

“Hot Abs”

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It's three in the morning and you are being awakened to the sound of the quick call, an address and a complaint. Category 1! It's near impossible to get out of bed for such a problem and while you try to be compassionate all you can think about is how some “whiner” is getting you getting you out of bed because they have a belly ache. On the way to the address you think about all the life threatening possibilities that you could be facing. Cramping pain that started after eating a dozen chili dogs

washed down by a pitcher of beer, abdominal distention associated with what seems to be non-stop gas that has you wanting to put the oxygen mask on yourself instead of the patient. There appears to be no limit to potential nonsense that you are soon to experience. As you walk in the door with a mental list of sarcastic “one liners” that you about to unleash on this hypochondriac you realize.....This guys really sick.

Abdominal pain is the leading cause of hospital admissions in the United States. There are approximately 5 million patients seen annually in emergency rooms with the problem. Despite the frequency that it is seen it remains difficult to manage. In approximately 30% of cases no diagnosis can be found. The list of possible causes of such pain is long and varying in severity. The source of abdominal pain can be as benign as psychogenic pain and as severe as an aortic aneurysm but present with the same symptoms.

In this article our objectives will be to...

- Review the procedure of assessing the abdomen both visually and by palpation.
- Understand how a complete history aids in assessment.
- Study the individual organs in their respective quadrants.
- Understand the emergencies that present in association with those organs.
- Understand other possible emergencies that can present as abdominal pain.

- Review and understand the S.P.E.M.S. protocol for abdominal pain.

Assessment

In cases of abdominal pain a good history of past illnesses as well as the present illness is extremely important. Many patients have experienced this problem before. They may have a history of gallbladder problems or an ulcer that can contribute to the current complaint, or a cardiac history that may lead to suspecting a cardiac event. Medical history is not the only history that should be obtained but the assessor should also find out what kind of foods have been eaten, when the pain started and what treatments if any that have helped. Certain information should be gathered prior to physically examining the patient.

When did the pain start and what were you doing when it started? Eating spicy foods or drinking alcohol can cause abdominal pain as well as exercising or lifting and moving heavy objects.



Where does it hurt? It is important to know the location of major organs but it is also important to remember that the location of the pain and the location of the organ causing that pain may not correlate with one another. Organs from the brain to the genitalia all refer pain or discomfort to the abdomen. An example would be a patient who is having a CVA that may complain of nausea that is just as bad if not worse than the headache that they may also have.

What does the pain feel like? Pain that is steady and sharp can indicate an inflammatory process such as an appendix that is ready to rupture. A bowel obstruction will present with pain that is cramping in nature. This cramping pain may indicate that the complaint is caused by an obstructive process.

Did the pain start suddenly or did it gradually present itself? Pain that starts suddenly may be due to a perforation, hemorrhage, or infarct. Pain that presents gradually will most likely be caused by distension of hollow organs.

Does the pain radiate anywhere? Pain that is felt in the right shoulder may be the gall bladder and pain that goes around the flank then into the groin could be related to a problem in the kidney or ureter.

Has the patient been vomiting and if so what does it look like. Emesis with blood in it (coffee grounds) indicates a possible upper GI bleed.

Has there been any change in urinary or bowel habits and what do they look like? Stool that is black and tarry is a sign of a lower GI bleed.



Some questions are specific to gender. In females the medic will need to know when the last menstrual period was and if it was normal or abnormal. A gynecological history should also be obtained. In females abdominal should be considered gynecological in nature until another cause can be found. Conditions such as pelvic inflammatory disease and tubal ectopic pregnancy, while being outside of the scope of this article, are dangerous

causes of abdominal pain in the female patient. In men pain in the abdomen can also be rooted in the genitals. While a physical assessment is not necessary the medic should be aware that trauma, testicular torsion and malignancies can cause pain that is referred into the abdomen.

