Abdominal Emergencies: Assessment and Treatment

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Introduction

…abdominal emergencies can be mysterious and the most challenging emergencies in medicine

Meet the Authors
Objectives

- Review abdominal cavity anatomy
- Learn to assess the patient with an abdominal complaint
- Discuss general abdominal emergency treatment
- Review abdominal emergency cases

Objective 1: Abdomen Anatomy

- Hollow organs
- Solid organs
- Blood vessels
- Skeletal structures

Hollow Organs

Primary function is digestion of food, absorption of water and nutrients, and transport of metabolic waste
Hollow Organs

Problems
• Rupture
• Distention
• Obstruction

Solid Organs

Kidneys
• Waste removal
• Urine production
Liver
• Bile for digestion
• Glycogen production
• Vitamin storage
• Detoxification
Pancreas
• Insulin, digestive juices, and glucagon
Spleen
• Lymphocyte and monocyte production
• Red blood cell storage

Solid Organs

Problems
• Rupture
• Obstruction
• Inflammation
• Infection
Visceral Pleura

- Contains nerve fibers
- Stimulated by pleura stretching or tearing

Parietal Pleura

- Connective tissue that lines abdominal wall
- Contains nerves that connect to the somatic nerves of the overlying muscle and skin
- Nerves stimulated by the inflammatory response

Four Quadrants
### Right Upper Quadrant

- Liver
- Gall bladder
- Gastric pylorus
- Duodenum
- Ascending colon

### Left Upper Quadrant

- Spleen
- Gastric fundus
- Transverse colon

### Right Lower Quadrant

- Cecum
- Right ovary
- Appendix
Left Lower Quadrant

- Descending colon
- Left ovary

RUQ and LUQ Overlap

- Epigastric region overlies the junction of the esophagus with the stomach

RUQ and LUQ Overlap

- Periumbilical region overlies the majority of the small bowel and pancreas
RLQ and LLQ Overlap

Suprapubic region which overlies the uterus and urinary bladder

Flanks

Vascular Structures

- Many arteries perfuse abdominal organs
- Disruptions could lead to an abdominal emergency
Skeletal Structures

• Vertebral column & musculature
• Diaphragm
• Abdominal wall muscles

Objective 2: Abdomen Assessment

Learn to use all your senses to assess a patient with an abdominal complaint

Abdomen Complaint Assessment

• Experience and judgment
• Clues about nature of illness
• Patient presentation
• Ability to gather and interpret data
• Creating a field impression and working diagnosis
• Using working diagnosis to manage and treat patient
• On-going assessment of effectiveness of interventions
Abdomen Complaint Assessment

- Use general appearance, presence or absence of ABC life threats, level of consciousness and vital signs to determine if patient is stable or unstable
- Use knowledge of anatomy, pain mechanisms, pathophysiology, and common disease processes to determine list of possible causes

Focused Physical Exam

- Practice on every patient
- Position patient with knees bent and hips flexed
- Don’t tell patient you are going cause pain
- Palpate as you speak to patient
- Start with areas that are non-tender and work to tender areas
- Leave barrier in place
- Look at patient’s eyes and face as you palpate; not at your hands
Focused Physical Exam

• Guarding – patient pulls away or flinches from pressure
• Rebound pain – patient experiences pain upon release of pressure

Pain – Anatomy Relationship

RUQ
• Gallstones
• Pancreatitis
• Perforated ulcers
• Hepatitis

LUQ
• Rupture or distention of spleen
• Duodenal ulcer
• Pancreatitis
• Gastric ulcer
• Myocardial infarction
Pain – Anatomy Relationship

RLQ
• Appendicitis
• Ectopic pregnancy
• Ovarian cyst
• Kidney stone

Pain – Anatomy Relationship

LLQ
• Ectopic pregnancy
• Ovarian cyst
• Kidney stone

Pain – Anatomy Relationship

Diffuse Pain
• Peritonitis
• Bowel obstruction
• Aortic aneurysm
• Gastroenteritis
• Pancreatitis
Origin of Abdominal Pain

Distention
- Hollow organs
- Rapid distention is very painful
- Slow distention has little to no pain

Traction
- Solid organs
- Tension or stretching

Inflammation
- Swelling or edema of the organ and associated visceral pleura
- Painful stretching

Origin of Abdominal Pain

Ischemia
- Blood flow to tissue is obstructed
- Steady pain that worsens over time
- Pain is often of proportion to overall presentation
- Suspicion of ischemic injury is indication for rapid transport

Visceral Pain

Arises from Abdominal Organs
- Dull, throbbing pain, comes in waves and poorly localized
- Most often reported in the mid-epigastric or umbilical areas
- May evolve into parietal pain
Parietal Pain
Arises from Parietal Peritoneum
• Sharper and constant
• Localized to a specific location
• Tends to be unilateral
• Patient may be most comfortable in fetal position
• Provoked by coughing, taking a deep breath, and movement

Areas of Referred Pain
Sometimes pain is referred to areas away from the location of injury or inflammation

