ABDOMINAL PAIN, CHRONIC

Introduction

The generally accepted definition of this condition is three or more bouts of pain severe enough to affect activities (usually school attendance) over a period of not less than three months. For some, the duration of three months is too long and intervention may need to occur earlier. Most children with this syndrome have a poorly understood yet easily recognisable condition for which an organic cause remains elusive. The approach adopted must be based on a thorough clinical assessment of the child.

Incidence

About forty years ago it was suggested that this condition affected 10 to 15 % of school children in Britain. A more recent community survey in North America found a prevalence of about 20% .The precise incidence in New Zealand is unknown but experience suggests that it is probably similar to overseas estimates. Chronic abdominal pain is one of the three common pain syndromes of childhood; the other two are headaches and recurrent limb pains.

Aetiology

Attempts to clearly distinguish organic from functional abdominal pain are fraught with difficulty as these two influences are not mutually exclusive in children. Psychological complications of organic disease are common and even in children with "purely" functional disorders, organic factors may contribute to symptomatology.

Despite many studies, the causes of the chronic abdominal pain syndrome in children remain unknown. The pain is not simply due to social modelling or a means to avoid school although in some cases either or both of these factors may be important. Studies examining intestinal permeability, dysmotility, abnormal autonomic responses, H. pylori infection and carbohydrate (lactose and sorbitol) malabsorption have not produced consistent results. They are plagued by selection bias (most subjects coming from tertiary institutions), lack of controls, and the use of techniques that cannot be reproduced. Even when a putative cause is identified it is clear that other factors must be involved. An example of this is carbohydrate malabsorption. Though lactose malabsorption is common only a minority of subjects appear to be affected symptomatically.

Defining the role of psychological factors has been even more difficult. Though some studies have suggested that environmental stressors are responsible, others have indicated the opposite. Clearly, other factors must be involved because not all children who suffer adverse life events develop abdominal pain.

It is not surprising therefore that the most useful approach is a biopsychosocial one where the recurrent abdominal pain is viewed as the child's response to biological factors, influenced by temperament (the child's developing personality) and reinforced by the family and school environment.

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Clinical Assessment

The logical approach to the child with chronic abdominal pain begins with a detailed history and physical examination.

With encouragement even young children are able to indicate by pointing with one finger the site of maximal intensity of the pain. John Apley (the paediatrician who first described this syndrome) observed that the further the site of maximal pain is from the umbilicus, the greater the likelihood of organic disease. Children often have difficulty describing the character of the pain but are usually able to describe any radiation. Night-waking suggests peptic ulcer disease as does pain that is aggravated by meals .The latter may also be a symptom of gastro-oesophageal reflux particularly when associated with vomiting. It is important to obtain a detailed history of the frequency and character of the child's bowel motions. Older children are often embarrassed to discuss their bowel motions and it may be necessary to keep a diary. Blood in the bowel motions, fever, weight loss, arthritis and skin rashes are indicators of chronic inflammatory bowel disease. Sudden onset of abdominal pain associated with nausea, vomiting or pallor suggests abdominal migraine

If the child's diet contains excessive amounts of lactose or sorbitol (as an artificial sweetener) restricting these should result in an improvement in symptoms if their malabsorption is responsible for pain and flatulence.

Drugs that produce abdominal pain include tetracyclines (oesophagitis) and non-steroidal anti-inflammatory agents (gastritis).

Specific enquiry should be made for a family history of irritable bowel syndrome, peptic ulcer, celiac disease, inflammatory bowel disease and migraine.

The best way to assess the severity of the pain is to find out how much it interferes with the child's daily activities.

In younger children chronic abdominal pain may be a manifestation of separation anxiety. With older children and adolescents, time should always be taken to interview the patient alone. During this interview concerns regarding the cause of the pain are explored and stressors in the home and school environments are discussed. Parental conflict, concerns regarding academic achievement, peer relationships, bullying, substance abuse, and sexuality are all potential areas of concern for older children and adolescents (HEADSS assessment). The possibility that the child or adolescent is depressed should always be considered.

It is always helpful to ask the parents and the child what they think may be causing the abdominal pain .It is not uncommon for them to be worried that the pain might be due to a serious disease e.g. leukaemia which can easily be excluded on clinical assessment and a blood count.