Prior to the physical assessment the patient's general behavior should be observed. This can take place at the same time that you are asking questions or delayed until other tasks are preformed like getting a blood pressure or putting the patient on oxygen. The general appearance of the patient can provide you with clues as to the type of problem that is going on.



First look at the skin color. A patient with pale skin may be showing the first signs of hypovolemia. Is the patient lying still or is the patient restless. A patient that holds still because the pain is increased with movement may have a problem related to inflammation of an abdominal organ or the peritoneum. A patient that is always moving in an effort to find comfort from the pain may have a problem that is related to an obstruction. The bare abdomen should also be visually assessed. Look for distention of the abdomen. Distention may be generalized through out the abdomen such as in a case of gastritis or localized

to a certain area like a hernia. You should also look for discoloration especially in the flanks and around the umbilicus.

Information about the severity of the patient's complaint can be found in the vital signs. Patients with abdominal pain have the potential to be hypovolemic. Early signs of hypovolemia can be found in the pulse rate. If the patient is tachycardic this can indicate early volume depletion but keep in mind that patients on beta blockers may not become tachycardic. In those situations suspicion may be a valuable tool. A tilt test should be done to identify early cases of hypovolemia where trauma is not a factor. A pulse increase of 20 BPM, systolic blood pressure decrease of 20 mmHg or a diastolic blood pressure decrease of 10 mmHg is considered a positive tilt test and can signify hypovolemia. A patient who can not stand or sit up without becoming weak, light headed or experiencing syncope should be considered to have a positive tilt. Remember a low blood pressure is a late sign in hypovolemia. Patients that are suffering from inflammatory type pain may be breathing rapid and shallow in an effort to minimize the affect the diaphragm has on the abdominal organs. Patients with an obstruction may also breathe rapid and shallow but in most cases the movement of diaphragm has little affect on their pain.

Obtaining a history of the past and present illness, vital signs and observing the patient should take very little time.

After this is done the physical assessment can began. Start by gently palpating the abdomen. Use the pads of your fingers to palpate each quadrant.

Keep in mind that palpating and poking

are not the same. By palpating the abdomen skin temperature, tenderness, texture, crepitation, swelling and the absence or presence of pulsating masses can be determined. Use warm hands with the patient preferably lying flat on the back with their knees bent. Start in a quadrant away from the pain and work towards it. Take note of areas where tenderness, rigidity, involuntary guarding, voluntary guarding and masses are found. If you chose to add the presence or absence of bowel sounds to your assessment then you should do so prior to palpating the abdomen. You should listen for bowel sounds for 1 minute in each quadrant. The absence of bowel sounds can indicate possible peritonitis or hypovolemic shock in the non-traumatic patient.



When assessing the abdominal pain of patient in the pre-hospital environment the goal is not to determine the exact cause but rather to recognize the existence of an acute abdomen. Acute abdomen is a general name referring to the presence of signs and symptoms of inflammation of the abdominal organs and the peritoneum.

Abdominal Anatomy

Upper Right Quadrant

Liver

- The liver is responsible for storing and filtering blood. It detoxifies hormones, drugs, and chemicals that are found in the blood stream. The liver is often a pre-hospital concern due to its potential to bleed severely when injured. The liver may also be a source of pain when it is affected by hepatitis or cancer. The liver also produces bile and pain may be felt in the area of the liver when the patient suffers from diseases of the biliary system.

Gall Bladder

- The job of the gall bladder is to store and thicken the bile that is produced in the liver. The gall bladder is a part of the biliary system and become painful in cases of biliary diseases. The gall bladder is most commonly known for gall stones. Inflammation of the gall bladder or Cholecystitis is also a problem for many patients. Often known as Gall bladder attacks they happen most often after ingestion of fatty foods. Patients suffering from cholecystitis will have upper right quadrant pain, nausea and vomiting. Occasionally patients will have a fever.



