

Abstract:

The clinical evaluation of acute lower abdominal pain in an adolescent female presents a unique diagnostic challenge. Because of the intraabdominal presence of female reproductive organs, the differential diagnosis of abdominal pain in these patients includes diseases of the ovaries, fallopian tubes, and uterus in addition to the typical diseases considered in other patients presenting with acute abdominal pain. Diseases such as ovarian torsion, ovarian masses, pelvic inflammatory disease, tuboovarian abscess, and ectopic pregnancy must be considered alongside more common causes of abdominal pain. A thorough history with focus on the gynecologic history and physical examination are of paramount importance. First-line imaging should be abdominal ultrasonography. Diagnostic laparoscopy is an important adjunct in those patients whose clinical picture is unclear and in those patients who have a high suspicion of ovarian torsion and potential ovarian loss.

Keywords:

adolescent female; abdominal pain; ovarian masses; ovarian torsion; tuboovarian abscess; pelvic inflammatory disease

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Evaluation of the Adolescent Female With Acute Lower Abdominal Pain

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Lower abdominal pain is a common presenting complaint for adolescent females in the emergency department. The differential diagnosis for lower abdominal pain is quite broad in the female population compared with males, due to the result of the intraabdominal location of the reproductive organs. As a result, any disease of the female reproductive tract can mimic other more common disorders such as appendicitis or acute viral gastroenteritis. In this article, we will describe the clinical approach to an adolescent girl presenting with lower abdominal pain. We will describe the appropriate tests and imaging modalities for evaluation of these patients. Finally, we will describe the appropriate therapy for each condition. At the end of the article, we will present 2 cases of lower abdominal pain in an adolescent female. These cases will highlight difficulties encountered in the evaluation of these patients and potential complications not typically considered by treating surgeons.

EVALUATION

The emergency department (ED) evaluation of an adolescent female presenting with acute lower abdominal pain should begin with a thorough history and physical examination. Through the process of obtaining a history from the patient, the clinician should be actively developing a differential diagnosis of possible etiologies for the presenting complaint. It is from the differential diagnosis that the clinician asks more pointed questions to include or exclude various disease processes. Furthermore, the history guides the

TABLE 1. Etiologies of abdominal pain in the adolescent female.

Nongynecologic Sources	Gynecologic Sources
Appendicitis	Ovarian torsion
Gastroenteritis	Ovarian masses (solid, cystic, complex)
Bowel obstruction	Pelvic inflammatory disease
Inflammatory bowel disease	Ectopic pregnancy
Hernias	Endometriosis
Urinary tract infections	Mittelschmerz (ovulatory pain)
Nephrolithiasis	Menstrual cramping

remainder of the clinical encounter: from the physical examination, to the various laboratory and diagnostic tests that should be obtained.

The differential diagnosis of lower abdominal pain in the adolescent female is quite broad. Table 1 contains a list of potential etiologies. One useful way to approach the differential diagnosis is to consider possible etiologies that are female specific vs those that could occur in any patient.

Those nongynecologic conditions that could present as lower abdominal pain include diseases such as appendicitis, acute viral gastroenteritis, bowel obstruction, hernias, inflammatory bowel disease, urinary tract infections, nephrolithiasis, and many others. The clinical presentations for these various diseases are well described. Any clinician in the ED should be well versed in these diseases and consider them in any patient they evaluate for lower abdominal pain.

The most encountered gynecologic pathologies that could present as lower abdominal pain include ovarian torsion, ovarian masses, pelvic inflammatory disease (PID), and ectopic pregnancy, among others.

In questioning an adolescent female with lower abdominal pain, the clinician should determine the laterality and any radiation of the pain. Furthermore, the character of the pain is of vital importance. One should determine if the pain is constant or colicky in nature. The presence of any associated symptoms such as nausea and emesis should be elicited. The gynecologic history is important in adolescent females, and thus, clinicians should start by determining the age of menarche. The regularity or irregularity of the patient's menstrual cycle and the last menstrual period should be determined next. If any temporal relation of the lower abdominal pain is recognized, it should be noted. The

presence or absence of fevers should be determined as well as any vaginal discharge. Finally, a sexual history should be taken to determine risks for sexually transmitted diseases and any possibility of pregnancy.

Physical examination in these patients starts with the abdominal examination. Inspection should reveal any prior surgical scars as well as abdominal distention. Auscultation reveals the presence or absence of bowel sounds. Any laterality of tenderness should be determined starting with light palpation and progressing to deep palpation in each quadrant of the abdomen. Presence of signs of peritonitis such as rebound tenderness or involuntary guarding should be noted and alert the physician to more serious conditions. Deep palpation should be performed gently to determine if any masses are present.

Finally, pelvic and digital rectal examinations can be vitally important in the evaluation of lower abdominal pain in the adolescent female, although pelvic examination can usually only be performed in older adolescents who are sexually active. A thorough pelvic examination includes both bimanual and speculum vaginal examinations. The bimanual examination is important to determine presence of any adnexal masses as well as any cervical motion tenderness. The vaginal speculum examination is important to determine if there is any cervical discharge and allows for a cervical swab to be obtained if discharge is present. The digital rectal examination is important to determine if there are any masses located in the cul-de-sac.

The most common laboratory tests necessary for the evaluation of adolescent girls with lower abdominal pain include the complete blood count with differential, a urinalysis, and pregnancy testing.

OVARIAN TORSION

Ovarian torsion is a rare condition that causes lower abdominal pain in adolescents. Pathophysiologically, ovarian torsion results from a twisting of the vascular pedicle that supplies blood to the ovary. As a result, these patients develop unilateral lower abdominal pain ipsilateral to the side of the ovarian torsion. Classically, these patients are described as postmenarchal girls with unilateral nonradiating lower abdominal pain. Typically, they complain of nausea and emesis and are writhing in pain with an inability to remain still. Studies have revealed that the most specific findings in ovarian torsion are colicky pain that is nonradiating and an enlarged adnexal mass.¹ Other clinical entities that can masquerade as ovarian torsion include appendicitis, hemorrhagic ovarian cysts, nonhemorrhagic ovarian

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