

Recurrent Abdominal Pain in Children

*Sulaiman Yusuf**, *Badriul Hegar***

* Department of Pediatric, Faculty of Medicine, University of Syiah Kuala/
Zainoel Abidin General Hospital, Nanggroe Aceh Darussalam

** Division of Gastroenterology, Department of Pediatric, Faculty of Medicine,
University of Indonesia/Dr. Cipto Mangunkusumo General National Hospital, Jakarta

ABSTRACT

Recurrent abdominal pain is one of the most common symptoms found in children. Description of abdominal pain is important in determining the etiologic cause. Organic pain must be ruled out first before suspecting psychogenic cause of pain. However, Children and infant are likely having difficulties in describing abdominal pain. Referred pain may lead to misdiagnosis. Alarm symptoms of abdominal pain are important indices and must be recognized. Careful and complete anamnesis and physical examination play critical role in management approach of recurrent abdominal pain in children and determine whether medical therapy only or combination with surgical intervention is considered necessary.

Keywords: recurrent abdominal pain, children, alarm symptom

INTRODUCTION

Recurrent abdominal pain is frequently complained by children. Not all abdominal pain has something to do with the lesion inside abdomen, but can be from other site or organ (referred pain).^{1,2} Every child has different tolerance in response to pain. The characteristic and site of lesion that causes pain may be determined according to clinical description of abdominal pain. Visceral pain is likely felt in dermatome where the nerve fibers of the organ involved is located. The pain stimulation originated from liver, pancreas, biliary tract, gaster or proximal intestine will have referred pain in epigastric area. Pain originated from distal small intestine, caecum, appendix, distal colon, urinary tract, or pelvic organ usually have referred pain in suprapubic area.²

Infants and children up to 2 years old cannot tell and describe the pain they are having. Experts say that sudden cry or screaming accompanied by vomiting is suggested as manifestation of pain in infant.² Careful anamnesis and physical examination are critical to have early diagnosis and prompt treatment.¹

DEFINITION AND CLASSIFICATION

Recurrent abdominal pain was defined by Apley as three or more bouts of abdominal pain that severe enough to interfere normal activities, occur over a period of not less than 3 months, and during the year preceding the examination.³

Classical concept divides abdominal pain into 2 types; psychogenic and organic. According to this concept, organic cause must be ruled out first before suspect psychogenic as underlying cause.⁴ The approach need much time and high cost. Barr (1983) proposed other concept and divided recurrent abdominal pain into 3 types as follows: organic, dysfunctional, and psychogenic.⁵ Other concept proposed by Levine and Rappaport (1984) emphasized on the multifactor causes. Recurrent abdominal pain is a resultant of 4 factors; (1) somatic, dysfunction or disease; (2) lifestyle; (3) characteristic and response pattern; (4) environment or precipitating factor. Those factors have role in stimulating pain or decrease pain. Thus, it can be explain why some children have constipation without abdominal pain while others have. The same goes in children with poor psychosocial condition.⁶

Rome Criteria classifies functional gastrointestinal tract disorders into 5 types:⁷

1. Functional dyspepsia
Pain or discomfort in upper abdomen (upper umbilicus). The symptoms have occurred at least for 12 weeks, not necessarily consecutive, in the last 12 months
2. Irritable Bowel Syndrome
Abdominal pain or discomfort that is associated with alteration in defecation pattern and stool. The symptoms will diminish after defecation

3. Functional abdominal pain
Pain at umbilicus area is persistent in childhood age or adolescent, not associated with physiologic activity such as eating, defecation or menstruation
4. Abdominal migraine
Pain with paroxysmal episodes in mid abdomen, non colicky, persist for few hours or days and there is non-pain period interval lasting for weeks or months
5. Aerophagia
Excessive swallowed air will cause abdominal distention and disturb food and fluid intake in children

PREVALENCE

Prevalence of recurrent abdominal pain in children is approximately 10-30% and most frequently found in school age (4-14 years old) with highest frequency in age 5-10 years. It is rare among those whose age less than 5 years. In girls are more frequently than boys (1.5:1).⁸ Organic abnormalities were found in 30-40% children with recurrent abdominal pain.²⁻⁴ Hegar et al found *Helicobacter pylori* infection in 23.5% children with recurrent abdominal pain.⁹

