The prognosis of childhood abdominal migraine

F Dignan, I Abu-Arafeh, G Russell

Abstract

**Aims**—To determine the clinical course of childhood abdominal migraine, seven to 10 years after the diagnosis.

**Methods**—A total of 54 children with abdominal migraine were studied; 35 were identified from a population survey carried out on Aberdeen schoolchildren between 1991 and 1993, and 19 from outpatients records of children in the same age group who had attended the Royal Aberdeen Children’s Hospital. Controls were 54 children who did not have abdominal pain in childhood, matched for age and sex, obtained from either the population survey or the patient administration system. Main outcome measures were presence or resolution of abdominal migraine and past or present history of headache fulfilling the International Headache Society (IHS) criteria for the diagnosis of migraine.

**Results**—Abdominal migraine had resolved in 31 cases (61%). Seventy per cent of cases with abdominal migraine were either current (52%) or previous (18%) sufferers from headaches that fulfilled the IHS criteria for migraine, compared to 20% of the controls.

**Conclusions**—These results support the concept of abdominal migraine as a migraine prodrome, and suggest that our diagnostic criteria for the condition are robust.

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Recurrent abdominal pain is a common problem in children, and in many cases, despite extensive investigation, no organic disease is found. It has recently been shown that many such children come from families that display high levels of maternal neuroticism, and go on to suffer an increased prevalence of psychiatric disorders as adults. However, although in the past it was widely believed that childhood abdominal pain with no obvious organic cause was commonly psychogenic, this view did not pass unchallenged. It is of course inherently unlikely that children with unexplained chronic or recurrent abdominal pain comprise a homogeneous group, and even in the absence of an organic diagnosis it is important to define the symptom complex as accurately as possible. In this way, it might be possible to categorise subgroups of children with recurrent abdominal pain, which in turn might facilitate management.

One subgroup that is widely recognised by paediatricians is the periodic syndrome, a term used to describe children who suffer from episodic symptoms including pallor, headache, abdominal pain, and vomiting, and who experience complete resolution of these symptoms between attacks. In their original report, Wyllie and Schlesinger noted that symptoms continued to manifest themselves in adult life in the form of vomiting, with or without migraine. In Western Australia, Cullen and Macdonald studied the prevalence of recurrent abdominal pain, in the context of the periodic syndrome, and documented the pattern of change from “bilious attacks” of early childhood to typical adult migraine. Barlow also described the periodic syndrome as a significant feature in the longitudinal history of migraine.

Although abdominal migraine has been recognised for many years, it is not included in the International Headache Society (IHS) classification, although some believe it should be. It has been suggested that the diagnosis of abdominal migraine can be regarded as proven only when detailed inquiry and follow up have revealed that the patient has suffered migraine with headache. This view would imply that the diagnosis cannot be made at the time the child is suffering the pain, thus denying the child treatment that has been shown to be effective.

There are several sets of criteria for the diagnosis of migraine headache, of which the most widely used is that proposed by the IHS, which forms the basis of the widely used UCSD questionnaire. In contrast, a constant problem in evaluating the literature on abdominal migraine is the lack of clear diagnostic criteria. Not every child with abdominal pain suffers from abdominal migraine; in fact very few do so.

We have previously examined the case histories of children whose primary complaint was recurrent abdominal pain, and in whom a diagnosis of abdominal migraine was suggested by a positive family history of migraine and relief of symptoms with specific antimigraine therapy. These children experienced prolonged bouts of severe, incapacitating pain, accompanied by a feeling of intense misery, together with a variety of symptoms similar to those experienced by migraineurs before or during headaches. Like children with migraine headaches, they were completely well between attacks. We then proposed the diagnostic criteria for abdominal migraine listed in table 1. In retrospect, we would have preferred to have phrased the description of the pain rather more graphically than simply stating that it was severe enough to interfere with normal activities, a phrase borrowed from diagnostic criteria for migraine headache.
Table 1  Criteria for the diagnosis of abdominal migraine

1. 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.

2. 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”.

3. Pain is periumbilical or poorly localised
   The child generally points to the location of the pain with a vague circular motion of the hand, centred around the umbilicus.

4. 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.

5. Each attack lasts for at least one hour
   In practice, most attacks last for at least four hours, and many last all day.

6. 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.

7. 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.

