Primary Health Care Initiatives (PHCI) Project
Contract No. 278-C-00-99-00059-00
Abt. Associates Inc.

ABDOMINAL PAIN

LEARNING OBJECTIVES

- To describe the most common causes of abdominal pain, and the characteristics of each
- To develop a systemic approach to the evaluation and emergency management of abdominal pain
- To be able to effectively manage and distinguish the non-life-threatening types of abdominal pain

TEACHING STRATEGIES

- Use case studies to stimulate discussion and thinking about the initial evaluation and management of abdominal pain
- Use lecture or informal presentation for didactic material, small group discussion for prevention, counseling and patient education issues
- Review and demonstrate the correct method of examining the abdomen on a volunteer (inspection, percussion, gentle palpation of all four quadrants, auscultation)

LEARNING POINTS

Common Causes of Abdominal Pain and Clinical Presentation:

1. Peptic Ulcer Disease
    a. Typically presents as burning pain in the epigastric area
    b. Pain of gastric ulcers usually improves with food
    c. Symptoms may improve with antacids or H-2 antagonists
    d. If bleeding develops, patient may present with melena
    e. Predisposing factors may be:
        - Medications (anti-inflammatories, aspirin, antibiotics like erythromycin)
        - Stress
        - Alcohol use or overuse
        - Smoking

2. Gastroenteritis
    a. Very common cause of abdominal pain
    b. Usually viral etiology
    c. Typically diffuse and crampy
    d. Commonly associated with diarrhea, may also have nausea

3. Irritable Bowel Syndrome
    a. Intermittent, recurring symptoms over months to years
    b. May have either mild diarrhea or constipation, often alternating
    c. Pain is cramping, variable, not consistently localized
    d. Pain is often temporarily relieved with passing gas or bowel movement
    e. Often associated with chronic anxiety or tension

4. Peritonitis
    a. Etiology is a ruptured viscus
    b. Sudden-onset of pain
    c. Physical exam diagnostic – findings include rebound, involuntary guarding
    d. Upright abdominal films may show free air under the diaphragm
    e. Requires immediate surgical intervention

5. Appendicitis
    a. Classically periumbilical pain, migrating to RLQ, but may be mid or RUQ
    b. Fever, leukocytosis, nausea, vomiting
    c. Anorexia is a classic sign
    d. On physical exam, look for signs of appendiceal inflammation adjacent to muscle, e.g. Psoas sign (pain on extension of right thigh), Obtrurator sign (pain on internal rotation of right thigh)

6. Acute Cholecystitis
    a. Pain in RUQ and epigastrium
    b. Colicky, then steady aching pain
    c. Nausea and vomiting, low-grade fever, leukocytosis
    d. Usually worse after meals, or with greasy foods
    e. Examine RUQ for Murphy's sign (pain in RUQ on deep palpation with inhalation)

7. Small Bowel Obstruction
    a. Usually mechanical etiology, e.g. adhesions, tumor, hernia
    b. Symptoms include sudden onset of diffuse pain, distention, vomiting
       and obstipation
    c. Physical exam remarkable for distention, diffuse tenderness and high-pitched bowel sounds
    d. Requires surgical evaluation, and usually immediate surgical intervention

8. Abdominal Aortic Aneurysm
    a. Sudden onset of knife-like pain suggests perforation
    b. On physical exam, look for pulsatile abdominal mass
    c. Size > 5cm by ultrasound has significantly higher morality
    d. With rupture, patient may become rapidly hemodynamically unstable – immediate surgical intervention is required!

