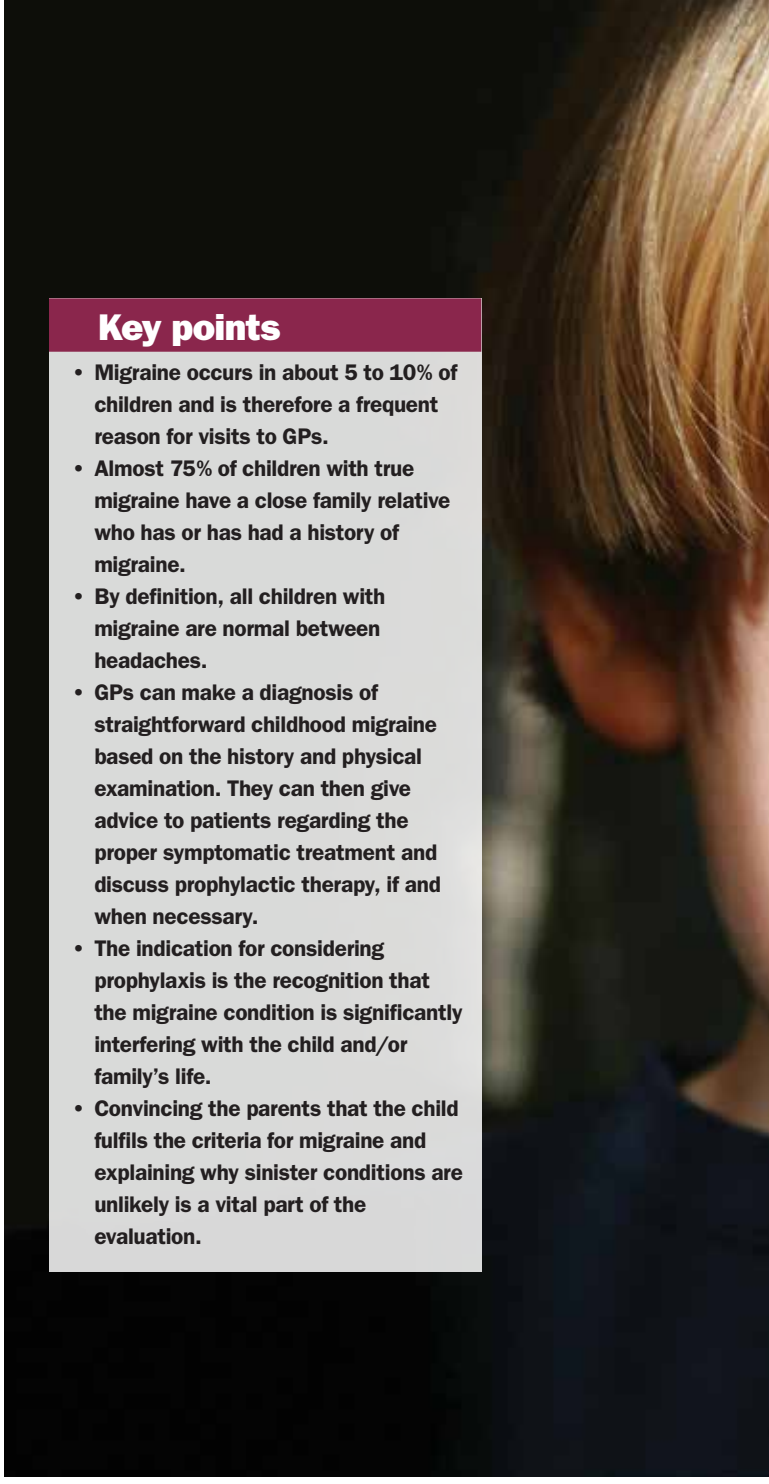
Childhood migraine

Assessment, parental reassurance and treatment

JAYNE ANTONY MD(USA); FRACP; PhD(Syd)

An accurate history of the child's headaches will almost always be diagnostic. GPs can assess patients to determine whether their migraine can be modified by advice regarding the proper use of symptomatic therapies and whether daily prophylactic treatment is necessary.



