Chronic Nausea & Vomiting

Lawrence R. Schiller, MD, FACG
Digestive Health Associates of Texas
Baylor University Medical Center,
Dallas, Texas

Nausea & Vomiting

• Common symptoms
• Quite troubling to patients & families
• May have a variety of causes
  – Mechanical obstruction: GOO & SBO
  – Inflammatory/painful diseases: e.g., pancreatitis, biliary tract disease, hepatitis
  – Ingestion of poisons & toxins, drug toxicity
  – Functional disorders: gastroparesis, pseudo-obstruction, others
Case #1

- JM, 42-year-old man with diabetes mellitus for 20 years; chief complaint: vomiting & weight loss
- Diabetes poorly controlled, blood sugars often >250 mg% despite insulin therapy
- Has disabling peripheral neuropathy for three years treated with gabapentin (600 mg TID)

Case #1

- Has had problems with vomiting for last 6 months associated with 40 lb. weight loss
- Vomits each morning: contents include remnants of food from previous dinner
- Nausea through the day reduces appetite
- Also complains of epigastric fullness and some pain
- Has occasional diarrhea
Case #1

• Physical examination
  – Normal vital signs, thin: ht. 66 in., wt. 125 lbs.
  – Pupils unreactive to light, but do accommodate, absent knee jerks
  – Abdomen & balance of exam: unremarkable, no succussion splash

• Endoscopy
  – Distal esophageal erythema, hiatal hernia
  – Old food and bile in stomach (after 12 h fast)
  – No pyloric obstruction

GASTROPARESIS

• Relatively rare condition: incidence, 6.2 per 100,000; prevalence, 23.7 per 100,0001
• Symptomatic reduction in gastric emptying
• Common symptoms
  – Nausea, vomiting
  – Dyspepsia, indigestion
  – Weight loss
  – Early satiety, bloating
  – Abdominal pain

1Jung H-K et al. Gastroenterology 2009;136:1225-33
GASTROPARESIS

• Common causes
  – Idiopathic
  – Diabetes mellitus
  – Post-vagotomy
  – Parkinson’s disease
  – Vascular disease
  – Pseudo-obstruction


CAUSES OF GASTROPARESIS

- Idiopathic: 6%
- Diabetic: 35%
- Postsurgical: 4%
- Parkinson’s: 5%
- Vascular Disease: 8%
- Pseudoobstruction: 29%
- Miscellaneous: 13%

IDIOPATHIC GASTROPARESIS

- Most common type in most series
- May be related to previous infection
  - “Reprogramming” of enteric nervous system
  - Degeneration of enteric nervous system
- May be related to “auto-immunity”
  - Degeneration of enteric nervous system
  - Fibrosis of muscle
- Symptoms may resolve with time


DIABETIC GASTROPARESIS

- Diabetes is most common known cause of gastroparesis
- Most often occurs with longstanding insulin-dependent diabetes
- Diabetic neuropathy coexists in most
  - Vagal autonomic neuropathy
- Hyperglycemia will slow emptying by itself
- Gastroparesis may upset diabetic control

POST VAGOTOMY GASTROPARESIS

- Altered proximal gastric accommodation
- Impaired antral peristalsis with truncal vagotomy
- Planned vagotomy usually associated with drainage procedure
- Inadvertent vagotomy may occur with antireflux surgery and other procedures


EVALUATION OF GASTROPARESIS

- History
- Physical Examination
- Diagnostic testing
  - Endoscopy
  - Radiography
  - Gastric emptying testing
  - Electrogastrography
  - Telemetry capsule
HISTORY

• Assess symptoms, impact on patient
• Consider gastrointestinal disorders, outlet obstruction
• Look for systemic illnesses
  – Metabolic diseases
  – Central nervous system problems
• Review medications
• Explore diet modifications

PHYSICAL EXAMINATION

• Nutritional status
  – Weight loss
  – Cachexia
• Succussion splash
• Evidence of neuropathy, systemic disease
DIAGNOSTIC TESTING

• Endoscopy
• Radiography
  – Exclude gastric outlet obstruction
  – Exclude small bowel obstruction
  – Look for other conditions

• Gastric emptying testing
  – Saline load test
  – Radio-opaque markers
  – Scintigraphy: 4 hour study more reproducible
    • Standardized international protocol¹
    • Less overall gamma camera time
    • Better correlates with symptoms²

DIAGNOSTIC TESTING

• Electrogastrography\(^1\)
• Telemetry pill\(^2\)
  – Sensitivity: 0.65
  – Specificity: 0.87


THERAPY

• Diet modifications
• Drugs
  – Antemetics
  – Prokinetic drugs
• Enteral/parenteral feeding
• Surgery
  – Gastrostomy, jejunostomy
  – Gastric electrical stimulator
  – Gastrectomy
EDUCATIONAL RESOURCES FOR PATIENTS

• ACG
  – www.patients.gi.org/topics/gastroparesis
• NIH

Case #2

• 24-year-old man with vomiting for 6 years
• Episodes of severe nausea, epigastric abdominal pain, vomiting every 2—3 weeks
• Rapidly becomes dehydrated, goes to ER
• Treated with IV fluid, antemetics and narcotics; symptoms resolve in 24—48 h
• Extensive work ups on two occasions were negative (endoscopy, CT scan, UGI/SBFT)
Case #2

