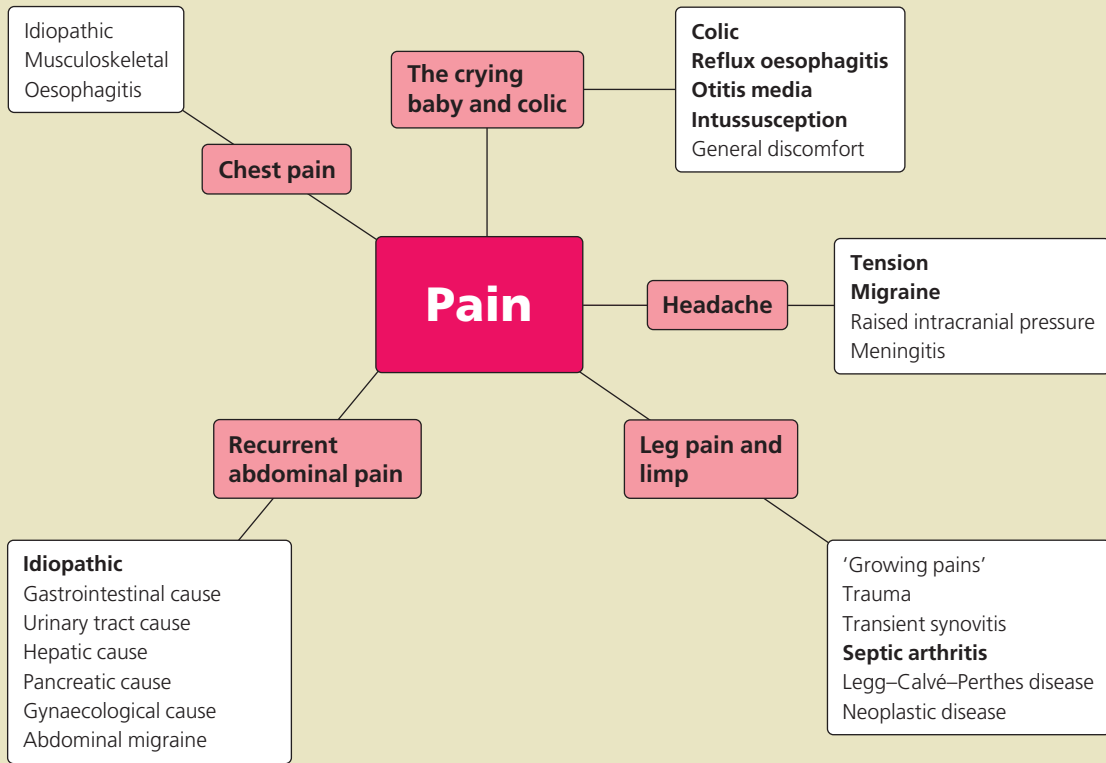


Pain

11

There is nothing that abateth so much the strength as pain.
Ambrose Pare, 17th-century physician

Finding your way around . . .



You must . . .

Know

- The characteristic features of colic
- The clinical features of migraine
- The signs of raised intracranial pressure

Be able to

- Differentiate nonorganic from organic pain by clinical assessment
- Develop an approach to the management of a child with recurrent nonorganic pain

Appreciate

- That most recurrent pain in childhood is nonorganic
- That nonorganic pain also requires medical attention

3

The crying baby and colic

Babies, or rather their parents, often present complaining of excessive crying. The crying is usually periodic and related to discomfort, stress or temperament. However it may indicate a serious problem, particularly if it is of acute onset. Infantile colic is a term used to describe periodic crying that affects young infants usually in the first 3 months of life.

Teething is very often blamed for crying, but there is little evidence that systemic disturbances such as fever, facial rashes and diarrhoea are caused by teething. When a baby seems to have a very irritable temperament, particularly if accompanied by possetting and vomiting, the diagnosis of reflux oesophagitis should be considered.

Babies are generally more irritable than older children when ill from any cause, and may well be off their feeds for a while. A common condition that causes severe distress, particularly at night, in the baby and young child is otitis media (see p. 75), which may occur in the absence of fever or catarrh. A serious cause of acute distress is intussusception (see p. 275), which precipitates severe paroxysmal crying. The common causes of crying are listed in Table 11.1.

Table 11.1 Causes of crying in babies.

Periodic crying	Acute onset of crying
Discomfort	Any illness
clothing	Otitis media
temperature	Intussusception
soiled nappies	Strangulated hernia
Temperament	
Environmental stress	
Hunger	
Wind	
Colic	
Reflux oesophagitis	
(Teething)	

Approach to diagnosing the crying baby

The purpose of your clinical evaluation is to make sure that there is no organic basis to the crying, and to identify psychosocial factors that may be exacerbating the problem.

History – must ask!

- *What are the characteristics of the cry?* Experienced parents can usually differentiate their baby's cries, so if

they are concerned that he or she is in pain, this needs to be taken seriously. Think of colic if crying characteristically occurs late in the day. Acute otitis media may cause a baby to wake at night in pain, and crying associated with feeds may suggest reflux oesophagitis. The sudden onset of severe paroxysmal crying should suggest intussusception.

- *Is the baby ill?* Ill babies are usually more irritable than usual, and often go off their feeds. Ask about fever and remember that a complete review of systems is needed.
- *How are the parents coping?* Babies are very sensitive to stress in the home, and existing stress levels increase with an incessantly crying baby. Gaining an idea of stress levels and coping strategies are important in managing the problem.

Physical examination – must check!