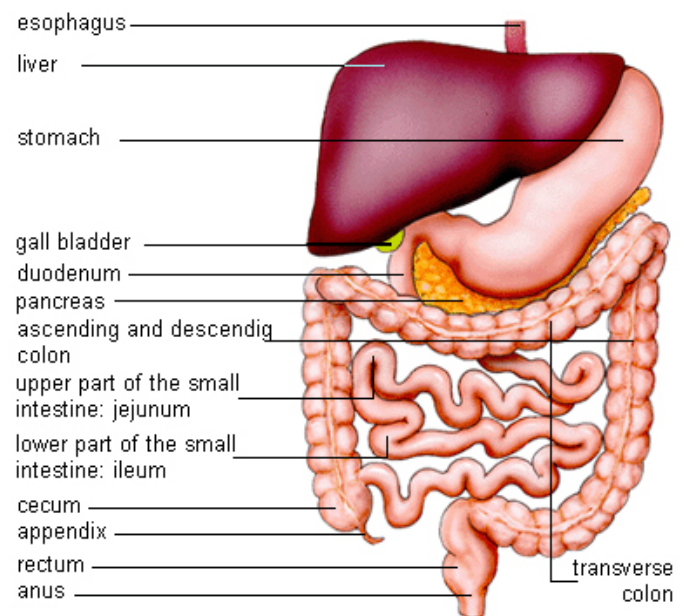
Pancreas

- The pancreas starts in the upper right quadrant and lies across the upper abdomen behind the stomach into the upper left quadrant. The pancreas serves a digestive and endocrine function. The pancreas releases enzymes into the duodenum to assist with the neutralization of acids and the digestion of proteins and fats. The

pancreas also releases insulin and glucagon into the blood stream. Pancreatitis is a condition where the pancreas becomes inflamed. Pancreatitis is triggered by excessive ingestion of alcohol or fatty foods. The patient may experience nausea vomiting and upper abdominal tenderness. Pain may radiate from the upper abdomen into the back.

Right Kidney

- The kidneys are located in the lumbar area of the back on both sides of the spinal column. The kidneys are responsible for the formation of urine and regulation of fluids, electrolytes, hormones and PH in within the body. The kidneys play a part in regulating the blood pressure as well. The most common complaint related to the kidneys is kidney stone's and urinary tract infection. In the case of kidney stones the pain is sudden and sharp. The location of the pain is dependent on the location in the ureter where the stone lodges. The patient will feel pain in the lower back or flank area. The pain may radiate into the upper back or into the groin. The patient will be restless and may feel nauseated. Urinary tract infection will have similar symptoms although the pain may not be as sharp and the patient will run a fever. In both cases the patient may have blood in their urine.



Transverse Colon

- The transverse colon is a continuation of the ascending colon which starts in the lower right quadrant and goes across the abdomen to the upper left quadrant. Information related to illness of the colon can be found later in this article.

Duodenum

- The duodenum is the first part of the small intestines. After food combines with stomach acid, it descends into the duodenum where it mixes with bile from the gall bladder and pancreatic fluids.

Duodenal ulcers are the most common complaint related to the



duodenum. Duodenal ulcers will cause steady pain that is localized in the epigastrium. The patient will most often describe the pain as a burning, gnawing or aching that increases with coffee, spicy foods, smoking or stress. The pain may be relieved with alkaline foods and antacids. Ulcers that are severe may become

perforations that can lead to a massive GI bleed. In cases of duodenal ulcer perforation the patient will have intense steady pain. The patient will lie still and the abdomen will be rigid.

Upper Left Quadrant

Left Kidney

- Information about the left kidney can be found under the right kidney.

Spleen

- The spleen is in the upper left quadrant approximately in the same area as the 9th to the 11th rib. The spleen purifies blood by capturing and destroying antigens and aging erythrocytes. It aids in the metabolism of iron and produces red blood cells in the fetus and in patients with diseases of the bone marrow. There are few medical problems related to the spleen but it is commonly injured in cases of trauma. Since the spleen purifies blood it can hemorrhage severally when damaged.



