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# Chronic abdominal pain in children

## Background

Chronic abdominal pain (CAP) is common in childhood and often causes significant disruption to daily life. It is most often due to a nonorganic/functional gastrointestinal disorder.

## Objective

This article presents information to assist in differentiating between nonorganic and organic causes of CAP. It stresses the importance of functional abdominal pain as a common clinical entity which needs active diagnosis and management.

## Discussion

Chronic abdominal pain is pain that occurs continuously or recurrently over a period of time. A thorough history and examination together with an event diary, recognition of 'alarm' symptoms and signs and appropriate investigation will assist in identifying patients with organic disease. A diagnosis of functional abdominal pain allows both the physician and family to focus on understanding the brain-gut interaction, avoid unnecessary investigations and implement appropriate pain management strategies.

■ **Chronic abdominal pain (CAP) refers to pain that has been present continuously – or occurring at least on a weekly basis when intermittent – for a minimum period of 2 months.<sup>1</sup> It is a description not a diagnosis, and can be due to a functional disorder or organic disease. A functional disorder is one in which symptoms of disease occur in the absence of objective evidence for an organic process. Organic disease and functional disorders can coexist.<sup>1</sup>**

## Functional chronic abdominal pain in children

In the majority of cases, CAP in childhood is due to a functional disorder. Functional CAP has two peak periods: the first at 5–7 years of age (when 5–8% of children [equal male to female ratio] have CAP) and the second from 8–12 years of age (when there is a strong female predominance).<sup>2</sup> Up to 25% of the population in this latter group can be affected.<sup>3</sup> Functional CAP is uncommon under 5 years of age.<sup>2</sup> Approximately 3–8% of cases<sup>4</sup> of isolated CAP are due to organic disease.

The typical presentation is a child aged 5–10 years with vague, peri-umbilical pain which can be quite severe, interrupt normal activities and be associated with nausea, pallor and headache. Epigastric pain is also described. The pain is not related to food intake, activity levels or stool pattern, and occurs during the day time.<sup>2</sup> The episodes are similar, resolve spontaneously and the child functions normally between the bouts of pain.

The cause of pain in these cases is probably due to an altered brain-gut interaction. Studies using neuroimaging techniques<sup>5</sup> are now demonstrating differences in activation of pain pathways, which appear causal in altering cortical interpretation of somatic stimuli<sup>6</sup> between normal controls and those with functional abdominal pain disorders.

Reduced pain thresholds in children with functional recurrent abdominal pain have also been demonstrated.<sup>7</sup> This population often



presents with other pain syndromes, such as headache, which also suggests that the central nociceptive wiring is abnormal. Anxiety and depression can present as functional CAP,<sup>8</sup> the physical symptoms of emotional distress being mediated via the autonomic nervous system.

## A clinical approach

A detailed history should elicit the characteristics of the pain, precipitating and relieving factors, appetite, dietary intake, and stool history. Functional constipation is common in childhood, and this diagnosis should be considered with a history of infrequent stools, encopresis, retentive posturing and painful or hard bowel motions. A history of abdominal distension, weight loss, poor growth, prolonged fever, bile stained or persistent vomiting, chronic or nocturnal diarrhoea, dysphagia, nocturnal pain, and pain persistently located away from the central abdominal area are 'red flag' symptoms and should trigger a search for organic disease (Figure 1).<sup>1</sup>

Information on diet, social and emotional status, and family should also be obtained. Anxiety, depression, family dysfunction and child abuse can all present with the somatic symptom of abdominal pain. Check for a family history of coeliac disease, inflammatory bowel disease, peptic ulcer disease, irritable bowel syndrome and constipation. The familiar occurrence of migraine headaches, anxiety/depression, atopy and food intolerances should also be noted. Document how the pain is impacting on the child's day-to-day function by asking about school absenteeism, cessation of normal activities and reduced social interactions. Note home management strategies.

Examination should focus on the child's general appearance. Children with functional abdominal pain syndromes look well and examine normally. Check growth and weight. Growth failure, weight loss, anaemia, mouth ulceration, perirectal disease, delayed puberty and arthritis are worrying signs associated with inflammatory bowel disease. Abdominal palpation may reveal a faecoma, a midline collection of faeces in the hypogastrium which is common in chronic constipation and usually associated with encopresis. Dipstick urinalysis should be performed.

