THE DIAGNOSIS OF ACUTE ABDOMINAL DISEASE IN INFANCY AND CHILDHOOD

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Abdominal emergencies in childhood vary with the age group. There are three well-defined periods, the neo-natal period, the period before the child can talk intelligently to its guardian and after that time. One of the most common emergencies in the neo-natal period is intestinal obstruction. This may be situated at any point in the intestinal tract. In the abdomen the duodenum is a common place for a high obstruction.

The intestine may be obstructed at any point anywhere along its whole length. There may be agenesis of segments of the gut, or stenosis or the obstruction may be produced by mal-rotation of the gut, by bands or by volvulus. In high obstruction the site of the obstruction may be above or below the bile papilla. This fact is important in relation to the one symptom on which this condition may be diagnosed—vomiting. Acute obstruction in an adult is characterized by a history of a sudden onset of colicky abdominal pain. The pain comes in spasms and varies in intensity. It is severe and is one of the characteristic features of the condition. Vomiting occurs. The initial vomit may be due to shock. The persistent vomiting of first stomach contents, then jejunal contents and finally faecal vomiting is often referred to as a sign of impending death rather than a sign of intestinal obstruction for it is hoped that patients suffering from this condition will be referred for operation before these series of changes manifest themselves. Associated with this there is constipation and no faeces or flatus is passed per rectum. On examining such an adult patient the pulse and temperature initially will be normal, the abdomen may be distended centrally if there is a small gut obstruction or in the flanks if large gut is involved. The hernial orifice should be palpated for a small tender tense mass may reveal a strangulated hernia which might not have been visible on inspection. Next the abdomen is palpated and a distended coil of gut may be felt. There may be a tender mass if a coil of gut is caught by a band. A variety of features may be discovered depending on the cause of the intestinal obstruction. A rectal examination may reveal the site of the obstruction.

Auscultation of the abdomen will disclose vigorous peristaltic movements unless this examination is delayed till the final stages of the disease have set in.

How different is the picture in the new-born infant. Pain, the characteristic feature of the adult and older child is absent or, if present, is not registered consciously by the infant. It neither screams nor curls its legs up. Vomiting in the newborn has the greatest significance. If the vomit contains bile it often means intestinal obstruction. Any new-born infant who vomits should be sent to hospital without delay. A child with a duodenal atresia above the opening of the bile duct may never vomit bile, yet is suffering from intestinal obstruction. It would help these infants if the midwives knew the significance of vomiting in the newborn and sent such babies to the hospital early. If, therefore, you are interested in this condition, go and lecture to the midwives, a very fruitful occupation.

If the obstruction is a high one the diagnosis can often be confirmed by an X-ray picture of the abdomen. After birth a baby takes its first breath and soon after this swallows its first mouthful of air. This air travels down the intestinal canal and before 12 hours have elapsed the infant may pass this air per rectum. If there is obstruction the site at which the air is held up is often clearly visible in the X-ray film. This is particularly true of the duodenal atresia. Volvulus of the whole of the small gut round the superior mesenteric pedicle and in rectal atresia. If there is any doubt, a small amount of radio opaque substance may be given and its course through the intestine watched on a series of X-ray films.

Other signs of obstruction present in the older child, such as pain, are absent and distension is often masked. It is upon the vomiting, and particularly the vomiting of bile, that suspicions should be aroused and further steps taken. The newborn stand laparotomy extraordinarily well. I personally have resected almost the whole small gut and have sucked meconium out of the peritoneal cavity and the infant survived. No infants

should be regarded as hopelessly malformed and every effort should be made to get them to a competent surgical team early in their lives.

After the neo-natal period intestinal obstruction presents with similar features to this disease in the adult with the possible exception of intussusception.

Here the characteristic feature is pain and the reaction to pain in a child under one year of age. The typical history in this condition is that a mother will bring her child, aged between six months to a year, and say that the child is a good healthy baby but that it suddenly had a screaming attack and drew its legs up. After the attack the baby looked a little pale but went to sleep again, only to be seized by another episode similar to the last. The child may have a normal pulse and temperature. On inspection the abdomen will be found to move normally on respiration. On palpation a sausage-shaped mass may be felt, possibly along the course of the colon. It is more easily felt when in systole, but that is the period during which the child may feel pain and it may scream when further palpation of the abdomen will be rendered useless. There may be emptiness in the right iliac fossa. On examination of the rectum, typical mucus stained with blood may be found on the examining finger. Vomiting occurs but it is not a prominent feature of the early stage. Difficulty may be experienced in the diagnosis, firstly by not having this condition in mind.

The child may be hard to examine but with patience and a warm hand the child's abdomen will usually relax sufficiently to palpate. The tumour itself may be difficult to feel as it may be up under the costal margin or under the liver edge. It may be in the pelvis or if the intussusception is ilio-ileal may be anywhere in the abdomen. If you suspect an intussusception never leave the child undiagnosed throughout the night. A barium enema may be diagnostic if the intussusception has entered the colon. The final and ultimate recourse if still in doubt is to give the child an anaesthetic and palpate the abdomen. You must be prepared to open the abdomen if the diagnosis is confirmed.