- *Growth.* Poor growth is a worrying sign that suggests the baby is not receiving enough milk.
- *Evidence of illness.* Carry out a complete physical examination, including inspection of the tympanic membranes. In intussusception, the baby can be seen to be experiencing paroxysms of severe distress.

Managing the crying baby

All babies cry, and even the most experienced parents at times may have difficulty in understanding what is distressing their baby. New parents have often had little previous experience of babies and need to learn how to handle their infant, and to respond to his or her needs.

Infants who wake and cry consistently at short intervals may not be receiving enough milk. However, it is important to appreciate that infants cry for reasons other than hunger. They may have discomfort from some other cause, such as too much clothing, soiled or wet nappies, swallowed air or illness. It is inadvisable to fall into the pattern of offering frequent feeds, or of holding and feeding to pacify all crying.

Unfortunately, and sadly too often, breast-feeding is thought by the mother or health professional to be inadequate and supplements are started. If the baby is thriving, and often when he or she is not, artificial feeds are of no benefit, and the mother and baby discover this too late when lactation has dried up.

Stress has a particular role. Babies are very sensitive to stress within the family and usually respond by crying. The crying itself, of course, can induce stress in the calmest of families, and can exacerbate already stressful situations.

Medical management, once a physical problem has been excluded, involves reassurance and support for the parents. Additional ongoing support can often be provided at home visits by the local health visitor.

Causes of crying in babies

Colic

The term 'colic' describes a common symptom of paroxysmal crying which occurs in babies principally under 3 months of age, and which is presumed to be of intestinal origin. Certain infants are particularly susceptible to colic. It may be associated with hunger and swallowed air, or discomfort and distension caused by overfeeding.

Clinical features The clinical pattern is characteristic. The attack usually begins suddenly, with crying which often lasts more or less continuously for several hours. The face may be flushed, the abdomen distended and tense, the legs drawn up and the hands clenched. The attack may end when the infant is completely exhausted, but often there is relief when faeces or flatus are passed. Attacks commonly occur late in the afternoon or evening. Careful physical examination is important to eliminate the possibility of intussusception, strangulated hernia or other disorders.

Management Holding the baby, or carrying him or her in a sling close to the parent, can soothe, and secure swaddling occasionally helps. No effective remedies have been found, although recent research suggests that sucrose may be effective. Changes of infant formula, although commonly tried, are rarely helpful. Support and sympathy are important in successful management of the problem, which resolves spontaneously over a few months.

3

Reflux oesophagitis (p. 106)

If oesophagitis is suspected, a trial of antacids, thickeners or H₂ antagonists can be empirically given, although in severe cases further investigation is merited.

Recurrent abdominal pain

Recurrent abdominal pain is one of the commonest symptoms presenting in children, with 10–15% of school-age children at some point experiencing it. Of these, only 1 in 10 are found to have an organic problem, the majority having no identifiable cause for the pain. The commoner causes of recurrent abdominal pain are listed in Table 11.2. The problem of the child with acute abdominal pain is discussed in Part 4.

Approach to the child with recurrent abdominal pain

Key points Approach to the child with recurrent abdominal pain

- Obtain a full picture of the pattern of episodes of pain
- Identify symptoms related to the various abdominal organs
- Determine whether there are any constitutional symptoms
- Decide if the pain is likely to be organic or functional in origin
- Obtain a picture of the psychosocial circumstances and the effect the pain has on the child's activities

Colic at a glance

Epidemiology

Babies under 3 months old

Aetiology

Presumed to be intestinal in origin

History

Crying for several hours, often late in the day

Face flushed, legs drawn up*

Abdomen distended*

Relief on passing flatus or faeces*



Physical examination

Normal

Confirmatory investigations

None

Differential diagnosis

Discomfort and stress

Reflux oesophagitis

Acute onset:

- intussusception
- otitis media

Management

Reassurance and support

Prognosis/complications

Usually resolves by 3 months old

NB *Signs and symptoms are variable

Table 11.2 The more common causes of recurrent abdominal pain.

Idiopathic

Psychogenic

Gastrointestinal

- Irritable bowel syndrome
- Oesophagitis
- Peptic ulcer
- Inflammatory bowel disease
- Constipation
- Malabsorption
- Giardiasis

Urinary tract

- Infections

Hepatic

- Hepatitis

Pancreas

- Pancreatitis

Gynaecological

- Dysmenorrhoea
- Pelvic inflammatory disease
- Haematocolpos
- Ovarian cyst

Other

- Abdominal migraine
- Lead poisoning

Abdominal pain can accompany almost any chronic childhood disorder, although luckily, it is rarely the only manifestation of serious disease. The purpose of your clinical evaluation is to decide as rapidly as possible whether there is an organic cause for the pain and, if not, to give appropriate reassurance and support rather than let anxiety linger that there is a serious problem that you have not identified.

History – must ask!

Take a complete history, reviewing the child's lifestyle and habits as well as focusing on symptoms related to each organ system.

- **What is the pain like?** The character of the pain can help you identify the cause. The child may be able to describe whether the pain is colicky or constant, and how it is related to daily activities, bowel habit or diet. Even if the child cannot describe the pain, the site can often be located. Nonorganic pain is classically periumbilical, and it has been said that the further the pain is from the umbilicus, the greater the chances that an aetiology can be

identified. A diary kept by the family can be quite helpful in clarifying the frequency of episodes and their relation to other events.