Key points

- Migraine occurs in about 5 to 10% of children and is therefore a frequent reason for visits to GPs.
- Almost 75% of children with true migraine have a close family relative who has or has had a history of migraine.
- By definition, all children with migraine are normal between headaches.
- GPs can make a diagnosis of straightforward childhood migraine based on the history and physical examination. They can then give advice to patients regarding the proper symptomatic treatment and discuss prophylactic therapy, if and when necessary.
- The indication for considering prophylaxis is the recognition that the migraine condition is significantly interfering with the child and/or family's life.
- Convincing the parents that the child fulfils the criteria for migraine and explaining why sinister conditions are unlikely is a vital part of the evaluation.

The problem

Headache in children is very common ranging from transient head pain associated with illness or stress to typical migraine headaches and the more worrisome headaches caused by organic illness including serious central nervous system pathology. Migraine occurs to various degrees in about 5 to 10% of children and, therefore, is a frequent reason for visits to GPs and in turn referrals to general paediatricians and paediatric neurologists.

Migraine headaches cause significant discomfort that can result in compromise of both school attendance and academic performance, as well as interruption to family life. Lack of recognition and understanding of the importance of migraine in children often leads to denial of the diagnosis. This can result in reluctance to seriously

PAIN MANAGEMENT TODAY 2014; 1(2): 6-9

Dr Antony is a Senior Staff Specialist Paediatric Neurologist of the T.Y. Nelson Department of Neurology and Neurosurgery at The Children's Hospital at Westmead, Sydney, NSW.

consider ameliorating the condition. When one considers that migraine headaches in childhood are usually easily controlled with the benefit of a proper assessment and informed advice regarding treatment, paediatric migraine can become the cause of unnecessary stress on the lives of affected children and their families.

Usual characteristics

Paediatric migraine can occur at any age, even in infants and toddlers. Very young children often present with isolated days or hours of irritability, fatigue and possibly photophobia and gastrointestinal symptoms with no explanation. The diagnosis is often made retrospectively years later. Onset of the migraine symptoms can occur anytime day or night and will be random in some individuals as opposed to having predictable patterns in other children. Duration is anywhere from 30 minutes up to several days with the average headache lasting several hours. The frequency of the headaches is very variable among different children occurring anywhere from a few times a year up to several times a month.

Of children with migraine, 50% do not have any identifiable triggers whereas the other 50% have one or more triggers that can be very specific, such as certain foods, physical activity and late nights. Randomly recommending cessation of certain foods or alteration of lifestyle without knowledge of the individual child's specific pattern is not advisable.

Factors that cast doubt on a diagnosis of migraine are chronic headaches or headaches that are always present in the early morning or are exacerbated by a change in position. The presence of neurological signs, visual loss and changes in cognition and/or behaviour inbetween headaches should also alert one to underlying neurological diseases. Headaches accompanying general health problems, such as growth failure or chronic illness, should also be investigated further.

The headache

Childhood migraine usually occurs without the preceding aura that is often characteristic of adult migraine, although the typical adult pattern with an aura occurring 15 to 20 minutes before the headache can be seen. Pain across the forehead is the most common localisation; however, localisation can also be unilateral or uncommonly occipital in the paediatric age group.

The pain more often than not is severe enough that even the most stoic child will be put out of action. Photophobia and sonophobia as well as gastrointestinal symptoms are often associated with the headaches. Gastrointestinal symptoms include nausea, vomiting or even just anorexia. Most children find relief by sleep. The most important factor in being confident about the diagnosis of childhood migraine is that the patient is normal between headaches.

Family history

Almost 75% of children with true migraine have a close family relative who has or has had a history of migraine. Migraine usually does not 'run true' in families with variable individual patterns, including age of onset, severity of headaches and other associated symptoms, presenting in different family members. Family history of migraine in relatives may be difficult to elicit because people often deny a history of migraine if their headaches have presented in the past and have resolved. Identifying headaches as being caused by certain factors, such as hormonal changes, without recognising that these factors have been triggers and not causes for a migraine is a common misconception. Acephalgic headaches may also be misinterpreted or misunderstood. The family history must be pursued with the questions: 'Have you or any of your family members ever had even a single headache in their life?' and 'If so, can you please describe what the headache was like'.

