



# INFORMATION FOR HEALTH CARE PROFESSIONALS



## Pediatric and Adolescent Migraine

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Headache is commonplace among children and adolescents. Up to 82% of adolescents report having a headache before the age of 15. Approximately 6% of adolescents experience migraine yearly. Migraines experienced in the pediatric population are just as disabling as those experienced by adults. Making the diagnosis of migraine in this population is more challenging because the expression of the associated symptoms can vary significantly over the span of childhood. As a result, the diagnostic criteria from the International Classification of Headache Disorders-2 (2004) often lack the flexibility necessary to make an accurate diagnosis of migraine in the pediatric population.

The key features to know for diagnosis of childhood migraine are:

- The duration tends to be shorter than in adults, sometimes as short as just one hour, although the overall duration is 1-72 hours.
- There is often bifrontal or bitemporal, rather than unilateral pain
- Pediatric patients have difficulty describing throbbing pain or levels of severity. Using a face scale or numerical scale, or even asking them to draw a picture, can be extremely helpful in determining the level of disability and the severity of their migraine pain.
- Children often have difficulty expressing the associated symptoms: they often have to be inferred from their behavior. For example, photophobia, phonophobia or the presence of nausea aggravated by physical activity often needs to be determined by the parent or caretaker from behavioral cues.
- Consider other associated symptoms, including difficulty thinking, fatigue, and lightheadedness.

### **Childhood Periodic Syndromes and Other Migraine Variants**

There are special presentations of migraine that occur in childhood, referred to as childhood periodic syndromes. They include *cyclical vomiting*, *abdominal migraine*, and *benign positional vertigo of childhood*. The headache may be mild or absent with these syndromes. They present with cyclical vomiting or abdominal pain, or episodes of vertigo at a very young age. The vertigo may start in toddlers with the initial episodes of cyclical vomiting and abdominal pain in young children. These manifestations may persist in various forms into the adult years. Oftentimes they resolve and the more typical symptoms of migraine in adults become evident.

The concern is making an accurate diagnosis, based on thorough understanding of the differential diagnosis associated with these childhood periodic syndromes. The differential diagnoses include neoplasm, metabolic disorders, and gastrointestinal disorders; referral to a child neurologist, neurologist, or headache specialist who is familiar with childhood headache may be necessary.

*Aura symptoms* often start in childhood and adolescence, specifically basilar-type migraine and familial hemiplegic migraine. Basilar type migraine may present with vertigo, tinnitus, diplopia, ataxia, altered consciousness, bilateral paresthesias, dysarthria, impaired hearing, and altered visual symptoms in both temporal and nasal fields, but no motor weakness is present. The aura symptoms should resolve within 60 minutes. A secondary cause of headache must be excluded.

Fully reversible motor weakness is a key component of *familial hemiplegic migraine*. There may be visual, sensory or dysphasic aura symptoms as well. Often, there is a first or second-degree relative that has a similar history. It is imperative to consider a secondary cause and do a thorough evaluation of these patients.

*Status migrainosus* lasting greater than 72 hours is rare in children, but does occur, and warrants appropriate evaluation and intervention.

### **'Red Flags' in the Diagnosis of Childhood Migraine**

Consider a secondary cause of headaches in the following situations:

- Escalating frequency and/or severity of headaches over several weeks (under four months) in a child under the age of 12, and even more importantly under the age of 7
- A change of frequency and severity of headache patterns in young children
- Fever is not a component associated with migraine at any age, especially in children.
- Headaches accompanied by seizures
- Altered sensorium may occur in certain forms of migraine, but it is not the norm, and needs attention to determine an appropriate assessment and intervention.

Most parents and guardians are most concerned about a brain tumor or other sinister neurologic disorder. It is important to reassure the child as well as the parent or guardian of the proper diagnosis, and discuss the normal progression of migraine from childhood through adolescence to adulthood.

### **Treatment.**

Good headache control is possible when young patients and their families work closely with their physician and allied healthcare professionals. The management of migraine in the pediatric population includes a comprehensive approach, using both pharmacologic as well as non-pharmacologic therapies. The discussion of therapy includes reviewing dietary triggers, avoidance of caffeine overuse, maintaining a normal BMI (body mass index), as well as the importance of avoiding head trauma and using protective headgear whenever appropriate. The comprehensive approach also includes behavior modification programs and exercise protocols. Addressing proper sleep patterns is a key component.

The acute therapies used for children and adolescents should be utilized as soon as it is clear that the headache is migraine. The goal is complete resolution of the pain, and preferably all symptoms, within one to two hours. Currently, there is no specific medication that is approved by the FDA for use in migraine for patients under the age of 18. There are data to support usage and

effectiveness of various medications, such as nonsteroidal anti-inflammatory agents (e.g., ibuprofen and naproxen sodium) and aspirin in children over age 15. Various studies found the triptans were effective and well-tolerated in children ages 12-17. The American Academy of Neurology practice parameters for physicians has recommended that Ibuprofen and Sumatriptan nasal spray are effective, Acetaminophen is probably effective and they should be considered for the acute treatment of migraine in adolescents. More recently, zolmitriptan nasal spray 5 mg and almotriptan 12.5 mg tablets have proven in double-blind placebo-controlled studies to meet their primary endpoints of headache response in one hour

It is important to discuss expectations regarding frequency of acute medication usage. Analgesics or acute medicines of any type are not used more than twice per week, unless the patient is under medical supervision. Headaches requiring treatment more than once per week may signal the need for improved preventive strategies. Consider supplementation with magnesium, riboflavin, and coenzyme Q-10 (appropriate dosages of these medications have not been determined in children).

There is presently no FDA-approved preventive medicine for use in children. Recent studies of antiepileptic agents, such as topiramate, have shown various levels of efficacy and good tolerability. Off-label use of the medications used in adults, with appropriate adjustments for milligram per kilogram dosing and addressing potential side effect profiles, have been used effectively in children.

When does one start and stop preventative treatment? Consider preventive treatment when a child has more than two to three migraines per month that are not fully controlled with acute medicine. The goal is to reduce the headaches frequency to one per month or less over the course of three to six months, and then to discontinue preventive therapy as soon as possible. Fortunately, not all adolescents will experience headaches throughout their life, but up to 70% will experience some continuation of their headaches, whether persistent or episodic.

## **REFERENCES**

Winner P., Lewis D., "Young Adult and Pediatric Headache Management", Hamilton, Ontario; 2005: page 1-232.

Winner P., Lewis D., Rothner A.D., "Headache in Children and Adolescents", 2nd edition, Hamilton, Ontario: BC Decker, Inc.; 2008: page 1-322.

Silverstein S., Lipton R., Dodick D., "Wolf's Headache and Other Head Pain", New York, NY; Oxford University Press; 2008: page 665-690.