Stomach

- The stomach stores, mixes, and liquefies food into chyme that is moved into the duodenum. Medical problems related to the

stomach are most often ulcers. Pain in the area of the stomach can also be caused by malignances. Most serious problems affecting the stomach involve the duodenum or the esophagus. Esophageal varices are dilated veins that are found in the lower part of the esophagus. Esophageal varices most often affect patients with a history of alcohol abuse. The dilated vein can rupture without warning and result in massive blood loss.

Transverse and Descending colon

- The transverse colon starts in the upper right quadrant and continues into the upper left where it turns downward and becomes the descending colon. Information related to illness of the colon can be found later in this article.

Lower Left Quadrant

Descending Colon

- The Descending colon comes from the upper left quadrant and descends down to the sigmoid colon then to the rectum. Bowel obstruction can result in pain that can be severe. A bowel obstruction is a blockage that interrupts the normal flow of contents. Bowel obstructions can be caused by adhesions, hernias, fecal impactions and tumors. The pain is often described as a cramping pain. The patient will have abdominal distention, nausea and vomiting. In severe cases the patient will vomit fecal material.



Ovaries

- The ovaries are found to the right and to the left of the uterus. The ovaries store and release eggs in sexually mature females. The ovaries also release hormones. The ovaries are connected to the uterus by the fallopian tubes. Females with polycystic ovarian disease (PCOD) will often have intense pain in the right to left quadrant depending



on the ovary affected that is related to a cyst on the ovary. The pain may be so severe that it may be debilitating but it is not a serious threat to life as is another Ob/Gyn problem. Ectopic pregnancy refers to any implantation that does not occur in the uterus. An ectopic pregnancy that occurs in the fallopian tube can cause severe pain in the lower right or left quadrant. As the fetus grows the fallopian tube will stretch until it ruptures resulting in sepsis and possible hemorrhage. Since ovarian cyst and tubal ectopic pregnancy have similar symptoms it should be assumed that all lower abdominal pain in females of child bearing age are suffering from a tubal ectopic pregnancy until proven otherwise.



Lower Right Quadrant Cecum

- The cecum is the beginning of the large intestine. Above the cecum is the ascending colon and below the cecum is the appendix. In the lower right quadrant pain from the appendix is the most common complaint. When the appendix becomes



obstructed usually by stone like masses of feces it becomes inflamed and painful. If not treated the appendix will rupture leading to infection. The patient's pain will in most cases start around the navel and then radiate to the lower right quadrant. The patient will lay still usually on the right side with the legs flexed. The patient may have nausea vomiting and no desire to eat or drink. Pain that suddenly goes away