- **Are there other abdominal symptoms?** Symptoms related to specific organ systems may give clues to an organic cause. Constipation, diarrhoea or vomiting suggest a gastrointestinal cause, and frequency and dysuria suggest a cause in the urinary tract. Do not forget to enquire about gynaecological symptoms in teenage girls.
- **Are there general constitutional symptoms?** General constitutional symptoms such as anorexia, weight loss and fever are important indicators that there is a serious underlying cause.
- **Are there emotional or family difficulties?** You should always enquire about emotional and family problems, as they are commonly associated with abdominal pain. Try to establish how much the symptoms interfere with life at home and at school.
- **Family history.** A family history of gastrointestinal disease, especially peptic ulcers, may be relevant.

Physical examination – must check!

You should always carry out a complete physical examination. Don't limit it to the region below the diaphragm and above the pelvis!

- **Growth.** Height and weight measurements are particularly important, as weight loss indicates serious pathology. If the problem is long-standing, fall-off in growth may also occur.
- **General examination.** Look for signs of pallor, jaundice and clubbing.
- **Abdominal examination.** Examine the abdomen for hepatomegaly, splenomegaly, enlarged kidneys or a distended bladder.
- **Anorectal examination.** Inspection of the anus and a rectal examination are not routine in children, but need to be carried out if there is any suspicion of sexual abuse, and at times for constipation.

By the end of your clinical examination you should be able to differentiate the pain as being of likely organic or nonorganic origin. Table 11.3 summarizes the features that will help you come to a decision.

Investigations (Table 11.4)

The diagnosis of nonorganic pain can be made in many children on the basis of the history and examination. If in doubt, a full blood count, sedimentation rate, stools for ova and parasites, and urinalysis and culture can be helpful as inflammatory bowel disease, chronic urinary tract infection (UTI) and gastrointestinal parasites may present with abdominal pain alone. You should only consider

Table 11.3 Features differentiating organic and nonorganic causes of abdominal pain.

	Organic	Nonorganic
Characteristics	Day and night Character depends on underlying cause	Periodic pain with intervening good health Often periumbilical If psychosomatic, may be related to school hours
History	Weight loss and/or reduced appetite Lack of energy Recurrent fever Organ-specific symptoms, e.g. change in bowel habit, polyuria, menstrual problems, vomiting Occult or frank bleeding from any orifice Family history of gastrointestinal problems	Otherwise healthy child
Physical exam	Ill appearance, growth failure, swollen joint	Normal, thriving child
Preliminary investigations	Anaemia leukocytosis, raised sedimentation rate or eosinophilia on blood count Abnormal urinalysis and/or culture	Normal

3

Table 11.4 Useful investigations in assessing the child with recurrent abdominal pain.

Investigation	What are you looking for?
<i>Blood tests</i>	
Full blood count	Anaemia, eosinophilia, infection
Sedimentation rate or plasma viscosity	Elevated in inflammatory bowel disease
Liver function tests	Liver dysfunction
Urea and electrolytes	Renal failure
Amylase	Pancreatitis
<i>Urine test</i>	
Urinalysis and culture	Urine infection
<i>Stool</i>	
Ova and parasites (x3 samples)	Gastrointestinal parasites, e.g. giardiasis
Occult blood	Gastrointestinal blood loss, e.g. inflammatory bowel disease or peptic ulcer
<i>Ultrasound</i>	
Abdominal and pelvic	Urinary obstruction at all levels, organomegaly, abscesses, pregnancy, ovarian cyst and torsion
<i>Xray</i>	
Plain abdominal	Constipation, renal calculi if radiopaque, lead poisoning
Barium swallow and follow-through	Oesophagitis and reflux, peptic ulcer, Crohn's disease, congenital malformations of the gut
Barium enema	Ulcerative colitis
<i>Endoscopy</i>	Oesophagitis and reflux Peptic ulceration Colitis

further investigations if there are findings suggestive of a particular disease process.

Managing abdominal pain

The management of abdominal pain obviously depends

on the aetiology. Analgesics are often prescribed, but are in fact usually unhelpful in relieving the pain. If you have come to the conclusion an organic cause is unlikely, the family still require care. The approach described in Clinical box 11.2 on p. 139 may be helpful.

Clues to the diagnosis of recurrent abdominal pain

	Features of the pain	Associated symptoms
Idiopathic recurrent abdominal pain	Periodic Periumbilical	Well between episodes
Psychogenic pain	Periodic	Psychosomatic symptoms
Irritable bowel syndrome	Nonspecific	Flatus and variable bowel pattern
Peptic ulcer	Epigastric Relieved by food and antacids	
Gastro-oesophageal reflux	May be chest pain	Vomiting Failure to thrive
Inflammatory bowel disease		Anorexia Diarrhoea +/- blood and mucus Weight loss
Constipation	Colicky	Hard, infrequent stools
Parasitic infection	Variable	Variable
Urinary tract infection		Dysuria, frequency, enuresis
Dysmenorrhoea	Varies with menstrual cycle	
Pelvic inflammatory disease		Vaginal discharge
Lead poisoning		Anorexia and irritability Pica Hyochromic microcytic anaemia
Abdominal migraine		Nausea and vomiting Family history of migraine

3

Causes of recurrent abdominal pain: nonorganic

Idiopathic recurrent abdominal pain

There is no identifiable organic cause for the majority of children presenting with recurrent abdominal pain. In this circumstance, the expression 'recurrent abdominal pain' is often used as a diagnostic term, in itself implying that the pain is functional rather than organic.

Clinical features Children with recurrent abdominal pain suffer very real pain, which can be severe. The periodicity of the complaint and intervening good health are characteristic of the syndrome. The children are often described as being sensitive, highly strung and high-achieving individuals, although this is by no means always true.

