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The child with recurrent abdominal pain: is it abdominal migraine?

Recurrent abdominal pain Epidemiology

Abu-Arafeh and Russell (1995) found that 72% of Aberdeen schoolchildren had had at least one episode of abdominal pain during the previous year. This pain was severe enough to interfere with normal activities in 32%, with severe pain occurring more than once in 8%. Other studies have identified recurrent abdominal pain in 10–15% of children.

Aetiology

Abdominal pain affecting such a high proportion of children is unlikely in the majority of cases to reflect serious underlying pathology, and organic disease can be identified in less than 10%. When present, organic disease usually involves the gastrointestinal or genitourinary tracts, but there are also numerous other albeit rather rare causes, ranging from referred pain from spinal or lung disease to metabolic disorders such as porphyria and lead poisoning. It is also important to distinguish recurrent from chronic abdominal pain; the latter, although uncommon, is almost always the result of organic disease.

In those children in whom no cause for the pain can be elicited, there have been two traditional approaches to diagnosis.

Periodic syndrome of childhood

Many generations of British paediatricians have been influenced by Wyllie and Schlesinger's (1933) description of the periodic syndrome, which comprised 'the repetition at irregular intervals of attacks of headache, vomiting, fever and abdominal pain' sometimes accompanied by

'dizziness, faintness . . . temporary disturbance of vision'. Many of these children went on to have migraine headaches as adults, and commonly had a family history of migraine. However, the authors feel the time has come to abandon periodic syndrome as a diagnostic label; it lacks precise diagnostic criteria, it includes fever which the authors believe is dangerous, and it has at times been used as a diagnostic ragbag for almost any unexplained but recurrent symptom in children.

Psychogenic abdominal pain

Apley (1975) was influential in promoting the concept of psychogenic abdominal pain as the likely cause of otherwise unexplained recurrent abdominal pain. There was no difference in intelligence between children with abdominal pain and controls, but children with abdominal pain had an excess of undesirable personality traits such as fussiness and anxiety, an excess of behavioural symptoms such as bed-wetting and appetite disorders, a tendency for attacks to be precipitated by stress, and a family history of recurrent abdominal pain, severe headache (including migraine) and 'nervous breakdown'.

Abdominal migraine Non-headache features of migraine

Every sufferer knows that migraine is much more than just a headache (*Figure 1*), and many migraineurs have indicated that the headache would be much more bearable were it not for the associated symptoms. These include a feeling of profound misery, neurological features such as vertigo, photophobia, phonophobia, visual and sensorimotor disturbances, and gastrointestinal features such as anorexia, nausea and vomiting (Wober-Bingol et al, 2004). In children with migraine, abdominal pain is a common accompanying symptom, whereas in adults it is most unusual (Blau and MacGregor, 1995).

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Migraine-associated symptoms in absence of headache

Some migraineurs experience attacks in which these symptoms occur in the absence of headache, and in such cases it is reasonable to assume that they are migraine-related. However, when similar attacks occur in children who do not get migraine headaches, it is more difficult to be sure of their relationship to migraine.

Diagnostic criteria

Despite these difficulties, a characteristic pattern of abdominal pain can be identified in children who do not themselves have migraine headaches, but commonly have a family history of migraine, and the authors believe that abdominal migraine is an appropriate diagnosis in such children. *Table 1* lists the criteria used for the diagnosis of abdominal migraine. Abu-Arafeh and Russell (1995) found that 4.1% of Aberdeen schoolchildren fulfilled these criteria.

Cyclic(al) vomiting

A source of confusion in the medical literature has been the inclusion under the blanket label of abdominal migraine of children whose predominant symptom is vomiting rather than pain. The syndrome of cyclic(al) vomiting, long recognized in the UK (Gee, 1882), is at long last being accepted as a diagnosis in North America (Fleisher and Matar, 1993) and the authors believe it should be regarded as a separate syndrome, although there is evidence that in at least some cases it may be related to migraine (Russell and Abu-Arafeh, 2002).

Evidence supporting abdominal migraine as a diagnostic entity

Although there is no reliable diagnostic test for migraine, the authors' diagnostic criteria are supported by several different strands of evidence.