- Well between episodes
- No weight loss
- No alcohol use, occasional marijuana
- No help with metoclopramide, promethazine, ondansetron
- Physical examination in office: normal
- 4-h gastric emptying scan shows 4% retention at 4 hours

CYCLIC VOMITING SYNDROME

- First described in children; now recognized in adults
- Stereotypical episodes occur with little prodrome; characteristic time course
- Pain may be quite prominent
- Nothing is wrong with the gut
- ?migraine equivalent
- Often history of marijuana abuse

CYCLIC VOMITING SYNDROME

• Acute treatment
  – Sedation is key to acute management (lorazepam, haloperidol on scheduled basis)
  – Minimize or avoid narcotics
  – Antemetics may be helpful
• Prophylaxis
  – Amitriptyline in substantial dose (>100 mg)
  – Other migraine prophylaxis
• Abortive therapy (sedation at onset)

EDUCATIONAL RESOURCES FOR PATIENTS

• NIH
  – www.digestive.niddk.nih.gov/ddiseases/pubs/cvs
• Cyclic Vomiting Syndrome Association
  – www.cvsaonline.org
Case #3

- 28-year-old woman with vomiting for 5 yr.
- Daily episodes of “projectile” vomiting while eating
- Emesis consists of food that she has just eaten; “undigested”, tastes the same as when it was first swallowed
- Sometimes can swallow hard/reswallow without ejecting bolus from mouth, rechews food occasionally

Case #3

- No weight loss in last 3 years
- Has missed time from graduate school
- Evaluated by two gastroenterologists
  - Normal endoscopy
  - Normal gastric emptying scan
  - Normal UGI/SBFT x-rays
  - Normal esophageal motility study
- Treated with metoclopramide, tegaserod, had TPN for 2 months with no effect on sx.
RUMINATION SYNDROME

• Initially described in mentally-retarded children; now also observed in adults
• Key clue is effortless regurgitation of food while eating; no nausea or pain
• Thought to be behavioral; nothing wrong with gut
• Episodes due to diaphragm/abdominal wall contraction and relaxation at EG junction


RUMINATION SYNDROME

• Symptoms may be exacerbated by stress
• No diagnostic test; need to exclude Zenker’s diverticulum, achalasia
• Treatment is supportive
  – Relaxation training, biofeedback
  – Psychotherapy
  – ? Role for SSRI drugs (e.g., mirtazapine)
  – Antemetics NOT helpful
Case #4

- 25-year-old woman with 6 years of nausea
- Feels OK when she first awakes, nausea develops within minutes of getting up
- Rarely vomits, but no appetite
- Weight loss of 30 lbs. since onset of illness
- Had to drop out of college due to symptoms

Case #4

- Extensive evaluation by three gastroenterologists since onset of illness
  - Negative endoscopy
  - Negative abdominal sonography
  - Negative HIDA scan
  - Cholecystectomy done: no improvement
  - 90-min gastric emptying scan: abnormal
- Trials of metoclopramide, tegaserod, domperidone unsuccessful
Case #4

- Some improvement of nausea with prochlorperazine
- Referred for consideration of gastric electrical stimulator placement
- Physical examination
  - Normal general examination
  - Nystagmus on rightward gaze
  - Rotates 90° to left while marching in place with eyes shut and ears occluded

VESTIBULAR DYSFUNCTION

- Surprisingly common cause of chronic nausea
- May or may not have vertigo or motion sickness symptoms (but often do)
- Emptying studies may be abnormal from nausea alone
- Scopolamine patches or antihistamines (meclizine, dimenhydrinate) helpful
### DIAGNOSES IN 248 REFERRED PATIENTS

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chronic Vestibular Dysfunction</td>
<td>64</td>
<td>(25.8)</td>
</tr>
<tr>
<td>Gastroparesis</td>
<td>28</td>
<td>(11.3)</td>
</tr>
<tr>
<td>Cyclic Vomiting Syndrome</td>
<td>22</td>
<td>(8.8)</td>
</tr>
<tr>
<td>Rumination Syndrome</td>
<td>3</td>
<td>(1.2)</td>
</tr>
<tr>
<td>GERD</td>
<td>5</td>
<td>(2.0)</td>
</tr>
<tr>
<td>Post-Surgical</td>
<td>6</td>
<td>(2.4)</td>
</tr>
<tr>
<td>Medication-Induced</td>
<td>3</td>
<td>(1.2)</td>
</tr>
<tr>
<td>Other Miscellaneous</td>
<td>41</td>
<td>(16.5)</td>
</tr>
<tr>
<td>Unspecified</td>
<td>76</td>
<td>(30.6)</td>
</tr>
</tbody>
</table>


### SUMMARY

- Not everyone with functional chronic nausea and vomiting has gastroparesis
- 4-hour gastric emptying study should be the standard test for delayed emptying
- Differential diagnosis is broad and includes both gastrointestinal and non-gastrointestinal problems

THINK OUTSIDE THE ABDOMEN!