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Recurrent abdominal pain in paediatric patients

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Summary

Recurrent abdominal pain is a common problem in the paediatric population. While functional abdominal pain accounts for the majority of cases, an organic cause for pain may be found in about 5% to 10% of children. Diagnostic evaluation depends on the clinical presentation and the presence of specific findings. Excessive testing should be avoided as this may increase parental anxiety and put the child through unnecessary stress.

摘要

反覆發作的腹痛是兒科常見的疾病。大多數屬於功能性腹痛，只有5-10%有器質性病因而可依據臨床的表現和一些特殊的發現來作出診斷。應該盡量避免做過多的檢查。因為這樣會使家長擔憂，也會給兒童增加不必要的壓力。

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Introduction

Recurrent abdominal pain (RAP), first described by Apley,¹ is a common problem in the paediatric population challenging family physicians, paediatricians and paediatric surgeons. RAP interferes with daily activities and may result in repeated clinic visits, hospital admissions and extensive medical evaluations. It may be the predominant clinical manifestation of a large number of well defined organic disorders, but in the majority of cases, RAP is due to a functional bowel disorder.

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Definition

Recurrent abdominal pain (RAP) is defined as more than three episodes of paroxysmal abdominal pain in children between the ages of 4 and 16 years that persists for more than 3 months and affects normal activity.^{1,2}

Epidemiology

RAP has been reported to occur in 10% to 15% of children between the ages of 4 and 16 years. Males and females are affected equally in early childhood up until the age of 9, at which point the incidence decreases in males.^{1,2} An organic cause for the pain could only be found in about 5% to 10% of children with RAP. Gender, intelligence, and personality traits do not distinguish patients who have functional pain from those who have organic pain.¹ Studies of the natural history of RAP suggest that symptoms remit spontaneously in 30% to 50% of children within 6 weeks of evaluation.³

Functional abdominal pain

In nearly 90% of patients, RAP is due to functional abdominal pain. The etiology and pathogenesis of functional abdominal pain are unknown. Abnormalities in intestinal motility, visceral sensation, and autonomic function have been proposed to contribute to the pathogenesis.^{2,4-5} The long-term maintenance of abdominal pain reported in surveys of patients with RAP suggests the possibility that RAP may be a childhood precursor of irritable bowel syndrome.⁶⁻⁷ It is generally agreed that the pain is genuine and not simply social modeling, imitation of parental pain, or a means to avoid an unwanted experience (e.g. school phobia or malingering). Functional abdominal pain is usually periumbilical in location, lasting for less than 1 hour. It rarely awakens the child from sleep. It may be associated with headache, pallor, nausea, dizziness and fatigue.

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Sometimes, physical or psychological stressful stimuli may be identified.

Organic abdominal pain

An organic disorder can be identified in only about 10% of children with RAP. The possible diagnoses can be divided into three categories according to the clinical presentation.²

1. Isolated paroxysmal abdominal pain (**Table 1**)
2. Abdominal pain associated with symptoms of dyspepsia (**Table 2**)
3. Abdominal pain associated with an altered bowel pattern (**Table 3**)

Diagnostic approach

Like many other illnesses, the diagnosis should be established by a detailed history, careful physical examination and minimum investigations. In the history, we should pay attention to the physical symptoms, the psychosocial background and the family history of the patient. In the physical examination, we should look for signs of significant illnesses, e.g. anaemia, failure to thrive, weight loss, fever or an abdominal mass. Not every child needs a full-blown work-up. The tests listed below (**Table 4**) are relatively non-invasive and inexpensive. They serve to reassure the doctor and the family/patient that an adequate search has been made for serious physical illness. In patients with specific symptoms, history, or physical findings (**Table 5**), other tests (**Table 6**) may be warranted.

Helicobacter pylori and recurrent abdominal pain in children

The role of *H. pylori* in a variety of paediatric disorders is very controversial.²⁰⁻²¹ First, it appears that there are no specific symptoms associated with *H. pylori* infection,²²⁻²³ and the majority of patients indeed may be asymptomatic.