- Abu-Arafeh and Russell (1995) showed that children fulfilling these criteria shared demographic, social, clinical and familial features with children with migraine headaches
- Mortimer et al (1990) showed that children with periodic syndrome (defined by the authors as paroxysmal abdominal pain with nausea and/or vomiting, but no headache) had visual evoked responses that closely resembled those of children with migraine

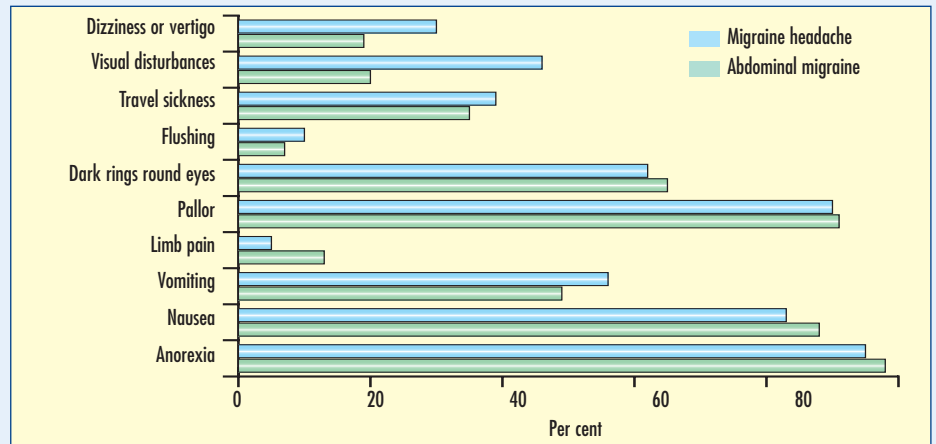


Figure 1. Symptoms accompanying attacks in children seen at the migraine clinic at the Royal Aberdeen Children's Hospital with migraine headache (n=200) and abdominal migraine (n=140).

- Symon and Russell (1995) showed that children with abdominal migraine respond to migraine prophylactic therapy, sometimes most impressively

Table 1. Criteria for the diagnosis of abdominal migraine

Pain is severe enough to interfere with normal daily activities	This implies that the child is unable to continue with normal study or leisure activities, and is generally incapacitated. At school, he or she generally has to leave the classroom and lie down. During these attacks, most children describe their mood as one of intense misery
Pain is described as dull or sore in nature	The child has difficulty in finding adjectives that adequately describe the pain, and usually resorts to describing it as 'just sore'
Pain is periumbilical or poorly localized	The child generally points to the location of the pain with a vague circular motion of the hand, centred around the umbilicus
Pain is associated with any two of the following:	Anorexia Nausea Vomiting Pallor
	These symptoms tend to be dramatic and severe, although many children find it difficult to distinguish anorexia from nausea. The pallor is often described in terms such as 'All colour drains from his face'. The pallor is often accompanied by dark shadows under the eyes. In a few patients, flushing is the predominant vasomotor phenomenon
Each attack lasts for at least 1 hour	In practice, most attacks last for at least 4 hours, and many last all day
There is complete resolution of symptoms between attacks	These children are not sickly or unwell, except during attacks, and do not appear to be suffering from anxiety, stress or other psychological problems. Their parents describe them as normal and well adjusted
Attacks occur at least twice a year	This criterion is included to ensure that attacks are genuinely recurrent. There are certainly children with abdominal migraine whose attacks are less frequent, but they are unlikely to be referred to hospital clinics
The diagnosis is excluded if any of the following is present:	Mild symptoms not interfering significantly with daily activities Burning pain Non-midline abdominal pain Symptoms suggestive of food allergy, malabsorption, or other gastrointestinal disease, e.g. diarrhoea or weight loss Attacks of less than 1 hour's duration Persistence of symptoms between attacks

From Dignan et al (2001)

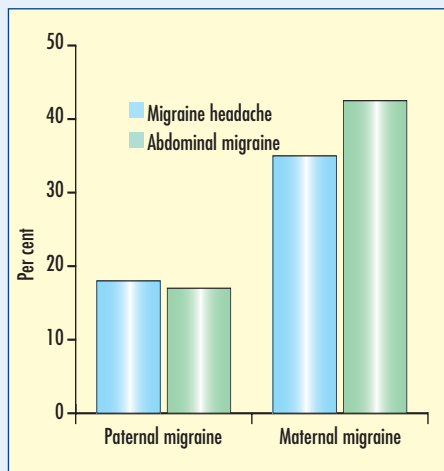


Figure 2. Parental history of migraine in children described in Figure 1.