PATHOGENESIS

Pathogenesis of recurrent abdominal pain due to organic abnormalities:^{1,2}

1. Vascular disease. It may be emboli/ thrombosis, rupture, occlusion due to torsion or compression, such as torsion of cyst of ovary or intestinal intususception
2. Inflammation. Organ infection or inflammation in peritoneal cavity causes pain if the inflammation process has reached parietal peritoneum. Like other inflammatory mechanism, pain is transferred through somatic nerve fiber. The pain may be felt in local area or diffuse in all part of abdomen according to inflammation of peritoneum involved. It can be persistent or increased if there is peritoneal movement (cough or compression of abdomen)
3. Passage disturbance/obstruction. Passage disturbance of gastrointestinal, biliary, pancreas and urinary tract (total or partial) will occur as result of increased intra-luminal pressure in the proximal site of obstruction. Pain may be persistent or colicky.
4. Stretching or distention of visceral peritoneum. This condition can be found in liver or renal enlargement

Those 4 causes of pain are rarely occurring separately; usually pain is caused by mixed process.

PATHOPHYSIOLOGY

Abdominal pain may be caused by several different sources such as visceral distention, ischemia, intra abdominal infection, abdominal wall abnormalities, extra-abdominal abnormalities, metabolic disturbance and nervous system abnormalities.^{10,11}

Receptor of pain in gastrointestinal tract is located at non-myelinated nerve originated from autonomic nervous system as high as T8 nerve root downward through L1. Somatic abdominal pain occurs because disease process involving peritoneum close to mesenteric viscera.^{1,2} Deep somatic pain originated from parietal peritoneum, associated with muscle rigidity and hyper anesthesia are specific signs of peritonitis. Pain is radiating through somatic nerve fiber or segmental afferent pathway from thoracic nerve root.² Pain from small intestine will be manifested in upper quadrant of abdomen or epigastric area. Pain originated from the bowel tends to be felt in lower quadrant of abdomen. Metabolic and psychosomatic causes of pain are rarely found and their mechanism of pain is unclear.

Referred pain is pain that originating from other organ or outside abdomen. Pain sensation radiates through afferent sympathetic pathway from brain and sensation of pain is diffused or not localized. Example of referred pain is pain from diaphragm is felt in shoulder, urethritic pain felt in testis and biliary tract pain felt in the scapula.²

CLINICAL MANIFESTATION

Clinical manifestation of recurrent abdominal pain in children depends on age. Guideline for abdominal pain in infants and children can be seen in table 1.

Table 1. Clinical manifestation of abdominal pain in children¹²

Age	Clinical Manifestation
0 - 3 months	Generally manifested as crying or vomiting
3 months - 2 years	Vomiting, sudden screaming, crying without apparent cause or trauma
2-5 years	Can inform the pain but cannot localize
> 5 years	Can describe and localize the pain

A child with abdominal pain usually looked very ill, crying, sweating and bowing position trying to protect his or her abdomen by shortening the rectus abdominis muscle. Pain is usually accompanied by other symptoms like nausea, vomit or anorexia.

Manifestation of recurrent abdominal pain is widely varied not only in frequency, time, intensity, location or constitutional symptoms. Nausea, cold sweating, vomiting, dizziness, pale and palpitation are frequent constitutional symptoms. The attack is usually lasts in

less than 1 hour and intervened by attack free period. Classic clinical manifestation of recurrent abdominal pain can be seen in table 2, while alarm symptoms as the sign of organic abnormalities causing the pain can be seen in table 3.^{13,14}

Table 2. Clinical symptoms of classical abdominal pain¹³

Paroxysmal
Periumbilicus or suprapubic area
Pain last < 1 hour
Non radiating pain, cramps or sharp, not awoken at night
Pain not related to food, activity or defecation pattern
Activity disturbance
Between 2 episodes there is free attack period
Normal physical examination, except that abdominal pain in lower left quadrant
Normal laboratory

Table 3. Alarm symptoms of recurrent abdominal pain^{7,13}

Localized pain, far from umbilicus
Radiating pain (back, shoulder, lower extremities)
Pain may awake child at night
Pain occur suddenly
Accompanied by recurrent vomit specially greenish
Motility disorder (diarrhea, obstipation, incontinence)
Gastrointestinal tract bleeding
Dysuria
Associated with menstruation
Growth disorder
Systemic symptoms: fever, anorexia
Age < 14 years old
Organ enlargement
Inflamed joint
Perirectal abnormalities, ulceration