Second, for diagnosing this entity, the gold standard has been endoscopy, which in children carries not only its own inherent risks and complications, but those of the general anaesthetic required to perform the procedure. Alternative methods (serum antibody and urease breath

Table 1: Isolated paroxysmal abdominal pain

- Fecal impaction
- Appendiceal colic⁸⁻⁹
- Partial small bowel obstruction
 - Malrotation
 - Lymphoma
 - Adhesion
- Urinary disorders
 - Ureteropelvic junction obstruction
- Musculoskeletal disorders
- Vascular disorders
 - Polyarteritis nodosa
- Neurological disorders
 - Abdominal migraine
 - Acute intermittent porphyria
- Gynaecological diseases
 - Teratoma of ovary

Table 2: Abdominal pain associated with symptoms of dyspepsia

- Upper GI disorders
 - Gastroesophageal reflux disease¹⁰
 - Peptic ulcer¹¹
 - *Helicobacter pylori* gastritis¹²⁻¹³
 - Celiac disease
- Motility disorders
 - Biliary dyskinesia
 - Intestinal pseudo-obstruction
- Extraintestinal disorders
 - Chronic pancreatitis
 - Chronic hepatitis
 - Chronic cholecystitis

Table 3: Abdominal pain associated with an altered bowel pattern

- Carbohydrate intolerance
 - Lactose
 - Fructose
 - Sorbital
- Idiopathic inflammatory bowel disorders¹¹
 - Ulcerative colitis
 - Crohn's disease
- Infectious diseases
 - *Giardia*
 - *Trichuris vulpis*¹³
 - Tuberculosis^{10,14}
- Drug-induced
 - Erythromycin

Update Article

Table 4: First line investigations only if indicated by history and physical findings

Blood	CBP, L/RFT, Amylase, ESR, ⁶ CRP ¹⁵
Urine	Urinalysis, culture
Stool	Culture, ovum and parasites, occulted blood
Abd USG ¹⁶	Hepatobiliary and pancreatic system, kidneys, pelvis
Diet	Trial of lactose-free diet

Table 5: Warning signs of significant illnesses

- Pain awakening patient from sleep
- Localized pain away from umbilicus
- Vomiting, diarrhoea, blood in stools
- Failure to thrive or weight loss
- Abnormal screening tests (anaemia, high ESR, etc.)
- Extraintestinal symptoms (fever, rash, joint pain, dysuria, recurrent aphthous ulcers)

Table 6: Second line investigations

- Upper endoscopy¹⁷ or colonoscopy⁷
- Upper GI contrast radiography
- Lactose breath hydrogen test
- Psychological consultation¹⁸⁻¹⁹
- Other tests (e.g. CT scan) when indicated by history and findings

tests) are being developed to detect this organism,²⁴ but they are invasive to a certain extent and are not as specific in indicating current infection. Serum antibody may present for a period of time after eradication of the infection.²⁵

Third, not only does the organism have varying prevalence rates among children with recurrent abdominal pain (unlike the adult population), but these rates also do not differ from those for children without this symptom complex.²⁶⁻²⁸

Last, although *H. pylori* has been highly correlated with gastritis²⁹⁻³⁰ and duodenal ulcer disease,³¹⁻³² the therapy against this organism has not been shown to consistently alter the clinical state. It appears that *H. pylori* does not play a role in abdominal pain that is not attributable to acid-pepsin disease.³³

It certainly does not appear reasonable to subject these children to a variety of procedures in an attempt solely to identify an organism that may occur equally in non-afflicted children, and that, even if identified and treated in a child with this syndrome, may not affect the symptoms.

Paediatric upper gastrointestinal endoscopy should be reserved for recurrent abdominal pain suggestive of acid-pepsin disease and other upper gastroesophago-duodenal disease such as inflammatory bowel disease and a variety of enteropathies.¹⁷

Surgical treatments

The role of surgery in treatment of RAP is debatable. Schisgall postulated that "appendiceal colic" owing to inspissated fecal material and leading to intermittent obstruction and distension of the appendix, is an important cause of RAP.⁹ Some surgical reports have evaluated the role of diagnostic laparoscopy and elective appendectomy in the diagnosis and management of RAP.^{8-9,34} Most of them demonstrated that laparoscopy and appendectomy were effective treatments for selected children with RAP.

Conclusion

Recurrent abdominal pain is a common problem in the paediatric population, yet an organic disorder can only be found in 10% of these children. Diagnostic evaluation depends on the clinical presentation and the presence of specific findings that suggest the possibility of an organic disorder. Excessive testing should be avoided as this may increase parental anxiety and put the child through unnecessary stress. ■

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Key messages

1. Recurrent abdominal pain (RAP) is defined as more than three episodes of paroxysmal abdominal pain in children between the ages of 4 and 16 years that persists for more than 3 months and affects normal activity.
 2. Majority of RAP represents functional abdominal pain, but 5-10% of them may have an organic cause.
 3. The diagnosis of the organic causes should be established by a detailed history, careful physical examination and minimal investigations.
 4. The role of *H. pylori* in RAP is still controversial.
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