Physical examination must include an assessment of growth and general nutrition. A complete physical examination may detect other clues to underlying disease processes (e.g. clubbing in chronic inflammatory bowel disease) and always provides reassurance to the child and family that their concerns are being taken seriously. Abdominal examination focuses on areas of tenderness, organomegaly and masses. Rectal examination is useful in detecting faecal impaction but is not always indicated. However, it is always important to inspect the perianal area for the presence of fissures and skin tags.

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Formulation

By the end of the clinical assessment it is usually possible to classify the child's presentation into one of six categories.

1. Chronic or Recurent Abdominal Pain Syndrome
This is the commonest of the five syndromes and occurs in children between the ages of 5 and 12 years. The pain is ill-defined, periumbilical and is unrelated to meals or the passage of bowel motions. It may be accompanied by pallor, nausea and headache. The physical examination and screening tests are entirely normal.

2. Constipation
Pain is a feature of constipation throughout childhood and adolescence. Older children are often reluctant to discuss their bowel motions and once toilet- trained many parents do not pay much attention to the frequency of their child's bowel motions. If uncertainty remains then including their frequency as part of a pain diary is helpful. Anal fissures manifesting as fresh blood on a constipated stool may lead to reluctance to the passage of further motions and result in abdominal pain

3. Peptic Ulcer Disease
Clues that the pain may be due to peptic ulcer disease are night-waking, pain related to meals and a positive family history. The pain is usually epigastric but may be periumbilical. The underlying pathology is either frank ulceration or gastritis. Functional dyspepsia is only diagnosed after endoscopy.

4. Irritable Bowel Syndrome
This diagnosis is more common in adolescence and initially only a few suggestive features may be present making the diagnosis difficult until further symptoms arise. It should be entertained when abdominal pain is relieved by defaecation or associated with a change in stool frequency or consistency. The stools may vary in consistency from hard to loose and watery. Straining at stool, urgency, the passage of mucus, bloating and a sensation of abdominal distension are all features of this syndrome. The pain is often cramping and though it may be located anywhere in the abdomen it is usually maximal in the lower quadrants. Physical examination is usually normal but sometimes there is tenderness in the lower quandrants.

5. Abdominal migraine
This is likely in children who have a sudden onset of episodic midline abdominal pain lasting between 1 and 72 hours. Anorexia, nausea, vomiting, pallor and other vasomotor symptoms are common and least 2 should be present to make the diagnosis.

6. Chronic Inflammatory Bowel Disease
Recurrent abdominal pain is a prominent feature of Crohn's disease, whilst in ulcerative colitis it is less prominent; it is usually associated with the passage of stool and more likely to be associated with bloody diarrhoea. Fatigue, weight loss, night-waking and a positive family history (in 30 % of cases) are all further pointers to these diseases.

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Investigations

These follow logically from the history and examination and can be divided into screening investigations and those that are used to confirm or exclude specific diagnoses (Table1).

A full blood count and ESR (or c-reactive protein) should always be performed. Faeces should be tested for occult blood and examined for the presence of red or white cells, bacteria and parasites. A normal urinalysis helps exclude atypical presentations of urinary tract infections. An abdominal x-ray may help confirm the clinical impression of constipation by demonstrating faecal loading.

The presence of anaemia, thrombocytosis, iron deficiency, elevated ESR or C-reactive protein and reduced serum albumin, may all indicate chronic inflammatory bowel disease.

An ultrasound is useful in excluding suspected gallbladder, renal or pelvic (ovarian cysts) disease but has a very low yield when used indiscriminately in all children with chronic abdominal pain.

Endoscopy is the investigation of choice to confirm or exclude peptic ulcer disease, antral gastritis or oesophagitis. Biopsies may show evidence of H. pylori infection.

Colonoscopy is indicated if chronic inflammatory bowel disease is suspected. Biopsies will help clinch the diagnosis. Barium contrast studies are helpful in defining the extent of the disease.

Table 1: Investigations In Children With Chronic Abdominal Pain:

Screening:	**In selected cases:**
Full blood count	Abdominal X-ray
ESR (or C-reactive protein)	Abdominal ultrasound
Stool examination (including occult blood)	Endoscopy (and biopsy)
Urinalysis	Barium contrast studies

Management

Successful management is dependant on an accurate diagnosis.

Not surprisingly the greatest difficulty is encountered with the non-specific recurrent abdominal pain syndrome. There is no place for rigid guidelines and one depends on clinical judgement in deciding on the most effective approach, which is based on thorough clinical assessment.