1. Abridged neurological examination for GPs to perform in children with migraine

- Usual general examination and observations during history taking
- Measurement of blood pressure
- Fundi examination by a GP experienced in regular eye examination or referral to an eye specialist (optometrist/ophthalmologist)
- Ask the child to hold his or her arms outstretched with eyes closed for at least a minute
- Finger nose finger test
- Walk on heels
- Tandem gait
- Stand on one foot
- Deep tendon reflexes

Clinical approach by the GP

History

An accurate history of the child's headaches will almost always be diagnostic. The frequency of the headaches, possible triggers and characteristics of the headaches, such as duration, as well as effects on the child and family's lives, should be sought. Depending on the age, children are the most valuable historians and the history should be taken from the child and not just the parents.

Physical examination

The physical examination begins as soon as the patient walks in the room when the GP should notice the child's general behaviour and ability to communicate as expected for his or her age. A basic neurological examination in a child who appears and behaves normally is outlined in Box 1.

Counselling parents and patients

The parents and child are likely to be reassured if you can discuss the following with them.

- Why you believe that the condition fulfils the criteria for migraine.
- Why you believe that it is very unlikely that the child has a brain tumour or any other sinister central nervous system pathology.
- The headache, especially if occurring in a prepubertal child, is very likely to improve and to be much less of a burden as they reach adult life.
- Migraine does not 'physically handicap or kill you' and, therefore, treatment and other issues are negotiable.
- No investigations are necessary when all factors suggest that a normal child is experiencing typical migraine.

Treatment

Acute treatment

Before considering daily prophylactic medication, a GP evaluating a child with migraine for the first time should review how the migraine is currently being treated at home and review with the family, including the child, the principles of adequate symptomatic treatment. It then may be advisable to send the family back home for a further trial of symptomatic treatment with advice to keep a headache diary and then review the situation two to three months later to judge the need for prophylaxis.

Many publications and discussions about treating migraine advise modifying the child's lifestyle. This is a very noble and sensible goal but not always practical and suggestions are often destined to be either ignored or only followed for a brief period of time. Nevertheless, regular meal times and sleep habits should be encouraged.

Any of the analgesic medications, including paracetamol and ibuprofen, as well as combination drugs, should be used in the largest recommended dose (see packaging instructions for doses matched appropriately for the child's age/weight) and as soon as possible at the start of any sign of an impending headache. The warning signs may be an aura in some cases or even vague and nonspecific changes in behaviour/personality, which predict that the headache is imminent. Doses of nonprescription analgesics recommended for children can be conservative and it may be necessary to give a higher dose if the recommended dose is not of benefit. If the headache continues either unchanged or only partially modified after two to four hours then a second dose should be given.

Despite the fact that triptans have not been able to be recommended by pharmaceutical companies in children under 12 years of age because of the issue of lack of informed consent in minors, there are published studies on the use of triptans in childhood and their use may be very appropriate in certain cases.[1] Good candidates, for example, would be children who have reasonably severe but infrequent headaches (less than two per month) and ideally preceded by a brief aura.

Meditation, yoga and acupuncture can be promoted, especially if the family have issues with the use of medication. The effectiveness of these techniques has neither been proven nor disproven. It would seem that children whose headaches are provoked by stress would be the most likely candidates to benefit. Finding available treatment centres for children and the difficulties with the family complying with regular visits often prove to be limiting factors.

Prophylactic treatment

Double-blinded trials evaluating the benefit of prophylactic agents have been difficult to interpret and the results are often disappointing or surprisingly negative. This may be explained by the recognised placebo effect of the prophylactic agents even in unequivocal migraine. One must also remember that the medical practitioner who makes a convincing diagnosis and reassures the family is, by far, the greatest placebo.

The indication for considering prophylaxis is the recognition that the migraine condition is significantly interfering with the child and/or family's life. The actual numbers of headaches themselves are not the real issue.

Prophylactic agents for migraine include those listed below.[2]

- Pizotifen: in contrast to adults, pizotifen is well tolerated by children with the major side effect being overeating and excessive weight gain, which occurs in about 5% of children. There has been

2. Prophylactic agents for childhood migraine

Common agents

- Pizotifen: available in 0.5 mg tablets; recommended dose is 0.5 mg up to 1 mg twice daily. Well tolerated in children; however, main side effects are overeating and weight gain.
- Propranolol: available in 10 and 40 mg tablets; recommended dose is up to 1 to 2 mg/kg/day in two divided doses; contraindicated in children with asthma and certain cardiac conditions. Blood pressure needs to be monitored.
- Topiramate: available in 25 mg tablets for migraine; recommended dose is 25 mg twice daily, up to 50 mg twice daily.
- Vitamin B2 (riboflavin): available in 100 and 200 mg tablets; recommended dose is 400 mg (megadose) once daily.