Management and prognosis Management must be directed towards reassurance, maximizing a normal lifestyle and minimizing school absence (see Approach to the child with recurrent abdominal pain, p. 126). In the majority of children the pain resolves over time.

Psychogenic abdominal pain

In some children, the abdominal pain is truly psychosomatic and related to stress at home or at school. Obviously, these underlying causes must be addressed. In most cases, simply indicating the link and explaining that children tend to experience tummy-aches in a similar way to which adults experience headache is enough to reassure the parents and child.

Some children utilize abdominal pain, whether real or fictitious, to their own ends, so missing school or unpleasant events. In this circumstance, confrontation is not usually helpful. An understanding attitude, while maintaining that absence from school is unnecessary, is a good approach.

Irritable bowel syndrome

The term 'irritable bowel syndrome' is sometimes used instead of 'recurrent abdominal pain', particularly if there are minor gastrointestinal symptoms, and no psychological stresses identified. It has been suggested that the discomfort results from a dysfunction of the autonomic system of the gut.

Idiopathic recurrent abdominal pain at a glance**Epidemiology**

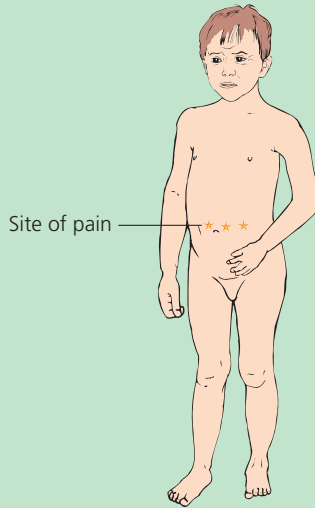
10–15% of school children

Aetiology

None identified
May be psychosomatic

History

Periodic pain, healthy between attacks
Often periumbilical site
Stress at home or at school*
Stools may vary from pellets to unformed*
Colic as a baby*

**Physical examination**

Normal

Confirmatory investigations

None

Differential diagnosis

See Table 11.2

Management

Reassurance
Minimizing school absence

Prognosis/complications

Resolves over time in the majority of cases

NB *Signs and symptoms are variable

3

Clinical features The bowel pattern may be described as varying from pellets to unformed stool. Flatus can also be a feature and many of these children give a history of colic as babies.

Management and prognosis Using the term 'irritable bowel syndrome' often gives families the reassurance that a diagnosis has been made. The symptoms usually resolve over time, but relapses are common.

Causes of recurrent abdominal pain: organic**Gastrointestinal causes of recurrent abdominal pain****Peptic ulcer**

Peptic ulcer is now being recognized as an important cause of abdominal pain in childhood. As in the adult, the organism *Helicobacter pylori* is implicated as a cause of gastritis and ulcers in childhood.

Clinical features The pain may have the classic features of adult peptic ulcer, being epigastric in site and relieved by food. There may be a family history of peptic ulceration.

Management If the diagnosis is suspected, a trial of antacids or H₂ receptor antagonists may be used empirically, but if symptoms are persistent confirmation of the diagnosis is required by barium studies or endoscopy followed by institution of appropriate therapy in the form of

H₂ receptor antagonists and eradication of *H. pylori* with antibiotics.

Gastro-oesophageal reflux (see p. 106)

Pain associated with gastro-oesophageal reflux may be experienced as chest pain.

Inflammatory bowel disease (see p. 319)

Inflammatory bowel disease may present with abdominal pain, but a careful history will usually also elicit symptoms of bowel dysfunction.

Constipation (see p. 116)

Constipation can be a cause of abdominal pain, particularly if acute, but in the chronically constipated child with mega-colon the constipation is often not associated with pain.

Malabsorption

Malabsorption can present as abdominal pain, although diarrhoea is a more common presentation.

Parasitic infestations

The commonest gastrointestinal parasite in the UK is *Giardia lamblia*. Inspection of the stool (three separate samples are required) is merited in all children with recurrent abdominal pain. Threadworms do not cause pain, nor are they detectable on examination of the stool (see p. 171).

Congenital anomalies

Delayed effects of congenital gastrointestinal anomalies causing obstruction or volvulus, although rare, may cause

abdominal pain. The diagnosis is suggested either by obstructive symptoms of constipation and vomiting, or gastrointestinal blood loss. Bile-stained vomiting always suggests malrotation.

Mesenteric adenitis (see p. 276)

Inflammation of the mesenteric lymph nodes is sometimes used as a diagnostic label on clinical grounds. This diagnosis can only be made at surgery and there is no evidence that inflammation of these lymph glands is a cause of recurrent abdominal pain.

Urinary tract causes of recurrent abdominal pain

Infections (see also p. 82)

Infection at any level in the urinary tract can cause abdominal pain. In view of the importance of identifying UTIs, urine culture should be requested in any child presenting with abdominal pain.

Clinical features Classically, cystitis causes suprapubic pain and is accompanied by symptoms of dysuria, frequency and enuresis, although these are difficult to identify in the young child. Pyelonephritis may present with abdominal pain, without accompanying fever and chills.

Management If infection is found, the urinary tract should be investigated (see p. 83).

Obstruction

Obstruction of the urinary tract by calculi is extremely painful. Obstruction secondary to anatomic malformations such as posterior urethral valves are often silent or cause rather vague abdominal pain.

Gynaecological causes of recurrent abdominal pain

Dysmenorrhoea

Dysmenorrhoea does not commonly occur until ovulation is well established a few years after menarche. It usually presents no diagnostic difficulty. Haematocolpos is a condition where the hymen is imperforate, so blood distends the vagina during periods. This causes severe distress monthly in the apparently premenarchal girl.