Appendicitis is commoner in the under twos than the textbooks suggest. In an adult the first symptom of appendicitis is generalized abdominal pain followed possibly by nausea, then localized pain and a temperature and a leucocytosis. The generalized pain is thought to be due to tension in the appendix which is also the cause of the nausea. Changes then spread through the appendicular wall and the parietal peritoneum becomes involved with resultant irritation of the eleventh dorsal nerve. It is the hyperaesthetic filament of this nerve passing through the rectus sheath which in part produces the tenderness over McBurney's Point. The second factor is the tenderness of

the underlying appendix. It is on this sign that the diagnosis of appendicitis in the adult is often made. During the second to third month of foetal life the appendix is in the umbilical cord outside the abdomen. In many young babies the caecum may not have attained its adult site. It may be sub-hepatic, lumbar, pelvic or freely mobile. The McBurney tenderness on which the diagnosis of appendicitis in the adult often rests, may never, in these children with the caecum in an abnormal position, be present at all. The appendix may be a long way from the peritoneum supplied by the eleventh dorsal nerve and the hyperaesthesia of this nerve and the important physical signs produced may be entirely absent. Another factor in the causation of appendicular pain is colic due to the obstruction of the lumen of the appendix. The third factor is the tenderness of the appendix itself to light palpation.

The inflamed appendix is tender wherever it is and a localized tender area in the abdomen of a young child is of great significance. This tender area may be in the right loin under the liver centrally in the abdomen. It may be just above the pubis if the appendix is pelvic. This tenderness in association with a short history of abdominal pain, a slight pyrexia and rise in pulse and a single vomit may be all upon which to diagnose appendicitis. In these children sudden acute persistent abdominal pain is of great moment. An abdominal pain which wakes a child at night is another factor in the history which points to a surgical lesion in the abdomen.

Accurate diagnosis of the acute abdomen in a child is helped by a good history. Interview the parent or guardian yourself. Do not rely upon a history taken by a third party. Examine the child in comfortable warm conditions in quiet surroundings. Shield the child from other screaming children. To attempt to examine the abdomen of a child in a cold casualty department in the presence of other terrified patients places a handicap upon the assessment of the condition. Examine the child generally. Take the pulse and the temperature. Particularly examine the throat—a tonsillitis is a frequent cause of abdominal symptoms. So also is a pink ear drum. Make quite sure you see both tympanic membranes, and if there is wax in the external auditory canal remove it carefully with a wax hook. Examine the chest. A basal pneumonia sometimes causes abdominal pain. If in any doubt get an X-ray film of the chest.

Look at the child's abdomen. You may see that the abdominal wall is not moving. Ask the child where the pain is. He may point to the umbilicus. Sometimes he will point to a particular side which may implicate the kidneys. Next palpate the child. Touch the chest first. If he does not mind move

the hand down to the abdomen. If he immediately resents it or screams it probably hurts and peritonitis may be the cause. A child, especially if known to be good tempered, who is restless and irritable when approached and who refuses to allow its abdomen to be examined is suspect. Its irritability and resentfulness may be caused by a ruptured appendix and a belly full of pus.

Examine the hernial orifices. Palpate the abdomen feeling the areas which are not suspect first. Feel for alteration in tension of the muscles localized tenderness and for the presence of tumours.

Ask the child to turn over and note its reaction. It may resent being moved. Examine the rectum. If it is full of hard faeces and you are still in doubt, order a simple enema and re-examine the child afterwards. If the rectum is empty palpate the pouch of Douglas. A pelvic appendix can be felt, so can a stone in the bladder. The lower abdomen can be palpated bimanually with a finger in the rectum and a hand on the abdominal wall. If this can be done readily and without undue discomfort there is probably no serious lesion in

the lower abdomen. Examine the urine. Spin it down and look for pus cells with a microscope. Do not rely on macroscopic tests for pus. Pyelitis is a frequent cause of pyrexia and pain in children.

Little children often cannot speak. Our responsibility to them is very great. Never dismiss a child if there is doubt in your mind concerning the pathological state within the abdomen. Either send the child to a competent surgical team or be prepared to give it a rectal wash-out; examine the urine for pus cells under the microscope and re-examine the child's abdomen within a few hours. If you have not the facilities for doing this we at the Westminster Children's Hospital will do it for you.

A final maxim for the overworked, harassed, general practitioner: '*Six hours abdominal pain associated with vomiting unrelieved by an enema is surgical—send the patient to hospital.*'

This dictum, put into practice, has reduced the incidence of perforated appendices to very low proportions and has reduced the mortality of appendicitis in one area from double figures to decimal figures.

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