Areas of Referred Pain
Posterior Anterior
Factors that Affect Abdominal Pain

- Children do not localize pain well
- Elderly, obese, and cognitively impaired patients tolerate a greater amount of pain than most other patients
- Pre-existing medical conditions can affect a patient's abdominal pain perception and complaint
- Patients who take pain medication chronically have an altered sense of abdominal pain

Factors that Affect Abdominal Pain

- Pain rating is subjective
- Mental state can affect abdominal pain
- Men tend to have a lower threshold than women
Associated Signs and Symptoms

1. Nausea
2. Vomiting
3. Diarrhea

Vital Signs
Collect multiple sets of vital signs to see trends or changes over time

Objective 3: Abdominal Emergency Treatment

45 y.o. male
- C/O – vomiting blood
- Known alcoholic
- Skin – pale, ashen, blood on lips
- Vomiting for several hours
- Lethargic and disoriented
Symptomatic Treatment

- EMS personnel are rarely able to definitively treat an abdominal emergency
- Treatment is symptomatic to relieve pain, nausea, and vomiting
- Treatment depends on type of pain, pain severity, other symptoms, exam findings, and transport time

Symptomatic Treatment

- ABC life threats
- Altered mental status or diminished level of consciousness
- Persistent vomiting
- Pain out of proportion to general presentation
- Signs of shock
- Abdominal pain with a fever

Red Flags of Severe Abdominal Emergency

Pinpoint, sharp localized pain that is worsening
Abdominal pain with increasing pulse and respirations
Abdominal pain with persistent diarrhea and or vomiting
Vomiting of bright red blood
Abdominal pain with inability to pass stool or urine
Persistent and copious amounts of blood in stool or urine
Abdominal pain with a fever
Objective 4: Case Studies

- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Case 1: 50 y.o. Female

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- What is your working diagnosis?
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- Is the patient a high or low priority transport?

Case 1: Diagnosis

- Transport is uneventful
- Patient ingested several pieces of plastic tableware
- Not an uncommon problem
- Could result in perforation of the GI tract
Case 2: Unresponsive Male

What is your working diagnosis?

What treatment will you provide?

Is the patient a high or low priority transport?
Case 2: Unresponsive Male

- Physical exam is unremarkable
- Status does not change during transport
- ED physician notices trauma and bleeding around rectum
- Patient's large intestine packed with condoms filled with illegal drugs
- Patient experiencing an acute overdose

Case 3: 60 y.o. Male

- Picture has been removed

Case 3: 60 y.o. Male

- Picture has been removed
Case 3: 60 y.o. Male

- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Case 3: Diagnosis

Impacted piece of meat in the esophagus

Case 4: Elderly Female

Picture has been removed
Case 4: Elderly Female

- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Case 4: Diagnosis

**Constipation**
- Diffuse pain and tenderness
- No recent bowel movement
- No bowel sounds
- Often result of loss in muscular tone to the colon

**Bowel obstruction**
- Most likely caused by scar tissue constricting colon and preventing stool from passing

**Sigmoid volvulus**
- Loop of bowel twists around and becomes strangulated
Case 5: Intoxicated Male

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- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Picture has been removed
Case 5: Diagnosis

- Upper GI hemorrhage
- Bleeding in esophagus leads to vomiting
- Color of vomit depends on how long the blood was in the stomach before being expelled

Case 5: Upper GI Bleed

- Bleeding in esophagus can compromise airway
- Monitor patient’s airway and suction as needed
- Can cause profound hypovolemic shock

Case 5: Gastric Ulcer

- Most common cause of upper GI bleeding
- Usually presents with chronic indigestion and mid-epigastric abdominal pain
- Body reaction is belching and vomiting
- Can perforate stomach and gastric juices to flow into abdominal cavity
Case 6: 32 y.o. Female

- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Picture has been removed

Case 6: 32 y.o. Female

Picture has been removed

Case 6: 32 y.o. Female

Picture has been removed
Case 6: Lower GI Bleeding

- Bacterial and viral gastroenteritis
- Diverticulitis
- Bleeding from a tumor or cancer in colon
- Diffuse inflammatory disease such as Chron's Disease or Ulcerative Colitis

Case 7: 57 y.o. Male

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Case 7: 57 y.o. Male

- What is your working diagnosis?
- What treatment will you provide?
- Is the patient a high or low priority transport?

Case 7: Diverticulitis

- Inflammation of small pockets in the colon
- Pockets develop over time
- Can become inflamed when food gets lodged
- Common as we age
- Inflammation depends on factors such as chronic constipation and diet

Summary

- Divide the abdomen into four quadrants to locate and assess the underlying hollow and solid organs
- During palpation of the abdomen watch the patient’s face, not your hands
- A complete assessment includes a focused physical exam, pain assessment, documentation of history and associated symptoms, and multiple sets of vital signs
- Most prehospital treatment for abdominal emergencies is supportive and symptomatic
- Use history and exam findings to determine if the patient is emergent or non-emergent
Credits

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NCI Visuals Online

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Disease Conditions of Chronic Alcoholism
Low Back Pain
Acute Coronary Syndrome