9. Pancreatitis
    a. Knife-like epigastric pain, usually sudden onset
    b. Usually radiates to the back
    c. Usual etiology is gallstones or alcohol abuse

10. Ectopic pregnancy
    a. Classic triad of fever, abdominal pain and vaginal bleeding
    b. Any woman of childbearing age presenting with abdominal pain should be asked about her last menstrual period
    c. Pain is usually in lower quadrants and severe
    d. If rupture has occurred, peritoneal signs and hypotension may be present
    e. On physical exam, classic finding would be a tender adnexal mass
    f. Usually requires surgical removal for definitive therapy

Diagnosis/Evaluation:

History:

The area of the pain, including its origin and pattern of radiation, time of onset, nature, and associated symptoms will frequently make the diagnosis. A menstrual history should be obtained

Questions to Ask:

1. Type of pain – diffuse or generalized?

2. Location of pain – which quadrant? Is it perumbilical? Did it start periumblical and shift to RLQ? (can be indicative of appendicitis)

3. Quality of pain – severe, sharp or cramping, persistent or constant, periodic and changing intensity over minutes (colicky?)

4. Time pattern – sudden onset, awaken at night, recurrent, occurs after meals, occurs during menstruation?

5. Radiation – to the back (could be pancreatitis), right shoulder blade (could indicate cholecystitis), to the groin, buttocks or legs?

6. Aggravating factors, e.g. worse with position, eating or drinking, alcohol, greasy foods (could indicate cholecystitis), stress, milk, straining?

7. Relieving Factors, e.g. after food or bowel movements, antacids.

A. **Associated symptoms.**

1. Weight loss, which might indicate malignancy or malabsorption.

2. Vomiting as with a small bowel obstruction or volvulus (obstruction especially if fecal).

3. Diarrhea and constipation, which might indicate inflammatory bowel disease, cancer, obstipation, malabsorption.

4. Melena or blood per rectum: check with Hemoccult. If negative consider foods (colored drinks, beets) or medicines (iron).

B. **Jaundice.** Consider pancreatic cancer (painless), hepatitis, hemolysis (sickle cell, G6PD deficiency, transfusion reaction), alcoholic hepatitis, choledocholithiasis, primary biliary cirrhosis, etc.

C. **Urinary symptoms.** Dysuria, frequency, urgency, hematuria. Renal problems often present as a complaint of abdominal pain. Consider urolithiasis, UTI, testicular torsion, etc.

D. Sexual activity, last period, birth control, history of venereal disease, vaginal discharge, spotting or bleeding. Consider ectopic pregnancy, PID, ovarian torsion, ruptured ovarian cyst, etc.

E. Past medical history including other major illnesses, prior surgeries, prior studies performed for evaluation of abdominal problems, family history of any similar complaints.

F. **Medications.** Especially digoxin, theophylline, steroids, tetracycline (esophageal ulcers), analgesics, antipyretics, antiemetics, barbiturates, diuretics, alendronate (esophageal ulcers).

I. Physical Examination

Vital signs. Observe for signs of shock, elevated temperature, signs of dehydration noted with dry mucous membranes and decreased skin turgor.

Abdominal exam.

1. **Inspection.** Scaphoid appearance or distention, point of most severe pain, hernia, scars.

2. **Ausculation.** High-pitched bowel sounds are suggestive of an obstructive process. Absent bowel sounds are suggestive of an ileus.

3. **Palpation and percussion.** Muscle rigidity (voluntary/involuntary), localized tenderness, masses, pulsation, hernias, peritoneal irritation (rebound: cough or jumping also may elicit "rebound"), involuntary guarding, obturator sign (pain on internal and external rotation of hip), psoas sign (pain on straight leg raising by using obturator muscle, may indicate abscess, etc.), Murphy's sign (RUQ pain when breathing in and pressing over the liver), liver dimension and spleen dimension.

4. **Tenderness of the costo-vertebral angle (over kidneys)**

5. **Pelvic exam in women.**

6. **Rectal exam.** To rule out GI bleeding, prostatitis, etc. The absence of rectal tenderness does not preclude the diagnosis of appendicitis nor does it make the diagnosis of appendicitis. The rectal examination should be used to add to your entire clinical picture.

