ABC of 1 to 7

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ACUTE ABDOMINAL PAIN

At the beginning of an episode of abdominal pain it may be difficult to make an exact diagnosis. The picture will become clearer if the child is seen again after a few hours, but if this is not possible the child may have to be admitted to hospital for observation. Many parents are worried that their child has acute appendicitis, and the responsibility for keeping an eye on the child should not be left to the parents, who do not have the knowledge to make the right judgments.

Although a definite diagnosis should be attempted it is essential to place the patient in one of the following groups:

- (a) surgical problem: admit;
- (b) chronic medical problem: admit or arrange paediatric appointment;
- (c) gastroenteritis: manage at home or admit to an isolation cubicle of the paediatric unit depending on the severity of the illness;
- (d) cause uncertain: see again within a few hours or admit to hospital for observation.

Appendicitis may produce features suggestive of many other conditions and it may not be possible to make a firm diagnosis or to exclude it on one observation. If surgical intervention is a possibility the parents should be warned not to give their child any food or drink in the meantime.

Although the mother gives the details of the history, it is important to obtain as much information as possible from the child himself. Children under the age of 3 years may, however, point to the abdomen as the site of pain when in fact the cause of the symptoms is in another area such as the throat. Abdominal tenderness can be observed even in small children, who may push away the examiner's hands.

The site and duration of the pain should be noted and whether previous attacks have occurred. The duration and severity of diarrhoea or vomiting should be noted. There may be fever, rash, or pain in the joints.

Causes

Surgical

Medical

Gastroenteritis

?

Appendicitis

The wall of the appendix is thinner in a child than in an adult; the omentum is less developed and perforation is often followed by generalised peritonitis. The child himself should be asked about his pain. Older children can often localise their pain accurately if they are asked to point to the pain with one finger. Pain around the umbilicus often starts suddenly and is followed by vomiting. The pain may be intermittent or continuous and colicky or dull. It may be relieved during sleep. After a few hours, during which there may be some improvement, the pain moves to the right iliac fossa. In about a quarter of patients the pain is in the right iliac fossa from the beginning. A child with appendicitis may have constipation or diarrhoea. His temperature may be raised. The child usually lies still as his pain is aggravated by movement. Movements of the abdominal wall during breathing are restricted.

Appendicitis is extremely difficult to diagnose in infants less than 2 years of age and perforation often occurs before the diagnosis is made. Then the infant looks extremely ill and has considerable abdominal tenderness.

Glucose

Microscopy

Culture

The abdomen should be palpated gently with a warm hand or the bell end of a stethoscope, beginning in the *left* iliac fossa. Tenderness is detected by change of expression on the child's face. Guarding is significant only if the child is completely relaxed. Bowel sounds are reduced if perforation has already occurred. Rectal examination should be performed only once and it is better to leave it to the surgeon. Very gentle examination is necessary to determine local tenderness rectally. The fact that a rectal examination has not been performed should be recorded in the patient's notes.

If the appendix is situated in the pelvis or behind the caecum diagnosis is particularly difficult. Tenderness may be shown only on deep palpation and there may be diarrhoea or urinary symptoms, but there is no excess of pus cells in the urine microscopically.

A full physical examination should be done to exclude disease in another organ, especially the respiratory system, as it may be responsible for the symptoms. The white cell count is not helpful and need not be considered as a routine test for children with suspected appendicitis. Microscopy of the urine should be carried out immediately if there is any doubt about the diagnosis and chest radiography should be considered.

If a definite diagnosis cannot be made initially the child should be examined again several times during the first 24 hours of his pain because perforation is more likely if the pain has been present longer than that period. If the pain has been present longer than 48 hours the child is likely to have generalised peritonitis, an appendix abscess, or pain not related to the appendix. If an episode of pain lasts continuously for longer than six hours the patient should be examined again by a doctor.