Pelvic inflammatory disease

This is an increasing problem among teenage girls and may occur without vaginal discharge. A sexual history should be taken in this age group.

Ovarian cyst

Ovarian cysts are a worrying cause of abdominal pain and

should be suspected in any girl with pain localized to one of the lower quadrants. It can culminate in torsion and an acute abdomen.

Other causes of recurrent abdominal pain

Lead poisoning

Lead poisoning (see p. 24) is now a rare cause of abdominal pain. It should be suspected if the blood count shows a microcytic hypochromic picture in the absence of iron deficiency.

Abdominal migraine

Children who eventually develop classical migraine may present with recurrent episodes of abdominal pain associated with nausea and vomiting. A positive family history of migraine can provide a clue. These children can be helped by prescribing pizotifen, and avoiding certain foods such as chocolate and nuts.

3

Headache

Headache is a common symptom in the school-age child, often arousing anxiety in the parent, and in many cases the doctor too. However, the commonest causes of recurrent headache (Table 11.5) are benign and can be differentiated on clinical grounds from more serious headaches caused by raised intracranial pressure.

Table 11.5 Causes of headache.

Tension headache
Migraine
Raised intracranial pressure
Hypertension
Dental caries
Infection
Meningitis (acute)
(Eye strain)

Approach to the child with headaches

Key points Approach to the child with headaches

- A good history usually identifies the headache's aetiology
- Serious pathology can usually be excluded on physical examination
- Signs of raised intracranial pressure include headache exacerbated on lying down, vomiting, papilloedema, hypertension and bradycardia
- Investigations are only indicated if there are physical signs

Children may present with acute onset of severe headache or, more commonly, a history of recurrent headaches. If the headache is acute and severe and the child ill, the possibility of serious pathology must be considered and intracranial infection, haemorrhage or tumour excluded. These serious conditions are covered elsewhere (Meningitis, p. 78; Brain tumours, p. 135; and Intracranial haemorrhage, p. 206). Features of particular concern are shown in Clinical box 11.1.

Features of concern in the clinical evaluation of a child with headaches

- Acute onset of severe pain
- Fever
- Headache intensified by lying down
- Associated vomiting
- Fall-off in school performance or regression of developmental skills
- Consistently unilateral pain
- Cranial bruit
- Hypertension
- Papilloedema
- Fall-off in growth

Clinical box 11.1

History – must ask!

Find out if the headache is acute, persistent or recurrent. Seek a detailed description of the pain in terms of the character, pattern of attacks and location, although this may be difficult in young children. Try to find out how much school has been lost through headaches. A diary of symptoms kept for a few weeks can be very helpful in demonstrating patterns of attacks and associated symptoms.

- **What are the headaches like?** A constricting or band-like pain suggests tension headache, whereas throbbing suggests migraine. Headaches caused by raised intracranial pressure are classically exacerbated by lying down.
- **Is there a pattern to the attacks?** The pattern of attacks is helpful in sorting out the severity of the problem as well as identifying particular events that precipitate an attack. Waking at night, or early morning headaches, suggest raised intracranial pressure, particularly if accompanied by vomiting. Tension headaches tend to occur towards the end of the day and psychogenic headaches may be linked to events such as particular lessons.
- **Where are the headaches located?** The location of the pain can be helpful. Tension headaches are rather non-specific, migraine is classically unilateral and headaches caused by intracranial pathology are often localized to the site of the lesion.

- **Are there associated symptoms?** Associated symptoms such as nausea and vomiting, a preceding aura and photophobia support a diagnosis of migraine.

- **Are there emotional and behavioural problems?** Emotional and behavioural difficulties are a cause of headaches, can also exacerbate them and may affect academic performance. However, you must be wary of always attributing headaches to these difficulties, as intracranial lesions, although rare, can be the cause of headache and also affect behaviour and intellectual function.

- **Family history.** Ask if there is a family history of headaches and migraine. This can help in making a diagnosis, and is important in management, as children may be suggestible to developing symptoms if headaches are prevalent in the home.

Physical examination – must check!

A careful physical examination is important in order to determine whether there is any evidence of serious pathology. In persistent or recurrent headaches there are usually no signs. Features of concern are shown in Clinical box 11.1.

It is important to exclude the following:

- **Is the child ill?** Fever, meningeal signs and reduced level of consciousness point to meningitis or meningoencephalitis.
- **Hypertension.**
- **Signs of raised intracranial pressure** – slow pulse, high blood pressure, papilloedema and, in the preschool child, enlarging head circumference.
- **Focal neurological signs.** These signs are dependent on the site of the lesion. Cranial nerve palsies and cerebellar signs (nystagmus, ataxia and intention tremor) indicate an infratentorial tumour. Signs of focal spasticity indicate a cerebral lesion, while delayed growth and puberty and visual field defects indicate a pituitary tumour.
- Look, too, for evidence of dental caries, sinus tenderness and carotid bruits.

Investigations

Investigations are rarely indicated unless there is evidence of raised intracranial pressure or neurological signs. In this circumstance, a computed tomography (CT) scan or magnetic resonance imaging (MRI) scan is indicated.

Managing headaches

Simple analgesia with paracetamol is usually adequate. If the headaches persist, the approach described in Clinical box 11.2 (Managing the child with nonorganic recurrent pain) on p. 139 may be helpful.