8. 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 intolerance, malabsorption, or other gastrointestinal disease, e.g. diarrhoea or weight loss
   - Attacks of less than one hour duration
   - Persistence of symptoms between attacks

controls

Controls for the cases identified in the population based study were recruited from asymptomatic children identified in the same study, and were matched individually for age, sex, and school attended. Controls for the clinic patients were identified by using the hospital computer database, on which every child born in the area is registered, to find children who were of the same sex and born in the same week as the cases. Three potential controls were found for each case and were contacted in turn until one responded. Table 1 lists the criteria used for the diagnosis of abdominal migraine. We used the questions asked in our previous population study, designed to elicit the presence or absence of each of these features. To diagnose migraine headaches, we used a previously vali-
Children with abdominal migraine were still suffering recurrent abdominal pain (38.9%) with previous abdominal migraine headaches. This suggests that abdominal migraine tended to manifest as migraine headache in adult life, and attacks of early childhood typically went on to periodic disorders of childhood. 

Results

Of 90 children who had previously fulfilled our diagnostic criteria for abdominal migraine, we were able to identify correct current addresses for 54 (35 from the schools study and 19 from the clinic patients). All but one agreed to take part in the project. Both sexes were equally represented. The mean age of both cases and controls was 17 years (median 16 years; range 12–25 years). There were no apparent age or sex differences between responders and those who could not be traced.

Table 2 presents the results. It can be seen that although abdominal migraine tended to disappear with the passage of time, 21 of the cases (38.9%) with previous abdominal migraine were still suffering recurrent abdominal pain. Just over 70% of the cases were either current or previous sufferers from migraine headaches, compared to only 20% of the controls ($\chi^2 = 24.08; p < 0.001$).

Discussion

This investigation is the first to follow up children in whom the criteria used for the diagnosis of abdominal migraine have been explicit. These criteria do not apply to the great majority of children with recurrent abdominal pain. In our population study,17 fewer than 6% of children with abdominal pain were considered to have abdominal migraine.

The patients were followed up through telephone interviews. This approach was adopted because: (a) many clinic patients lived at some distance (up to 350 km) from the hospital, and would be unlikely to attend for clinical interview; (b) commitments at school, college, and work would make attendance problematical for patients in this age group; and (c) our previous experience with the use of clinical examination in epidemiological studies of migraine indicated that this labour intensive procedure added nothing to the diagnostic accuracy of a well structured interview.26 In diagnosing migraine headache, we used a validated questionnaire,16 which was easily completed by telephone. For abdominal migraine, we used the questions in our previous population study, designed to elicit the presence or absence of each of the diagnostic criteria listed in table 1. The telephone interview format also allowed responses to be checked for accuracy by questioning a second informant, usually the mother.

Our follow up was incomplete because of failure to find current addresses for 40% of the cases we wished to interview. There is no reason to believe that this failure was anything other than random, and data protection regulations within the EU precluded further attempts to trace these individuals. With a 98% response rate from those individuals we were able to trace, we believe that our cases represent a statistically valid sample. Our controls were carefully matched for age and sex, and were asymptomatic at the time of our initial survey,18 or in the case of controls identified from the patient administration system, seven years prior to interview.

Recurrent abdominal pain in childhood is gener- ally considered to have a benign prognosis,28 29 the majority of cases resolving spontaneously over one or two years.25 The 40% prevalence of continuing abdominal pain in our cases probably reflects the relatively brief follow up period.

Willie and Schlesinger6 observed that the periodic disorders of childhood tended to manifest as migraine headache in adult life, and Cullen and MacDonald14 found that “bilious attacks” of early childhood typically went on to adult migraine. More recently it has been suggested that recurrent abdominal pain should be viewed as a prodrome of migraine headache30; the high prevalence of migraine in our children after a relatively brief follow up would support this view. In adolescence and early adult life, 70% of our cases with childhood abdominal migraine had either current or previous migraine headaches, compared to only 20% of controls. These figures are higher than those reported by Bille5; differences in methodology and a possible increase in the prevalence of
migraine over the past 30 years may account for this variation. The proportion of migraineurs in the control group is higher than what we found in the childhood population, and reflects the trend for the prevalence of migraine to increase with age. It is also of interest that, of the 11 controls who developed migraine headaches, four (36%) also suffered from recurrent abdominal pain, a much higher proportion than that observed by Blau and Macgregor in a group of 100 adult migraineurs, and probably a reflection of the relatively young age of our patients at follow up.

These results, together with our previous report of the successful prevention of abdominal migraine with pizotifen, suggest that our diagnostic criteria for abdominal migraine are robust. They will therefore be useful in making a positive diagnosis of this condition, which in turn will avoid unnecessary investigation, ensure appropriate management, and, through proper explanation and reassurance, reduce stress and anxiety in affected children and their families.

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