## Investigations

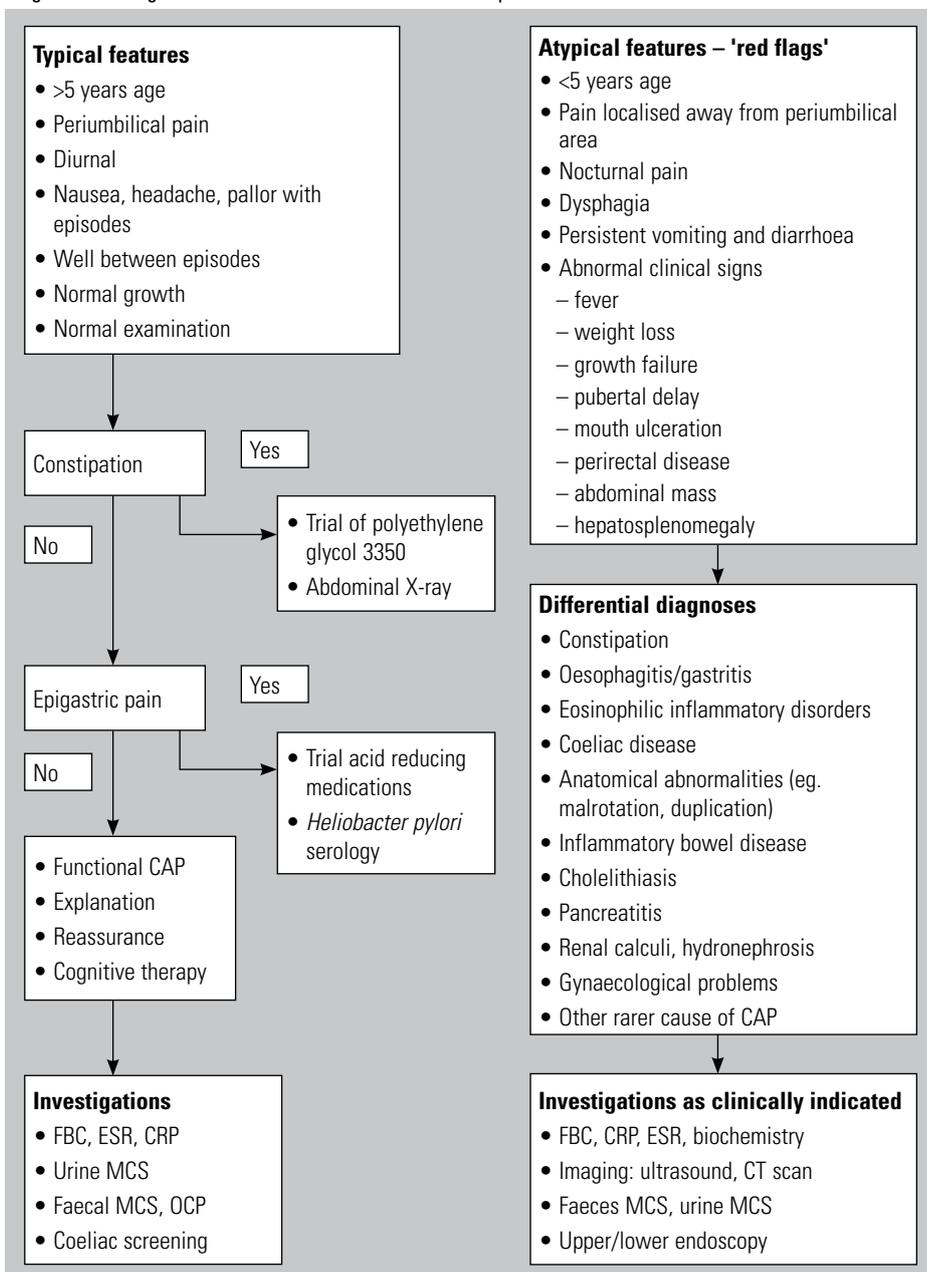
In the well child with a normal examination and history typical of functional CAP, investigation is usually unnecessary. However, the duration and severity of pain, its impact on daily life and the level of concern will temper this approach. A full

blood count (FBC), erythrocyte sedimentation rate/C-reactive protein (ESR/CRP), urine culture, faecal microscopy, ova, cysts and parasite examination and culture are appropriate baseline investigations.