Clues to diagnosing headaches

	Character of the headache	Timing of the headache	Associated features	Physical examination
Tension	Constricting, band-like	Towards the end of the day	Nil	Normal
Migraine	Throbbing, unilateral		Nausea, vomiting, aura, photophobia, family history	Normal
Raised intracranial pressure (RICP)	Worse on lying down, may be localized to site of lesion	Early morning Waking at night	Vomiting without nausea, other features depend on site of lesion	Slow pulse, high blood pressure, papilloedema, enlarging HC, focal signs
Meningitis	Severe, acute		Fever, neck stiffness	Drowsiness, irritability, Kernig's sign

3

Causes of headache

Tension headaches

Tension headaches usually develop towards later childhood. They are thought to be caused by persistent contraction of neck and temporal muscles.

Clinical features Headaches which are constricting or band-like in nature tend to occur towards the end of the day, but do not interfere with sleep. There may or may not be evidence that the child is under stress. Often, other members of the family suffer from similar headaches.

Management The family needs to be reassured that there is no serious underlying pathology. In terms of treatment, rest and sympathy is often all that is required. Simple analgesics such as paracetamol may be given, but dependency should be avoided. Any underlying stress and tensions in the child's life need to be addressed. It is important that school absence is kept to a minimum, and the school may have to be approached directly to develop a strategy for when headaches develop in school hours.

If others at home experience headaches, it helps to advise minimizing attention to them as children can be quite susceptible to the symptoms of others.

Prognosis The headaches often resolve spontaneously or become less frequent.

Migraine

Migraine is another common cause of headache in the school-age child, and is thought to result from constrict-

tion, followed by vasodilatation and pulsation of the intracranial arteries.

Clinical features Onset is usually in late childhood or early adolescence. Classically, the attack is preceded by an aura (caused by constriction of the vessels), which is often visual in nature, but may consist of other fleeting neurological sensations. Within a few minutes, a throbbing unilateral headache occurs accompanied by nausea and vomiting. Sleep usually ends the attack. In younger children, the attack is often bilateral with no aura, nausea or vomiting. Rarely, complicated migraine occurs when focal neurological symptoms and signs are present. The migraine headache always causes some reduction in the child's ability to function normally.

There is often a history of repeated vomiting or travel sickness when the child was younger, and a positive family history is usually present. There is no confirmatory test for migraine and diagnosis is made on the presence of some of the following:

- episodic nature;
- aura;
- visual disturbance;
- nausea in 90% of cases;
- unilateral headache;
- family history;
- impairment of normal function during an attack.

Management First-line treatment is rest, with simple analgesia. In some children, attacks are precipitated by certain foods such as chocolate, cheese or nuts, and withdrawal of these items from the diet can be helpful. If attacks are frequent, prophylaxis with propranolol or pizotifen should be considered. Sumatriptan, a 5-hydroxy-tryptamine

Tension headaches at a glance

Epidemiology

Common in later childhood

Aetiology

Possibly caused by contraction of neck and temporal muscles

History

Constricting/band-like pain
No interference with sleep
At end of day*
Stress at home or school*
Family history of headaches*



Physical examination

Normal

Confirmatory investigations

None

Differential diagnosis

Migraine
(Causes of raised intracranial pressure)

Management

Reassurance
Simple analgesics

Prognosis/complications

Usually spontaneous resolution

NB *Signs and symptoms are variable

3

Migraine at a glance

Epidemiology

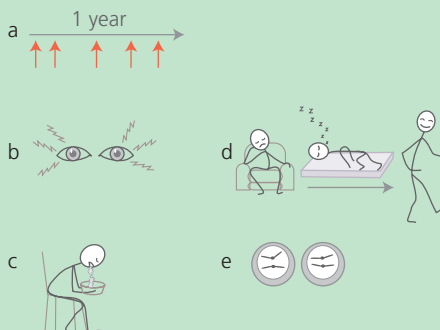
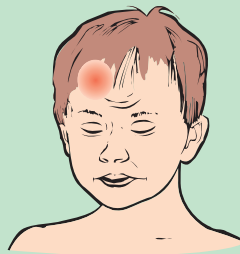
< 5% school-age children/adolescents

Aetiology

Constriction followed by vasodilatation of intracranial arteries

History

Episodic pain (a)
Aura
Visual disturbance (b)
Older children: throbbing unilateral headache; nausea and vomiting in 90% (c)
Younger children: generalized headache; nausea and vomiting
Relief with sleep (d)
Family history of migraine common (e)
History of travel sickness*



Physical examination

Normal

Confirmatory investigations

None

Differential diagnosis

Tension headaches
(Causes of intracranial pressure)

Management

Rest and simple analgesics
Prophylaxis may be needed

Prognosis/complications

Spontaneous remission, but may persist into adulthood

NB *Signs and symptoms are variable

agonist, is useful in aborting acute migraine attacks in adolescents. It is not recommended for use in childhood.

Prognosis Migraine headaches often persist into adulthood, but may undergo remission spontaneously.

Raised intracranial pressure

Brain tumours, abscesses and chronic subdural haematomas are rare causes of headache in childhood.

Clinical features Headaches which are caused by a rise in intracranial pressure are classically exacerbated by lying down and so it is concerning if a child wakes from sleep with headaches. The headache is often accompanied by vomiting with little associated nausea. Raised intracranial pressure may cause elevated blood pressure, bradycardia, papilloedema and altered neurological function.

The location of the pain is a good localizing sign for the site of the lesion. The commonest tumours are infratentorial in site, causing signs of cerebellar or brainstem dysfunction. Supratentorial tumours may be located in the hypothalamic–pituitary axis, causing endocrine or visual problems, or may be located in the cerebrum, causing epilepsy or spasticity.