CHARACTERISTIC PHYSICAL FINDINGS IN THE ACUTE ABDOMEN

Peritonitis

Generalized guarding, tenderness, rebound tenderness, hypoactive or absent bowel sounds

Appendicitis

Right lower quadrant tenderness, guarding and rebound, discrete tenderness at McBurney's point, peak age 10-20.

Acute cholecystitis

Right upper quadrant tenderness and guarding, positive Murphy's sign, may radiate to right scapula.

High Small Bowel obstruction

Severe vomiting, dehydration, no distention

Low Small Bowel obstruction

Distention, hyperactive and high pitched bowel sounds, vomiting.

Bowel Infarction

Pain out of proportion to tenderness, rectal bleeding if venous infarction.

Ruptured aortic aneurysm

Pulsatile tender mass, hypotension, back pain

Pancreatitis

Steady, severe, LUQ and epigastric pain radiating to the back; pain less when sits forward; decreased BS; diffuse tenderness.

II. **Laboratory**

. CBC with differential, platelet count, and urinalysis routinely done on most cases of abdominal pain.

A. Electrolytes with vomiting or diarrhea.

B. Liver function tests and liver enzymes; amylase and lipase for upper abdominal pain.

C. Other studies as indicated: chest radiograph (upright) for pneumonia or free air (best radiograph for free air). Abdominal flat plate and upright for bowel obstruction, ileus, free air, abnormal calcification. Ultrasonography to look for peritoneal fluid. ECG for acute MI, ischemia, or arrhythmias. Paracentesis may be important with fluid in the abdomen or in evaluation of abdominal trauma. Culdocentesis (nonclotting blood for ruptured ectopic pregnancy).

D. Pregnancy test on **all reproductive-age females** unless status post hysterectomy. Sexual history is often unreliable in the emergency setting.

III. Management of Abdominal Pain Syndromes

1. Peptic Ulcer Disease
    a. Dietary modification – avoid spicy and fatty foods
    b. Stop smoking!!
    c. Avoid alcohol drinks
    d. Investigate stress in life
    e. Medications
    f. Begin with simple antacid or H2 blocker (cimetidine or ranitidine)
    g. Carafate often effective in reducing symptoms of gastric ulcer
    h. If no response to above, switch to omeprazole, or other proton pump inhibitor
    i. If symptoms recurrent, consider testing for *Helicobacter pylori*, or simply treat with three medications (omeprazole, amoxicillin, metronidazole) for 10 – 14 days.

2. Non-ulcer Dyspepsia
    a. Often responds to dietary change such as avoiding milk or fatty foods
    b. May try antacids or anti-spasmodics

3. Gastroenteritis
    a. Maintain hydration, occasionally needs IV rehydration
    b. May benefit from anti-emetic (phenergan, etc.) if other causes excluded
    c. Reassure patient that symptoms are usually short lived
    d. If diarrhea prominent, avoid dairy products and fatty foods for several days.

4. Acute Cholecystitis
    a. Avoid fatty foods
    b. Maintain hydration if vomiting or diarrhea
    c. Antispasmodics (atropine, hyoscine, etc.) useful for pain

d. If recurrent or severe or elderly patient, consider referral for surgery

5. Irritable Bowel Syndrome
    a. Explore relationship with stress and tension in patient's life
    b. May benefit from high fiber, milk and fat free diet
    c. May need antispasmodics (atropine, hyoscine) periodically
    d. Maintain hydration when diarrhea severe

6. Pancreatitis
    a. In mild cases, maintain hydration
    b. If pain or vomiting severe, may need referral for hospitalization and hydration

7. Ectopic pregnancy
    a. When diagnosis suspected, refer for definitive diagnosis and treatment

Initial Treatment for Severe Abdominal Pain

. Decide whether to admit and observe, discharge, operate. Serial examinations may clarify the diagnosis.