As isolated abdominal pain is not an uncommon presenting symptom in children >5 years of age with coeliac disease,<sup>9</sup> and considering that many children with coeliac disease remain undiagnosed,<sup>10</sup> including coeliac serology in the initial screening tests does not seem unreasonable. Perform total immunoglobulin (IgA), endomysial antibody, tissue transglutaminase IgA (tTG) and iron studies.

If there is prominent epigastric pain, *Helicobacter pylori* serology could be considered. Upper endoscopy should be reserved for those children with dysphagia or recurrent epigastric discomfort not

Figure 1. Management of childhood chronic abdominal pain





responding to standard therapies.<sup>1</sup> An abdominal X-ray may be useful if constipation is suspected. Abdominal ultrasound may be indicated for children who have pain localised to the renal areas, right upper quadrant and, in older females, the pelvis. Abnormalities occur in <1% of children with CAP with typical features, and these findings may not explain the pain.<sup>11</sup>

More extensive investigations, dictated by clinical presentation, are indicated for those children presenting with 'red flag' features suggesting organic disease (Figure 1).

## Management

In children with CAP who appear well, examine normally and have a history suggestive of constipation, appropriate management would be to diarise pain, stool pattern and trial 1–1.5 g/kg/day polyethylene glycol 3350 (Movicol) for 3 days,<sup>1</sup> with an ongoing dose titrated to keep a soft stool consistency for a few weeks.

In children with epigastric pain, a trial of acid reducing medication is indicated. Endoscopy and biopsy are indicated if symptoms do not settle or recur, and if dysphagia is present. Endoscopic examination is able to diagnose peptic ulceration, *H. pylori* infection, eosinophilic oesophagitis, gastritis and enterocolitis, and coeliac disease. Dysphagia is a common symptom in allergic eosinophilic oesophagitis.<sup>12</sup>

If ingestion of certain dietary items triggers abdominal pain, consider food chemical intolerance and a referral to a dietician for an elimination diet.

For children who fit the diagnostic picture of functional CAP, it is important to acknowledge to both the child and family that the pain is real and that real pain occurs in the absence of organic disease. Discuss with the child and family the brain-gut interaction by explaining the interaction between environment, mind and body. Alleviate concern that there is an organic cause for the pain without resorting to extensive investigations that are unlikely to be helpful.

Provide explanation and reassurance that functional CAP is a common and well recognised clinical entity in childhood, reiterate to the child and family that the pain symptoms are characteristic of this disorder, and that physical examination is normal. Stress the importance of continuing normal daily activities and school attendance.

Start a symptom diary. Explore with the family nonpharmaceutical pain management strategies such as muscle relaxation, art, movement and imagery.

Plan an early follow up appointment to review investigation results, diary entries and pain management. The treatment goal is to ease pain and enable the child to function normally. Treatment should be individualised. Explanation and reassurance is all that is required in many cases. Referral to a child psychologist is recommended when anxiety or mood disorder are suspected and when symptoms are disabling and have not responded to first line strategies. Note that children <8 years of age cognitively have difficulty understanding that feelings can cause physical symptoms.

In children who appear anxious, depressed or have significant functional impairment, consider a trial of a tricyclic antidepressant or

selective serotonin reuptake inhibitor,<sup>13</sup> with the caveat there is only weak evidence that medication is beneficial in CAP.<sup>14</sup>

Provide periodic review to ensure clinical status is unchanged, that the child is gaining weight and growing, and to give support.

More studies evaluating the long term outcome for children with CAP are needed,<sup>1</sup> with increased anxiety and psychiatric problems in adulthood having been reported.<sup>15</sup>

## Summary of important points

- CAP is common in childhood and is usually due to a functional disorder.
- The most important assessment is a detailed history and careful examination.
- Investigations should be minimal unless atypical features are noted.
- Management focuses on understanding the pain and reducing pain using a behavioural approach. Planned periodic review is appropriate.
- Children with CAP may be at higher risk of psychological problems in later life.

Conflict of interest: none declared.

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