Management CT and MRI scans are reliable in detecting intracranial space-occupying lesion. Treatment depends on the pathology of the lesion.

Hypertension

Hypertension is usually asymptomatic in childhood, but headache can be a symptom, and measurement of blood pressure is of course mandatory in any child presenting with headache.

Meningitis

Meningitis presents with a severe acute headache in a febrile child. Bacterial and viral meningitis are described on p. 78.

Other causes of headache

Headaches often accompany minor systemic infections. Dental caries, sinusitis and otitis media are all treatable causes of headache, and signs of these problems should be sought on clinical evaluation. Eye strain is often blamed for headaches, although there is little evidence for this. However, it does no harm to recommend an assessment of visual acuity.

Leg pain and limp

The complaint of leg pain alone, unaccompanied by physical signs, is usually nonorganic in nature. Limp, however, is likely to have an underlying organic explanation. The causes of leg pain and limp are listed in Table 11.6.

Table 11.6 Causes of leg pain and limp in childhood.

<i>Organic</i>
Transient synovitis
Septic arthritis
Legg–Calvé–Perthes disease
Slipped capital femoral epiphysis
Trauma
Osteomyelitis
Neoplastic disease
Systemic disease
<i>Nonorganic</i>
Growing pains

3

Approach to the child with leg pain or limp

Key points Approach to the child with leg pain or a limp

- Organic and nonorganic causes can be differentiated on clinical grounds
- Important features suggesting organic disease are a child refusing to walk, limp and any physical signs
- Pain in the hip is referred to the knee, so children with knee pain require a full examination of the leg and groin

In a child presenting with acute or recurrent leg pain, a good history and physical examination should differentiate nonorganic from organic causes. Investigations may be required to identify the aetiology where organic disease is suspected.

History – must ask!

Focus on the characteristics of the pain and any systemic symptoms that the child might have.

- **What is the pain like?** Pain from organic causes tends to be persistent, occurring day and night and interrupts play as well as schooling. Particularly significant is a limp or refusal to walk. Organic pain is often unilateral or located to a joint. By contrast, nonorganic pain usually occurs at

night and primarily on school days. It does not interfere with normal activities, and the parents report a normal gait. It is often bilateral and located between joints.

- **Are there systemic symptoms?** Systemic symptoms such as weight loss, fever, night sweats, rash and diarrhoea point to organic causes.

Physical examination – must check!

Examine the child lying down and then walking. Remember that pain in the hip is referred to the knee, so that a child presenting with knee pain requires a full examination of the leg and groin.

- **The limb.** Look for signs of point tenderness, redness, swelling and muscle weakness or atrophy. Examine the joints for limitation of movement. In nonorganic pain, the examination is normal, although you may see minor changes such as coolness or mottling of the leg.

- **General examination.** Look for evidence of fever, rash, pallor, lymphadenopathy or organomegaly which suggest infectious or systemic causes.

3

Investigations

If the leg pain is thought to be pathological, the investigations listed in Table 11.7 may be indicated.

Table 11.7 Laboratory tests helpful in diagnosing leg pain.

Investigation	What you are looking for
Blood count	Leukaemia Infections Collagen vascular disease
Plasma viscosity	Infections Collagen vascular disease Inflammatory bowel disease
Xray	Tumours Bone tumours Infection Trauma Avascular necrosis Leukaemia Slipped capital femoral epiphysis
Bone scan	Osteomyelitis Stress fractures Malignant tumours
Muscle enzymes	Damage to muscle cells

Managing leg pain

In the child where no organic cause is suspected, the approach described on p. 139 may be helpful.

Clues to the differential diagnosis of leg pain

	Organic	Nonorganic
Characteristics	Day and night Interrupts play Unilateral Located in joint Limp or refusal to walk	Only at night Primarily school days No interference with normal activities Located between joints Bilateral Normal gait
History	Weight loss Fever Night sweats Rash Diarrhoea	Otherwise healthy child
Physical examination	Point tenderness Redness Swelling Limitation of movement Muscle weakness or atrophy Fever, rash, pallor, lymphadenopathy, organomegaly	Normal examination or minor changes such as coolness or mottling of leg

Causes of leg pain and limp in childhood

Transient synovitis

Transient synovitis is the commonest cause of limp in young children, usually affecting boys aged 2–8 years. It is a benign condition, the major significance being the possibility of overlooking septic arthritis of the hip.

Clinical features There is a sudden onset of limp with hip and/or knee pain. A mild UTI may precede the symptoms. On examination there is limited abduction, extension and internal rotation of the hip. Transient synovitis can be differentiated from septic arthritis by the lack of systemic symptoms and signs, a normal white cell count, normal or only mildly elevated erythrocyte sedimentation rate (ESR) and a normal hip Xray.

Management and prognosis Transient synovitis lasts for a few days or weeks and treatment consists of rest and simple analgesia.

Septic arthritis of the hip (see also pp. 85, 181)

Septic arthritis of the hip is a serious cause of pain in the infant and toddler. The child, who may appear toxic, holds the leg in a flexed and abducted posture. However, as opposed to septic arthritis in other joints, the hip may not appear swollen or hot to the touch. The management of the child suspected as having septic arthritis is discussed on p. 85.

Growing pains

Growing pains is a term used for the common complaint of leg pain in children where organic disease has been excluded. The complaint tends to occur in the 3–6-year-old age group. The term 'growing pains' is a misnomer as the pain does not appear to be related to growth, but may be caused by oedema in the fascial sheaths.

Clinical features Limp is not a feature. The pain classically occurs at night, often after a day of vigorous activity. These children also not infrequently experience headaches and abdominal pain.

