Acute Abdominal Pain in Children

See also separate Recurrent Abdominal Pain in Children article.

Childhood abdominal pain is a very common reason for parents to seek medical advice. For most children the presenting abdominal pain is functional and is benign and self-limiting\(^{[1]}\). However, this means that we need to be especially astute at picking up the more serious cases which can be life-threatening\(^{[2]}\).

Epidemiology\(^{[2]}\)
- Acute abdominal pain is a common complaint in childhood and it can be caused by a wide range of underlying surgical and non-surgical conditions.
- The most common non-surgical condition is gastroenteritis, while the most common surgical condition is appendicitis.
- Appendicitis accounts for more than 40,000 hospital admissions in England every year. Appendicitis is the most common non-obstetric surgical emergency during pregnancy, with an incidence of 0.15-2.10 per 1,000 pregnancies\(^{[3]}\).
- The frequency of surgical intervention in patients presenting with acute abdominal pain is around 1\% but it is essential not to overlook a serious organic aetiology on clinical assessment.

Presentation

History
This varies according to the age of the patient.
- Neonates and babies may present with crying and difficulty feeding.
- Toddlers - can usually answer simple questions.
- Teenagers - may be more embarrassed to talk about the pain.
- Ask about duration, location, character.
- Associated symptoms include vomiting, diarrhoea, fever, groin pain, urine symptoms, bloody diarrhoea, vaginal discharge.
- Also enquire about recent travel history.
- Gynaecological and sexual history may also be appropriate.

Physical examination
- Note whether the child looks ill.
- Babies may have abnormal facial expressions.
- Haemodynamic status - pulse rate, blood pressure in older patients, mucous membranes, urine - eg, wet nappy.
- Rash - eg, Henoch-Schönlein purpura.
- Icteric.
- Temperature.
- Note whether the child can be distracted from the pain.
- Ask the patient to suck the abdomen in and blow it out.
- Get them to point at the pain with one finger.
- Check the abdomen for tenderness, rebound tenderness, guarding, organomegaly, loin pain, bowel sounds.
- In males, check the testes for torsion.
- Rectal and vaginal examinations should only be performed if they will provide significant information.
- Other system examination as appropriate.
- Urine dipstick.

Causes of abdominal pain in children
See also separate Abdominal Pain article. The causes and presentation of abdominal pain may be similar to adults’, especially for older children.
<table>
<thead>
<tr>
<th>Age group</th>
<th>Medical causes</th>
<th>Surgical causes</th>
<th>Other causes</th>
</tr>
</thead>
</table>
| Birth-1 year | • Gastroenteritis  
• Constipation  
• Urinary tract infection (UTI) | • Intussusception  
• Volvulus  
• Incarcerated hernia | • Infantile colic  
• Hirschsprung’s disease |
| 2-5 years | • Gastroenteritis  
• Constipation  
• UTI | • Appendicitis  
• Intussusception  
• Volvulus  
• Trauma | • Mesenteric lymphadenitis  
• Henoch-Schönlein purpura  
• Diabetic ketoacidosis  
• Sickle cell crises |
| 6-11 years | • Gastroenteritis  
• Constipation  
• UTI | • Appendicitis  
• Trauma | • Mesenteric lymphadenitis  
• Abdominal migraine  
• Henoch-Schönlein purpura  
• Diabetic ketoacidosis  
• Sickle cell crises  
• Pneumonia  
• Functional pain |
| 12-18 years | • Gastroenteritis  
• Constipation | • Appendicitis  
• Trauma  
• Ovarian torsion  
• Testicular torsion | • Dysmenorrhoea  
• Diabetic ketoacidosis  
• Mittelschmerz (ovulation)  
• Threatened abortion  
• Ectopic pregnancy  
• Pelvic inflammatory disease  
• Inflammatory bowel disease  
• Adrenal crisis |

Investigations

- These will depend upon the clinical findings and may not be needed - eg, viral gastroenteritis.
- Urinalysis - microscopy, culture, sensitivities, stone analysis.
- Blood tests - capillary blood glucose, plasma glucose, FBC, renal function, liver function, inflammatory markers, amylase.
- Other blood tests if indicated - eg, paracetamol levels, TFTs,
- Stool samples if there is diarrhoea - microscopy, culture and sensitivity; ova, cysts and parasites.
- Abdominal imaging - abdominal X-ray (looking for obstruction), CXR (looking for pneumonia and air under the diaphragm), ultrasound scan of the abdomen and testes.
- CT scan may also be appropriate.
- More specialist investigations - eg, barium enema - will depend upon preliminary findings.

The Paediatric Appendicitis Score (PAS) has been shown to be useful in children presenting with acute abdominal pain to assess whether further investigations and/or intervention is required. The PAS (range 0-10) assigns 1 point (unless otherwise stated) for each component present: migration of pain, anorexia, nausea/vomiting, right lower quadrant tenderness (2 points), cough/percussion/hopping tenderness (2 points), elevated temperature (fever >38°C), leukocytosis >10,000 cells/mm$^3$, and polymorphonuclear neutrophilia >7,500 cells/mm$^3$.\[4\]
Management

This depends on the cause. Self-limiting causes - eg, gastroenteritis - may just require reassurance and simple advice to parents and carers. The advice should include continued use of the child's usual and age-appropriate diet to prevent and limit dehydration. Clear liquids should not be substituted for oral rehydration solutions or regular diets to prevent or treat dehydration. For other causes, more specific therapies may be required - eg, surgery in appendicitis, treatment of diabetic ketoacidosis with insulin, fluids and potassium.

Some specific causes

Infantile colic (gripe)
- Occurs in babies in the first few months after the birth month.
- Babies scream, draw up their knees and experience severe pain.
- Episodes can last up to three hours and occur often in a week.
- Changes in feed type and routine may help.
- Over-the-counter medicines - eg, simeticone - may help but have not been proven to be of benefit[6].

Mesenteric lymphadenitis
- This is associated with adenoviral infection.
- It presents similarly to appendicitis but there is no peritonism.
- The abdominal pain tends to be more diffuse.
- There may also be generalised lymphadenopathy.

Pitfalls to watch out for in children with abdominal pain
- The diagnosis and excluding serious underlying conditions may be particularly difficult with infants and young children[7].
- In females, always consider gynaecological disorders and pregnancy-related disorders (you may need to speak to the patient alone).
- Male patients - always consider torsion of the testes.
- Consider illicit drug use.
- Consider whether there is a possibility of child abuse.

Additional management may include:
- Referring the patient if you are unsure or concerned.
- Repeating the physical examination - may help.
- Using analgesia as required - it does not affect diagnostic accuracy[8].

Further reading & references

3. Appendicitis; NICE CKS, March 2016.

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