DIAGNOSIS

The best examination is done when the abdominal pain occurs:¹

Anamnesis

1. Age. In certain age, abdominal pain is a clinical sign of abnormalities suggesting the need of surgical intervention such as intussusceptions in age between 6 months and 3 years old; or appendicitis in age between 5-14 years old
2. Pain
 - Location. The alteration of pain location is important thing to explore in children. Pain from upper gastrointestinal tract is usually felt in epigastrium. Distal ileum disturbance and appendicitis felt in lower right abdomen. Pain from infection of intestine is difficult to determine the location. Pain which first felt at periumbilicus and then move to lower right abdomen, could be sign of appendicitis
 - Characteristic and factors that can increase or decrease pain. Pain due to from smooth muscle spasm (intestine, urinary tract, biliary tract) usually is colicky pain and difficult to determine the “exact location”. Pain from peritoneal irritation is persistently located but

worsening when child cough or compress the abdomen

- Duration and history of pain. Abdominal pain last more than 24 hours usually needs special attention
 - Constitutional symptoms. Yellow or greenish vomit is a sign of intestinal obstruction, as well as vomiting that persist 12-24 hours or more may need special attention
 - Defecation pattern. Diarrhea, obstipation or blood in stool may be the cause of abdominal pain •
- Urine pattern
- Menstrual cycle
 - Respiratory tract disturbance
 - Trauma. Blunt trauma can cause sub-serous hematoma

Physical examination

Physical examination must be done completely from head to toe although focusing in abdomen. Take a careful look on general condition and position of a child when walking or lying on the bed. Abdominal examination must be done in relaxing position and concern for some important things such as asymmetry, pain location, any presence of mass, ascites, abdominal tenderness, rebound tenderness, and bowel sound. Digital rectal examination to explore if there was blood found. Gynecologic examination is done when there is indication. Emergency signs of abdomen are tense abdominal wall muscle, defense muscular, abdominal pain, rebound tenderness which are signs of peritonitis. Physical examination is also looking for strangulate or incarcerated inguinal hernia and skin rash in limb or buttocks as possible extra-abdominal causes.

Laboratory examination

Always keep in mind that anamnesis and physical examination have an important role for establishing the etiology of recurrent abdominal pain in children. The choice of laboratory and radiology examination depends on the working diagnosis. By careful anamnesis and physical examination, we can determine which laboratory and radiology examination are needed and what is the best management approach for patient.

MANAGEMENT APPROACH

A child complaint of recurrent abdominal pain must be determined whether they need medical therapy only, surgical intervention or psychological approach. A child complaint of recurrent abdominal pain should be determined whether it is functional or organic in origin. Most of cases of recurrent abdominal pain in children are functional or psychogenic.

Based on these particular things, it is quite reasonable not to conduct invasive examinations directly or too early. Some modification approach has been done in developing countries such as Indonesia. Laboratory and radiology examinations are not in the first list to be conducted in recurrent abdominal pain without alarm symptoms. Although it has not been approved by all countries yet, Rome Criteria could be used to establish the diagnosis of functional abdominal pain.⁷

Some types of functional abdominal pain need medical treatment as supportive therapy. To date, there has not been controlled study regarding treatment of dyspepsia in children. H-2 receptor agonist and PPI are widely used in ulcer type of functional dyspepsia and cisapride in dismotility type.

When psychological stress factor were dominant, good relation between doctor, patient, and parents would be very important in management of functional abdominal pain.⁷

In emergency state of abdominal pain, immediate actions are needed in following conditions: acute pain, colic, specific location far from umbilicus, more severe pain when moving, and greenish or fecal vomit. Physical examination reveals abdominal wall stiffness, defence muscular, abdominal and rebound tenderness. Those findings suggest the patients to be hospitalized.^{13,15} If we do not find abdominal emergency, the etiology must be sought and give appropriate medical treatment. In severe pain, sedatives or analgesics can also be given.^{1,2,15}

CONCLUSION

Recurrent abdominal pain is one of frequent complain in children. With careful anamnesis and complete physical examination can establish the cause of abdominal pain in children. Children with normal physical development only need minimal supporting examinations, thus, alarm symptoms are important in management approach.

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