Management Symptoms usually respond to heat and massage and may need simple analgesia. As in all cases of functional pain, psychosomatic factors should be considered. The approach described on p. 139 may be helpful.



Fig. 11.1 Xray of the hips of a 5-year-old child with Legg–Calvé–Perthes disease. Note the increased density, flattening and fragmentation of the left capital femoral epiphysis.

3

Legg–Calvé–Perthes disease

Legg–Calvé–Perthes disease (avascular necrosis of the femoral head) is a relatively common condition affecting children, principally boys, between the ages of 4 and 10 years. It may follow on from an episode of transient synovitis. The aetiology of the avascular necrosis is unknown.

Clinical features The condition is initially painless but, once a crush fracture develops, pain in the hip or knee and limp are major features. Diagnosis is made by Xray (Fig 11.1) or bone scan.

Management and prognosis Treatment involves bracing or traction and recovery may take 2–3 years.

Slipped capital femoral epiphysis

Slipped capital femoral epiphysis is a condition classically occurring in overweight sedentary teenage boys.

Clinical features Pain is experienced in the groin or medial side of the knee, and is often gradual in onset. On examination, the hip is held in abduction and external rotation with limitation of internal rotation. Xray confirms the diagnosis.

Management Treatment is surgical.

Trauma

Trauma, when acute, is an obvious cause of leg pain; however, chronic pain may result from stress fractures or prolonged healing of muscle haematomata. It is therefore worth enquiring into a preceding traumatic event when a child presents with persistent or recurrent leg pain.

Osteomyelitis (see p. 87)

Osteomyelitis can present subclinically as well as acutely. There may be associated swelling, erythema, tenderness and decreased movement of the limb. The sedimentation rate is high, the white cell count elevated and diagnosis can be made radiologically or by bone scan.

Neoplastic disease

Neoplastic disease is the most potentially serious of all causes of limb pain. Malignant tumours are usually palpable as a tender mass, which is seen as a destructive bony lesion on Xray. Benign tumours also occur and may also present as a mass or pain. Leukaemic bone disease is harder to diagnose. The pain is described as deep and throbbing and often wakes the child at night. Diagnosis is often made on the blood count, but Xrays are only sometimes helpful.

Systemic disease

Children with haemophilia may have leg pain as a result of bleeding into the tissues. Leg pain caused by sickling crisis is a cardinal sign in sickle cell anaemia. Swelling of the joints (see p. 180) rather than arthralgia is usually seen in the collagen vascular diseases.

Chest pain

Chest pain is a relatively common complaint which is usually benign and self-limited, but generates a lot of anxiety because of the connotations that chest pain has for adults. Table 11.8 shows the causes of chest pain in childhood.

Table 11.8 Causes of chest pain.

Idiopathic
Psychogenic
Stitch
Musculoskeletal
Oesophagitis/gastro-oesophageal reflux
Cardiovascular (very rare)

Diagnosing the child with chest pain

History – must ask!

The history is important as there are rarely any physical signs. Ask about the duration, frequency, quality and location of the pain, and whether there is any exacerbation or relief with position, exertion, eating, coughing or stress.

Physical examination – must check!

Your examination should focus on the presence of fever or weight loss, signs of trauma and altered breathing patterns, as well as inspection of the chest and spine and a good respiratory and cardiac assessment.

Investigations

Investigations such as blood counts, sedimentation rate, chest Xray and electrocardiogram (ECG) are rarely required but may provide extra reassurance.

Managing chest pain

You should acknowledge the pain, provide relief for the symptoms in terms of rest and simple analgesics, and reassure the family of the benign nature of the problem.

Causes of chest pain

Stitch

This familiar pain is thought to be caused by peritoneal ligament stress occurring when exercising in the upright posture.

Musculoskeletal pain

Musculoskeletal pain can occur as a result of muscle strain, cough, trauma and stress fracture. Pain at the costochondral junctions due to costochondritis is not uncommon and is often preceded by an upper respiratory tract infection (URTI) or exercise.

Oesophagitis/gastro-oesophageal reflux

See p. 106.

Nonorganic pain in childhood

Children commonly experience recurrent headaches, stomach-aches and leg pains, often occurring in

Managing the child with nonorganic recurrent pain

- Assure the parents and child that no major illness appears to be present. In particular, rule out and focus on diagnoses which concern the family
- A diagnosis of psychosomatic pain should not simply be made by exclusion of pathology. Positive emotional and psychological causes must be identified
- In the child where neither an organic nor a psychosomatic cause is found, it can be helpful to label the diagnosis such as tension headache, or growing pains, while qualifying this with an explanation that the aetiology is unknown
- Identify those symptoms and signs which the parents should watch for and which would suggest the need for a re-evaluation
- Do not communicate to the parents that the child is malingering
- Develop a system of return visits to monitor the symptom. Having the family keep a diary of pain episodes and related symptoms can be helpful
- During return visits allow time for both the child and parent to uncover stresses and concerns
- Make every effort to normalize the life of the child, encouraging attendance at school and participation in regular activities

Clinical box 11.2

combination. Luckily, the cause is rarely organic, but none the less the complaint can be serious in terms of discomfort, the anxiety produced in the family and the degree of dysfunction, especially in terms of school absenteeism that may result. The approach taken for all these complaints needs to be a thorough clinical assessment to exclude identifiable pathology, and a minimum

of investigations. Reassurance and understanding are essential in the management of these children. An approach to children with non-organic and recurrent pain is shown in Clinical box 11.2 above.

To test your knowledge on this part of the book, please go to p. 394.