Examination of the Acute Abdomen in Children

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The history and physical examination (H&P) on a child with an acute abdomen is an opportunity to build a solid relationship with the child and parents. Building confidence and trust under fraught circumstances requires a genuine affection for children, and sympathy for the anxiety of the parents. Arrival of a surgeon is a signal that the illness is serious and not likely to respond to the usual remedies. The surgeon therefore must have a gentle, unhurried approach. Obtaining the history should be nondirective and allow both parent and child to describe the entire timeline of the illness without interruption. The physical examination should be done without hurting the child, first observing how the child moves about in bed and undresses, then having the child control palpation by holding the examiner's hand and pulling it away should undue pain be elicited. Even though a diagnosis and a plan for surgery may already have been made, exiting the exam room after the H&P to review lab and radiological images gives the family time to regroup information. The diagnosis and decision for operation require simple and direct explanations that communicate patience, have a tone of reassurance, and affirm repeatedly that parents understand what is being said. The message is that surgery is a shared decision, and safety and the child's wellbeing always foremost. To the child three points have to be paramount: They won't feel pain during or after the procedure; after the operation they will feel better; and they won't be alone. The goal is to build a trusting relationship so that the child has some calm in departing to the operating room and the parents willingly see them leave. (J Surg Ed ▮:▮▮▮-▮▮▮. © 2016 Association of Program Directors in Surgery. Published by Elsevier Inc. All rights reserved.)

KEY WORDS: acute abdomen in children, physical examination, acute appendicitis, communication, surgeon patient relationship

COMPETENCIES: Professionalism, Communication

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The history and physical examination (H&P) on a child with an acute abdomen is often the family's first contact with a surgeon, a stranger who brings the fearful news that an operation may be necessary. The encounter is emotionally charged and scary. Aside from the clinical task of collecting the necessary information to make a diagnosis, the H&P is an opportunity to build a solid relationship with the child and parents that would become more necessary whether surgery should be the next step. Building confidence and trust under fraught circumstances requires a genuine affection for children, and sympathy for the anxiety of the parents.

Arguably, the essence of the art of the clinical practice of pediatric surgery, performing an H&P in a child with an acute abdomen receives scant attention. Neither of the standard texts of the field devotes a full column of text to the topic.[1,2] Most of the recent literature on appendicitis in childhood involves the application of imaging technology,[3] and more recently, nonoperative management with antibiotics without surgery.[4] A widely referenced 8-point scoring system for the diagnosis of appendicitis based on items in the H&P gives no clues or tips on how to get the required information.[5]

Computed tomography and magnetic resonance imaging still have a 2% to 3% false-negative and 6% to 8% false-positive rate for appendicitis,[3] so there is a place for a well-performed H&P. The approach described later applies to the examination of the abdomen of children in general, not just appendicitis. It evolved over nearly 30 years of practice, observing how mentors and trusted colleagues approached their patients, and seeing the responses of hundreds of children and their parents.

THE CONSULTATION

Making the diagnosis of appendicitis starts with the following 2 decisions: parents realize that their child has an illness that is not going to get better by itself, and the pediatrician or emergency physician concludes that the patient may have

  1931-7204/$30.00 http://dx.doi.org/10.1016/j.jsurg.2016.01.007

a surgical disease. The family and their personal doctor likely have worked through the long list of common causes for abdominal pain. They have dealt with several episodes of abdominal discomfort over the years—simple ones such as emotional upset, anxiety-producing school events, straightforward conditions and illnesses such as constipation, urinary infections, and gastrointestinal infections and dietary indiscretions.

However, the current episode is different enough to have raised the possibility of a surgical cause. Experienced pediatricians and emergency physicians are alert to the possible presence of peritonitis if a child cannot stand upright or resists movement because of pain. Pain that is associated with vomiting and fever raises concern that the patient has appendicitis. Significant visceral injury may cause abdominal pain that follows a fall or minor mishap. Vomiting and the passage of bloody mucus in stool in infants direct attention toward intussusception.

From the point of view of the child and the parents, bringing in a surgeon in consultation is a serious step. Intuitively, they know that the child's illness is serious and not likely to respond to the usual remedies. Almost always the illness is the child's first hospital visit since birth. Everyone is on edge, often it is the scariest thing that is happened to both the child and parents. The encounter is nearly always tense. The surgeon must be relaxed, friendly, and at ease, speaking with a gentle tone and unhurried pace.

THE HISTORY

The history consists of the parents' observations of their child's symptoms. The surgeon's initial question should be general and nondirective: "Tell me about your child's illness." Let the parents tell their story completely, without interruption. Resist the temptation to interject with specific questions. This phase of the encounter, whereas it may seem lengthy, is seldom more than 5 min. It avoids the common complaint, "The surgeon never listened to me." When they are done, ask enough questions to get a clear idea of the onset and course of the illness, and whether other relevant symptoms were present in a systems review.

Always speak with the child and try to get the history from him or her. Aside from getting more information about the illness, it also assures the child that he or she would be involved in the process as a participant, and not a victim. Parents observe that the surgeon takes the relationship with their child seriously, and cares about his or her feelings.

THE PHYSICAL EXAMINATION

The approach is intended to assure the child and parents that nothing would be done that is deliberately hurtful. The goal of examination of the abdomen is to detect signs of peritonitis—localized tenderness and spasm of the abdominal musculature in response to underlying inflammation (involuntary guarding). Palpation locates the area of maximal tenderness, and graded stimuli give the examiner an idea of the degree of peritoneal irritation. Once the surgeon finds peritonitis, further maneuvers are not necessary.

Gradual and gentle, the approach is an increasing series of forceful movements of the abdomen to provide an idea to the degree of peritoneal pain. The child controls each step and is not asked to move beyond the point of pain. Explicitly say, "I am not going to hurt you." At each step in the examination tell the child what is going to be done (e.g., "I am going to touch your abdomen next"), or what to do as part of the examination ("please move closer to the head of the bed" and "please hold my hand as I examine your tummy").

Giving the child intravenous analgesia relieves pain and calms both the child and parent. True peritoneal irritation is not masked by a modest dose of narcotic, so the child continues to exhibit involuntary spasm of the abdominal musculature over the area of inflammation.

The physical examination begins before the patient is touched. Clues to the presence of peritoneal irritation come from elements of the history—pain is induced by walking and going down steps, needing to be carried, getting in and out of the car, and driving over bumps during the car ride to the hospital. On entering the room, see how the child is sitting or resting on the gurney—in comfort or in pain, at ease or protecting the abdomen and flexed in the classic "fetal position."

Have the child undress, or ask a parent to do so if the child is unwilling or unable to do so. The lower abdomen needs to be examined, so the pants need to be removed to allow unencumbered access to both groins. This involves unbuttoning, unzipping, and raising the buttocks off the table, all involving movement that would cause pain if peritonitis is present. However, the child (or parent) controls the amount of movement and associated discomfort.

Have the child move about in bed. First, have the child straighten out and lie supine to allow formal examination of the anterior abdomen. Ask the child to scoot while recumbent to the head of the bed, observing how easily the child moves. If the child still displays little pain, ask him or her to sit up so the posterior lung fields can be examined. The final step is getting off the bed and standing, a request that usually comes after examination of the abdomen. Many practitioners ask the child to jump in place. Using the graded approach outlined earlier, it is usually apparent long before this point that the child does not have peritonitis.

Ask the child to cough, and then, ask, "Did it hurt to cough? Where did it hurt the most?" Tell the child that the bed would be moved a bit and shake the bed or table gently. Do the same before shaking the child's hips. If these simple maneuvers cause abdominal pain, it is likely that significant