Intussusception

An intussusception is a partial or complete intestinal obstruction due to invagination of a proximal portion of the gut into a more distal portion. It may occur at any age although the maximum incidence is at 3-11 months. An intussusception may be easily diagnosed in a child who has all the typical features but these children are not common. The distinctive feature is the periodicity of the attacks, which may consist of severe screaming, drawing up of the legs, and severe pallor. Some episodes consist of pallor alone. The attack lasts a few minutes and then disappears, to recur about 20 minutes later, though attacks may be more frequent. One or two loose stools may be passed initially, suggesting a diagnosis of acute gastroenteritis. Blood-stained mucus may be passed rectally or shown by rectal examination. But some patients pass no blood rectally. Between attacks the infant appears normal and there may be no abnormal signs apart from a palpable mass.

It is difficult to examine the abdomen during an attack because the child cries continuously, but between attacks a mass, most commonly over the right upper quadrant, can be felt in 70% of children. If the diagnosis is definite some surgeons prefer to carry out a laparotomy without further investigations.

Others arrange an urgent barium enema examination, which may reduce the intussusception. A barium enema is helpful when the diagnosis is uncertain but it should not be performed if there is clinical or radiological evidence of intestinal obstruction because there is a risk of perforating the intestine. In about 6% of cases there is a persisting mechanical cause of the intussusception and this will not be detected by the barium enema.

Strangulation of an inguinal hernia

Strangulation of an inguinal hernia is likely to be present if the hernia is not reducible easily and there is abdominal pain. Gangrene of an area of small intestine may already have occurred and this part may have to be resected. The danger of strangulation of an inguinal hernia in infants under 2 years is considerably greater than at any other time, and any infant with an inguinal hernia must therefore be admitted for early operation. There is no place for conservative treatment.

Other causes

Urinary tract infection—In children with urinary tract infections the pain is usually in one loin but may be central. There may be fever, but dysuria and frequency of micturition are uncommon in younger children. Rarely haematuria may be present. Microscopy of the urine should be carried out immediately and the child admitted for confirmation of the diagnosis if organisms or an excessive number of pus cells are present in the urine.

Trauma—If the patient has been in a car crash or had an injury to the abdomen within the previous week the possibility of a ruptured viscus such as the spleen should be considered.

Henoch-Schönlein purpura—Abdominal pain may precede but usually accompanies the rash and joint swelling of Henoch-Schönlein purpura. The rash, which consists of haemorrhagic papules as well as purpuric spots, appears on the extensor surfaces of the limbs and the buttocks but spares the trunk. Blood may be passed rectally.

Diabetic ketoacidosis—Children with ketoacidosis may have abdominal pain which resolves during treatment with insulin and intravenous fluids. The diagnosis can be excluded by finding a normal blood glucose concentration with a Dextrostix test or by finding no reducing substances in the urine.

Sickle-cell disease—Painful "crises" occur as a result of occlusion of small blood vessels with distal ischaemia and infarction. Abdominal pain may be due to occlusion of intestinal or splenic vessels. Other organs commonly affected are the small bones of the hands and feet and the pulmonary vessels. Any child of African or Mediterranean stock who has obscure abdominal pain should have a sickle-cell test performed as an emergency and be admitted to hospital.

Recurrent abdominal pain of childhood—At least 10% of schoolchildren suffer recurrent abdominal pain—or the periodic syndrome. The condition should be diagnosed only in children who have had at least three episodes of pain over longer than three months. Two-thirds of the patients have a history of vomiting associated with abdominal pain. There is no abdominal tenderness. The child with recurrent abdominal pain of childhood is just as susceptible as any other child to physical disease, such as appendicitis. If the pain is present continuously for longer than six hours an organic cause must be considered (see next paper for further details of recurrent abdominal pain of childhood).

Gastroenteritis—Gastroenteritis sometimes presents with abdominal pain as the main symptom and it will be discussed in the paper on diarrhoea and vomiting.

Sickle cell

The photograph of an inguinal hernia was reproduced by permission of Dr M Silverman and Dr Sheila McKenzie.

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