One of the most important aspects of management is parental reassurance. Fears of specific underlying diseases need to be confidently allayed. Parents need to know that this is a common well-recognised but poorly understood condition. A diary kept by the child with parental assistance is an easy way to confirm the frequency, duration and associations of the pain.

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Diary for recording the frequency and associations of the pain

- Date:
- Time:
- What I was doing when the pain started
- How bad my pain was (1 to 3 1= mild 3= the worst pain)
- How long my pain lasted
- What made my pain better

The role of environmental stressors need to be discussed in a non-judgmental way. Most parents are aware that stress can produce real pain. It makes sense to ensure that any bullying at school, concerns regarding academic progress or poor peer relationships are all sympathetically addressed. Any pain is much easier to cope with when the home and school environments are perceived as supportive. School attendance has to be actively managed in its own right as absenteeism is much more difficult to address once it has become entrenched and affected the child's self-confidence. The non-specific abdominal pain is often most severe in the morning but rarely lasts more than an hour – it is important to take the child to school once the pain starts settling. Similarly any sick bay attendances should be as short as possible and sending the child home from school is always the last resort. It is helpful to gain the support of teachers to ensure that the child and the pain are appropriately managed. With regular follow-up and support from their GP most children with recurrent abdominal pain syndrome will improve or at least reach a stage where they can cope with daily activities. Cognitive behavioural therapy may be helpful.

When to refer the child with Chronic Abdominal Pain to a Paediatric Clinic:

- Diagnostic uncertainty
- Excessive parental anxiety
- School absenteeism
- Suspicion of serious gastrointestinal disease (persistent vomiting, weight loss, dysphagia)
- Night-waking
- Pain localized away from the umbilicus
- Poor growth or weight loss
- Extra-intestinal symptoms e.g. fever, rash, mouth ulcers, joint pain)
- Blood in stools
- Anaemia
- Raised ESR
- Family history of peptic ulcer or inflammatory bowel disease

The management of the other conditions responsible for recurrent abdominal pain is as below:

Management of specific conditions causing chronic abdominal pain

Constipation: see constipation guideline

- Laxatives (e.g. Movicol, Lactulose, bulking agents)
- Increase dietary fibre
- Regular toileting (5 minutes on toilet 20 minutes after breakfast and evening meal)
- Star chart for younger children

Irritable Bowel Syndrome – Explanation

- Avoiding /managing psychosocial triggers
- High fibre diet may be helpful

Peptic Ulcer Disease

- H_2 blockers
- Proton pump inhibitors

Abdominal migraine

- Pizotifen may be effective as prophylaxis

Chronic Inflammatory Bowel Disease

- Nutritional support
- Anti-inflammatory /immunomodulatory drugs

Prognosis

Most studies show that organic disease is rarely missed in children with chronic abdominal pain. Thirty to fifty percent of children with chronic abdominal pain settle within 6 weeks with the rest taking somewhat longer. Factors associated with a poorer prognosis are shown in Table 2.

Table 2: Prognostic Indicators in Children with Chronic Abdominal Pain

Factor	Better prognosis	Worse prognosis
Family	No family history of chronic pain	Family members with chronic pain
Gender	Girls	Boys
Age Of Onset	Older than 6 years	Younger than 6 years
Duration of pain before Treatment	Less than 6 months	More than 6 months

Adults who as children had chronic abdominal pain are at increased risk of having functional abdominal pain (as well as headaches and back pain) but in the vast majority of cases this does not interfere with their daily activities.

Conclusion

Recurrent abdominal pain of childhood is a common condition of childhood. The vast number of children with this condition do not have serious underlying gastro-intestinal disease and those that do can be readily distinguished by clinical assessment and a few basic screening investigations.

References

Up to date; Evaluation of the child and adolescent with chronic abdominal pain. Last literature review 19.1: January 2011-06-22. Contains details of Rome III diagnostic criteria for functional gastrointestinal disorders at childhood (ages 4-18 years).

Clinical Report: New recommendations for treating children with chronic abdominal pain. Subcommittee on Chronic Abdominal Pain of the American Academy of Pediatrics. Pediatrics March 2006

Cochrane database of systematic reviews has ongoing reviews of psychosocial, dietary and pharmacological interventions.