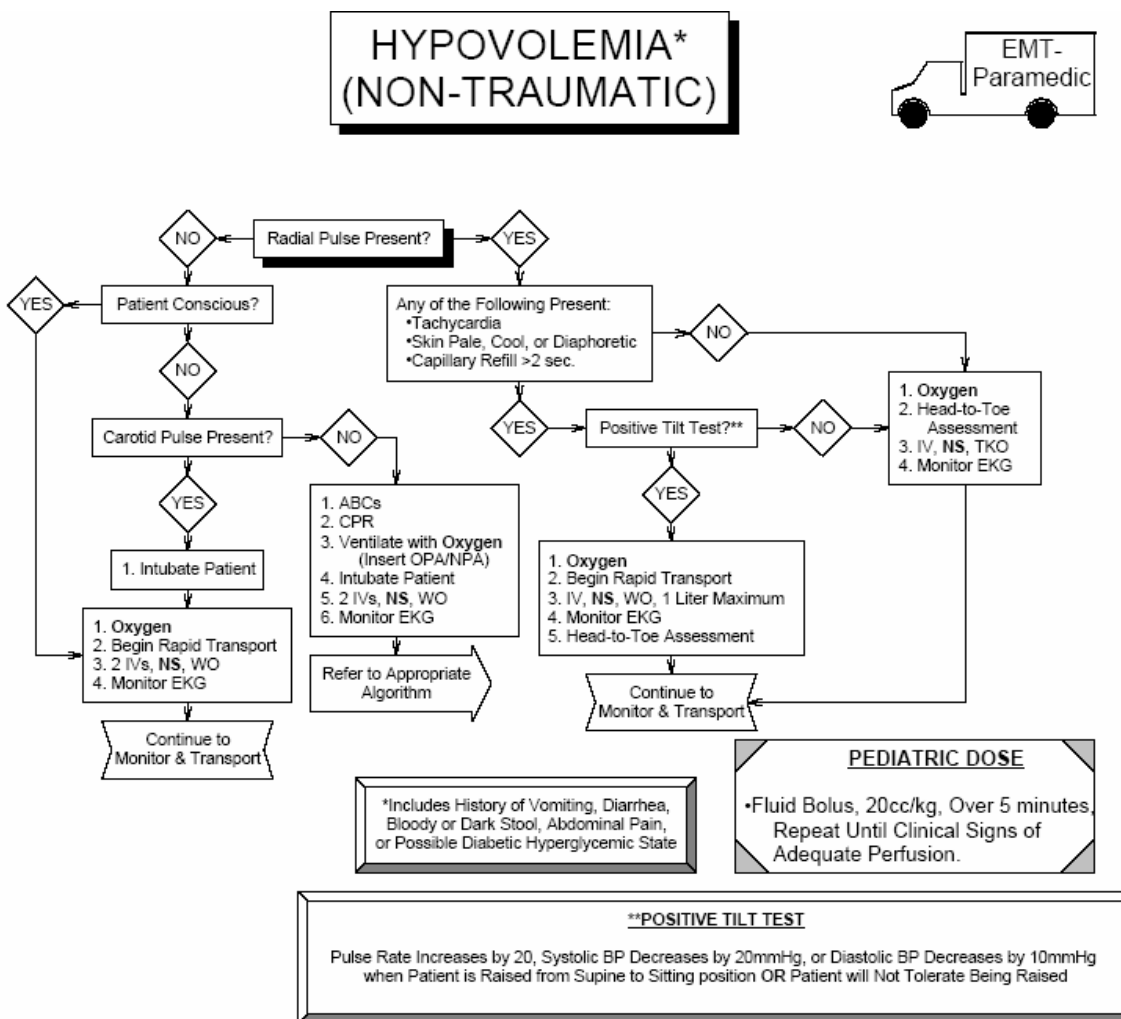
may be a sign rupture. Be aware that the pain may not always be in the lower right quadrant. Patients that are pregnant or obese may present with pain in a different location.

Abdominal Aortic Aneurysm

An abdominal aortic aneurysm (AAA) is weak place in the wall of the aorta in the abdomen. Aortic aneurysm can occur anywhere along the aorta. A patient with an AAA will have weakness and syncope. The patient may show signs and symptoms of hypovolemia. A pulsating mass may be felt in the abdomen and at times the mass may be seen when the abdomen is visualized. The patient may feel pain in the lower back flank or the abdomen. In the event that the aneurysm should rupture the patient will decompensate quickly.

Treatment

It is the goal of EMS is to identify an acute abdomen and treat it before problems arise. Regardless of the underlying problem vomiting and diarrhea can lead to hypovolemic shock. Infection can lead to peritonitis which can result in septic shock. Special attention should be placed on assessing possible volume loss and fluid replacement. In adults cardiac problems should be ruled out as a cause of the pain by doing a 12 lead EKG.



While the cause of abdominal pain may be a mystery, the assessment and treatment should not be. The medic should consider all possibilities and treat them accordingly.



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