■ Dignan et al (2001) found that 70% of young adults who had had abdominal migraine as children were present or past sufferers from migraine headaches, compared to only 20% of matched controls (Figure 3).

Formal recognition of abdominal migraine as a valid diagnosis

Reflecting the gradual accumulation of evidence that abdominal migraine is a discrete diagnostic entity, the Headache Classification Subcommittee of the International Headache Society (2004) included it in the second edition of their classification.

Prognosis

Abdominal migraine is very much a disorder of childhood. Abu-Arafeh and Russell

(1995) found that the prevalence peaked at 10 years of age, although it persisted into the late teens in over one-third of cases. Dignan et al (2001) found that it could persist into adult life, as well as developing de novo in adults.

Variable severity

Like migraine headaches, abdominal migraine can be much more than just a nuisance. Although the pattern varies tremendously, many children suffer frequent prolonged attacks, interfering with education and social activities. In some children the attacks are stereotypical, with identical attacks occurring at regular intervals, although more often episodes are sporadic, often precipitated by psychological stress.

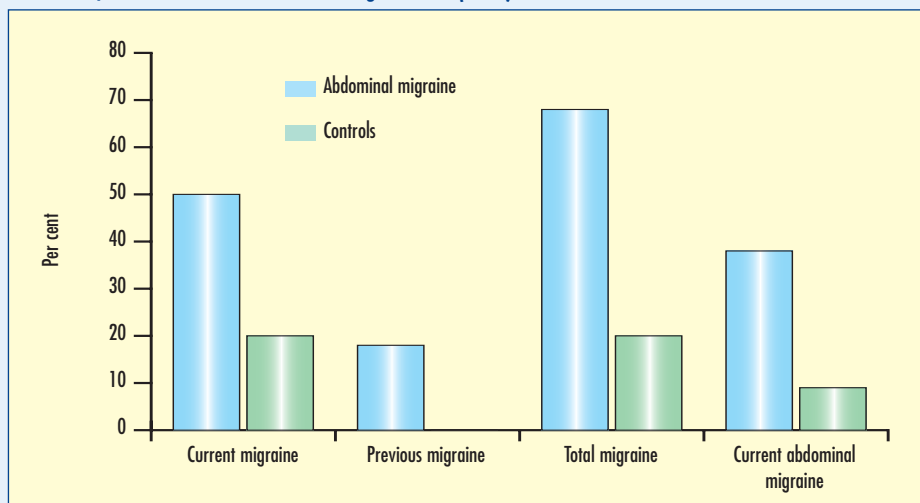
Aetiology

The most powerful influence is a family history of migraine, particularly in the mother (Figure 2). Otherwise, the aetiology is unknown.

Precipitants

Stress is the most frequently reported precipitant (Abu-Arafeh and Russell, 1995), but the authors' population study found no unusual personality or behavioural features. In contrast, in studies of children with less well-defined types of recurrent abdominal pain, Walker et al (2001) emphasized the importance of underlying psychological problems, suggesting that there are important differences between abdominal migraine and non-specific abdominal pain.

Figure 3. Migraine headache and abdominal migraine in 56 young adults who had had abdominal migraine as children, and matched controls. From Dignan et al (2001).



Kokkonen et al (2001) have emphasized that food allergy is an important cause of recurrent abdominal pain. It is tempting therefore to speculate that food allergy might be the cause in those cases of abdominal migraine with dietary triggers. However, Abu-Arafeh and Russell (1995) found no excess of atopic disorders in abdominal migraine and in clinic patients the authors have invariably found negative skin tests and radioallergosorbent tests, and normal immunoglobulin E levels.

Other well-recognized triggers include travel (Symon and Russell, 1989), prolonged fasting and irregular sleeping habits (poor 'sleep hygiene').

Abdominal migraine and abdominal epilepsy

Abdominal pain has long been recognized as an epileptic aura, and it has been suggested that abdominal pain on its own might be an epileptic manifestation, supported by minor electroencephalographic abnormalities commonly seen in children with recurrent abdominal pain. Although the similarities between epilepsy and migraine have been re-emphasized (Cupini et al, 2003), the authors would counsel against diagnosing abdominal epilepsy in the absence of clinical supporting features such as disturbed consciousness.