Other agents

- Amitriptyline: available in 10, 25 and 50 mg tablets; recommended dose is 0.5 to 1.0 mg/kg/day. May be preferred if anxiety or depression coexist with migraine (off-label for migraine only).
- Calcium channel blockers (only used in children with migraine resistant to ordinary prophylactic agents; off-label use):
  - nimodipine: recommended dose is 10 to 20 mg three times daily
  - flunarizine: recommended dose is 5 mg/day (available on special request to the TGA).
- Cyproheptadine: available in 4 mg tablets; recommended dose is 4 mg/day, which may be increased as tolerated to 4 mg twice daily.
- Sodium valproate: available in 200 and 500 mg tablets; recommended dose is 20 to 40 mg/kg/day (off-label use).

conflicting results in clinical trials of this drug. A dose of 0.5 to 1 mg is generally necessary (given in the evening to avoid side effects). Experience of this drug in children is still limited.

- Propranolol: a beta blocker that has been used for prophylaxis of migraine for a number of years. It is contraindicated in children with asthma or certain cardiac conditions. Blood pressure should be monitored in children taking propranolol, especially at higher doses. A low dose should be started with and titrated up to 1 to 2 mg/kg/day in two divided doses if needed.
- Topiramate: a drug initially released for use in epilepsy that has proven to be a very effective medication for migraine when used in small doses which would normally be subtherapeutic for epilepsy. A starting dose of 25 mg once daily should be given, but usually 25 mg twice daily is needed for efficacy. At this dose, it is rare to experience side effects except for idiosyncratic reactions, such as depression or cognitive compromise. Topiramate is approved by the TGA only in adults for migraine prophylaxis.
- Vitamin B2 (riboflavin): available in 100 and 200 mg tablets. A recommended dose of 400 mg, which is a mega dose, is required once daily. It is available without prescription.

One of the four above prophylactic agents will benefit most children with migraine. A summary of these medications, plus other less common medications that have been used for childhood migraine, is listed in Box 2. All prophylactic treatments take up to six weeks to become effective. It is important that the parents and children understand this time delay as well as the difference between symptomatic and preventive treatment. The former should still be used as necessary when a child is taking prophylactic medication.

3. Indications for referral of children with migraine to a paediatric specialist

- Ordinary migraine that is resistant to treatment
- Complex forms of migraine and prolonged neurological signs, including:
  - hemiplegic migraine
  - acute confusional migraine
  - basilar artery migraine
  - acephalgic migraine
  - ophthalmoplegic migraine
- Specific childhood variants of migraine, including:
  - benign paroxysmal vertigo
  - paroxysmal torticollis
  - cyclical vomiting
  - abdominal migraine

Role of the GP and when to refer

GPs can make a diagnosis of straightforward childhood migraine based on the history and physical examination. They should then be able to proceed to give advice regarding the proper symptomatic treatment and discuss prophylactic therapy, if and when necessary. GPs can also arrange referrals for children with excessive anxiety, sleep problems and other emotional disorders that might be aggravating the migraine. Migraine conditions that are in need of a paediatric specialist's opinion are outlined in Box 3.

Conclusion

Migraine is very common during childhood with most affected children experiencing migraine without aura associated with severe pain, photophobia, sonophobia, gastrointestinal complaints and relief by sleep. By definition, all children with migraine are normal between headaches. GPs can assess patients to determine whether the condition can be modified by advice regarding the proper use of symptomatic therapies and whether daily prophylactic treatment is necessary. Convincing the parents that the child fulfils the criteria for migraine and explaining why sinister conditions are unlikely is a vital part of the evaluation and establishes a favourable working relationship between the family and the GP. **PMT**

References

1. Evers S. The efficacy of triptans in childhood and adolescent migraine. Curr Pain Headache Rep 2013; 17: 342.

2. Eiland LS, Jenkins LS, Durham SH. Pediatric migraine: pharmacological agents for prophylaxis. Ann Pharmacotherapy 2007; 41: 1181-1190.

COMPETING INTERESTS: None.