A. Allow no food or fluids by mouth until diagnosis is clear.

B. IV fluids: Decide on expected fluid losses and current level of hydration.

C. NG tube for vomiting, bleeding, or obstruction.

D. Foley catheter to monitor fluids.

E. Pain medications will often help clarify the diagnosis.

F. Serial labs may be helpful, especially CBC, cardiac enzymes.

PREVENTION ISSUES AND PATIENT EDUCATION MESSAGES

- Provide education to patients and families about signs and symptoms of life-threatening, surgical or serious abdominal pain and when to seek immediate medical evaluation

- Provide education to patients and families about signs and symptoms of abdominal pain of benign etiology, and when to defer medical evaluation

- Provide advice for simple steps at home to manage abdominal pain that does not seem surgical:
    - Avoid food until symptoms improve
    - Clear liquids for rehydration if significant diarrhea is involved
    - Avoid analgesic pain medications if possible
    - Consider a trial of antacids or H-2 blockers

CASE STUDIES

1. A generally healthy woman of 30 years old complains of moderately severe abdominal pain of 2 days duration, mainly in the right lower quadrant of the abdomen. She feels like she has a slight fever and some nausea. She does not have any vomiting, diarrhea, urinary urgency or pain, or pain in the back. She takes not medications regularly. Her menstrual cycles are irregular, and her last menstruation was 5 weeks ago.
    a. What are the most likely possibilities that could be causing this pain?
    b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?
2. A 42 year old female presents to the Health Center complaining of intermittent abdominal pain for the past several years. The pain is generally in the upper abdomen, described as a fullness, bloating, and occasionally cramping. It is sometimes worse after eating, especially after mansaf. She has occasional loose stools, and occasional constipation, but no consistent diarrhea. She has not had fever.
    a. What are the most likely possibilities that could be causing this pain?
    b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?
    c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?
3. A 50 year old man comes to the Health Center with severe burning pain in his upper abdomen for the past 12 hours. He has vomited two times, and the last time it appeared to have some dark material like coffee. He has had similar episodes of pain occasionally for the past several years, and has not eaten spicy foods for several years. He also has some arthritis, and one month ago was given diclofenac, which has decreased the arthritic pain significantly.
    a. What are the most likely possibilities that could be causing this pain?

b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?

c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?

4. A 62 year old man is brought to the Health Center with a 24 hour history of increasingly severe abdominal pain and recurrent vomiting. The pain began in the mid abdomen very mildly, but progressively increased. There has been no diarrhea, and no stools for the past 12 hours. His only past history was a hospitalization for a perforated appendicitis 20 years ago. He takes only medication for his blood pressure. On examination, his abdomen is distended and appears full of gas.

   a. What are the most likely possibilities that could be causing this pain?

   b. What further evaluation (history, examination, and laboratory tests) should be done to clarify the diagnosis?

   c. Should this patient be referred, and with what urgency? What measures of treatment could be attempted in the Health Center before referring the patient to a specialist?

CRITICAL ELEMENTS FOR REFERRAL

- Any patient that is hemodynamically unstable, e.g. hypotensive, diaphoretic, short of breath, tachycardic

- Any patient with suspected surgical etiology e.g. appendicitis, peritonitis, acute cholecystitis, small bowel obstruction, ectopic pregnancy, ruptured abdominal aortic aneurysm

- Any patient with significant dehydration e.g. from vomiting or diarrhea associated with the abdominal pain, should be considered for hospital admission

- Any patient with abdominal pain that is not readily explained by a thorough history and physical, and basic diagnostic testing and could benefit from further procedural evaluation

CRITICAL ELEMENTS FOR EVALUATION OF COMPETENCE

- Able to correctly evaluate by history and physical exam patients who present with abdominal pain, and distinguish serious from non-serious causes of pain, and likely surgical etiologies that require immediate medical attention
- Understand initial management of abdominal pain and stabilization of the patient, if necessary
- Clear understanding of when to refer patient with abdominal pain for further evaluation and management