Investigations

In the absence of a diagnostic test, the diagnosis is one of exclusion. There is neither diarrhoea nor constipation in abdominal migraine, a feature that distinguishes it from irritable bowel syndrome. Physical examination is negative, as are simple tests such as urinalysis, urine culture, routine blood biochemical tests, and acute phase reactants such as blood count, C-reactive protein and erythrocyte sedimentation rate. More complex investigations are unnecessary if the child fulfils the diagnostic criteria listed in Table 1, but parental anxiety or atypical presentation may prompt further investigations such as abdominal ultrasound and urinary porphyrins.

Management

Writing about the periodic syndrome, Franklin (1952) asked, 'What is the doctor's function in the management of these cases of periodic syndrome?' He suggested that it was to marshal all the relevant facts

...; to settle absolutely the question of organic disease; to build up the parents' confidence ...; to strive for a better understanding of the mechanism of an attack and for symptomatic relief.

Non-drug approaches to prophylaxis

Today, Franklin's approach remains the cornerstone of the management of abdominal migraine. The first essential is to explain the condition to the child and his or her parents. Explanation and reassurance may be the only treatment needed. Such explanation should be followed by a thorough search for avoidable trigger factors, such as stress, travel, prolonged fasting, irregular sleeping habits, exposure to glaring or flickering lights, and exercise.

If trigger avoidance proves unsuccessful, then a clinical psychologist may be able to provide cognitive therapy, relaxation programmes with or without biofeedback, or other behavioural approaches to management.

Alternative non-drug approaches to prophylaxis include simple dietary management, usually comprising the avoidance of foods rich in amines or xanthines, together with any foods that the family suspect are triggering attacks. Food and symptom diaries are sometimes useful in identifying triggers. Egger et al (1983) achieved great success with a few-foods diet, but this approach places considerable demands on the entire family, and is appropriate only for children who are mature enough to understand the purpose of the exercise, who can be trusted to cooperate with the diet, and who are motivated by the fact that abdominal migraine is causing genuine disruption to their lives.

Management of acute attacks

It is extremely important that acute attacks should be managed consistently and, if possible, effectively, as effective acute management generally obviates the need for prophylactic treatment. During an attack, most children wish to lie down in a quiet darkened room and to be left alone. No other treatment may be required. Drug therapy is often precluded by anorexia and/or vomiting, but simple oral analgesics with or without metoclopramide or domperidone can be tried. The total dose given should be monitored so as to avoid toxic effects from sud-

den absorption at the end of the attack. Analgesic and/or anti-emetic suppositories are also useful. The authors have successfully used both injected and nasal sumatriptan, but this treatment has not been subjected to formal trial. The knowledge that attacks can be aborted is enormously reassuring to both the child and his/her parents, and lessening anxiety may substantially reduce the frequency of attacks.

Drug prophylaxis

Drug prophylaxis has a limited part to play in the management of abdominal migraine. It is the authors' practice to restrict it to children who have not responded to non-drug measures, and whose symptoms impact adversely on their lives. There is published support for the use of propranolol and cyproheptadine, but only pizotifen has been subjected to double-blind, placebo-controlled trial (Symon and Russell, 1995). These drugs are quite different pharmacologically, and when one is ineffective, it is always worth trying another. On occasion the authors have also obtained good results with clonidine and sodium valproate.

Conclusions

Final proof that abdominal migraine is indeed migraine-related must await further uncovering of the genetic and biochemical basis for migraine. It is hoped that such developments will also pave the way for improved more specific treatments. **BJHM**

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KEY POINTS

- Recurrent abdominal pain is common in children.
- Within this group of children, a subset can be identified with a syndrome that appears to be related to migraine.
- The diagnosis of abdominal migraine, disputed for many years, has now been formally accepted.
- The diagnosis is based on the history and the absence of abnormality on clinical examination.
- In making the diagnosis, it is important to document fulfilment of recognized criteria.
- The treatment of these children should be as simple as possible.
- If drug prophylaxis is necessary, affected children usually respond to anti-migraine therapy.