. Peptic ulceration
   b. Gastroesophageal reflux disease

c. Gastric cancer
d. All of the above

3. Cisapride is the current drug of choice for nonulcer dyspepsia.
   a. True
   b. False

4. Which of the following "red flag" features should a physician look for before performing an endoscopy?
   a. Weight loss
   b. Anemia
   c. Dysphagia
   d. Vomiting
   e. All of the above

5. *H. pylori* infection occurs in which percent of patients with nonulcer dyspepsia?
   a. 60%
   b. 50%
   c. 100%
   d. 85%
   e. None of the above

Attention *Primary Care Reports* Subscribers

No one knows the clinical information and analysis that primary care physicians want and need as much as readers of *Primary Care Reports*. To tap into that expertise, we are happy to announce that we are opening up our monograph selection process to our readers.

Monographs range from 25-35 Microsoft Word document, double-spaced pages. Each article is thoroughly peer reviewed by colleagues and physicians specializing in the topic being covered. Once the idea for an article has been approved, deadlines and other details will be arranged. Authors will be compensated upon publication.

As always, we are anxious to hear from our readers about topics they would like to see covered in future issues. Readers who have ideas or proposals for future single-topic monographs can contact Associate Managing Editor Robin Mason at (404) 262-5517 or (800) 688-2421 or by e-mail at robin.mason@medec.com.

We look forward to hearing from you.

In Future Issues:

Atrial Fibrillation—
Santosh Menon, MD,
Patrick Donovan MD, and Gery Tomassoni, MD

Management of Obesity—
John P. Foreyt, PhD