An approach to children with chronic daily headache

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Chronic daily headache is a condition that affects 2 to 4% of adolescent females and 0.8 to 2% of adolescent males. It is manifested by severe intermittent headaches, as well as a chronic baseline headache. Chronic daily headache is diagnosed when headaches occur for greater than or equal to 15 headache days per month, over a period of 3 consecutive months, and with no underlying pathology. The headaches last for more than 4 hours a day. Patients with chronic daily headache will frequently have sleep disturbance, pain at other sites, dizziness, worsening anxiety and mood, and school absence. Successful approaches to treatment include education, use of preventative medication, avoidance of analgesics, and helping the children work their way back into a functional daily routine.

Episodic migraine occurs in 2 to 5% of preschool children, 10% of school-aged children and 20 to 30% of teenage females. The typical patient with episodic migraine will have one or two headaches a month. Some patients with a history of migraine will develop more frequent headaches. Chronic daily headache is diagnosed when headaches occur for greater than or equal to 15 headache days per month, over a period of 3 consecutive months, and with no underlying organic pathology. The headaches last for more than 4 hours per day. Chronic daily headache occurs in 2% of middle school females (12–14y) and 0.8% of middle school males. It can occur in up to 4% of young females and up to 2% of young males, with similar prevalence rates seen in studies from Asia, Europe, and the USA.

Adolescent patients with chronic daily headache typically have a past history of episodic migraine. The transformation from having episodic migraine attacks to a chronic transformed migraine may occur over a period of weeks to months, or it may occur abruptly over a matter of hours. Approximately a quarter of teenagers with chronic daily headache will have no significant past headache history. In these latter patients, an infection such as mononucleosis or a minor head injury may incite a new daily persistent headache. A smaller number of patients will have primarily a history of tension-type headaches prior to their chronic daily headache.

Most patients will complain of at least two distinct types of headaches. Prominent are severe intermittent headaches that are migraine-like. These severe headaches will be described as throbbing, severe, crushing, knife-like, or hatchet-like. They are often associated with nausea during the most severe times, and the patient will frequently have photophobia, phonophobia, and osmophobia. Sleep will sometimes help, but patients will still have persistent headache when they awaken. The frequency of these severe headaches will typically occur multiple times a week.

The patient with chronic daily headache will often complain of a continuous headache that is present 24 hours a day, 7 days a week. This continuous headache may wax and wane in severity, often being worse either in the morning or at the end of the school day. The described characteristics of the all-the-time headache pain are similar to the episodes of severe headaches, only much less intense. Some patients may also describe this constant headache as having features of a tension-type headache, with the pain being band-like or crushing rather than throbbing.
Evaluation

The evaluation of a patient with chronic headaches will include a thorough history and physical examination (including blood pressure measurement), as well as consideration of a neuroimaging study, and, occasionally, a lumbar puncture. In selected patients, tilt-table testing or sleep studies may also be of value.

Perhaps the most useful role of the neuroimaging study in chronic daily headache is to reassure the patient and family. An imaging study is most likely to be significantly abnormal if there are focal deficits on examination or a history of seizures in the patient. Occasionally, white matter abnormalities, arachnoid cysts, or pineal cysts will be seen that are generally believed to be of no clinical significance to the chronic daily headache. If a patient has had a significant history of head or neck trauma, particularly at the onset of the chronic daily headache, then magnetic resonance angiography of the neck should also be considered to rule out a possible carotid dissection. When pseudotumor cerebri is a strong consideration, then a magnetic resonance venogram should also be considered since sinus thrombosis can cause elevated intracranial pressure.

Idiopathic intracranial hypertension (IIH) is a constellation of symptoms and signs that include an elevated intracranial pressure with a normal magnetic resonance scan. The patient with IIH will complain of a headache, diplopia, tinnitus, and eye pain. On examination, the patient will have papilledema and a sixth nerve palsy. Although the diagnosis is easy to make when all these signs and symptoms are present, there are some rare patients who may have idiopathic intracranial hypertension without showing significant papilledema. Patients with chronic daily headache or migraine seem to be almost universally prone to getting a post-lumbar puncture headache. So although a lumbar puncture can be a valuable diagnostic tool, perhaps the most useful role of the neuroimaging study in chronic daily headache is to reassure the patient and family.

Treatment

Chronic daily headache is difficult to control. Many of these patients can report a sudden onset of their daily headache, and some can even point to a specific day when they went from a headache-free life to a continuous headache. Unfortunately, it typically takes weeks to months to effect a positive change in headache control. The cornerstones of therapy are education, preventative medication, avoidance of daily pain relievers, and attention to routine.

It is difficult for many families to comprehend that the headaches can persist for such a long time, that there are no abnormalities on diagnostic testing, and that the medications prescribed are not immediately effective. It is not unusual for these patients to see multiple doctors because of this frustration. To limit this frustration, it is useful to spend adequate time with the patient and their family in discussing chronic daily headache. The discussion should include describing what chronic daily headache is, how secondary causes of headache have been ruled out, the role of medications, when not to use pain relievers, the role of non-medication approaches (such as biofeedback or physical therapy), and what the family should expect in the near and long term.

Preventative medications are traditionally used in episodic migraines to reduce the frequency of the migraine headaches. In chronic daily headache, a reasonable therapeutic goal would be to make the severe intermittent headaches less frequent, and to make the continuous headache less intense. Unfortunately, there have been few prospective randomized controlled studies in children to give us guidance as to what is the most effective or safe medication to use in chronic daily headache.

Studies in adults and children have shown that tricyclic antidepressants, such as amitriptyline, are helpful in chronic daily headache. A key to success is to be willing to go up to the higher therapeutic levels of these medications than is traditionally used in episodic childhood migraine. Blood levels of the tricyclics as well as electrocardiogram changes need to be monitored. Weight gain is a significant concern in adolescent patients with these medicines, and it affects some children more than others. Amitriptyline can also be helpful for sleep onset. Other tricyclics such as nortriptyline or protriptyline...
may cause less sedation. In some patients, the use of selective serotonin reuptake inhibitors (SSRI) can be effective. The SSRIs seem to be less effective than the tricyclics for pain control, although they are more helpful in children for their positive effects on mood.

Studies in headache patients have also shown anticonvulsants are also useful. Valproate, topiramate, and gabapentin have been used. Choice of rational pharmacotherapy to treat the patient’s other problems is ideal. Antidepressants can address underlying mood disorders as well as sleep problems. Beta blockers can occasionally result in sadness and nightmares, however, they may be helpful for patients with a postural orthostatic tachycardia syndrome. Calcium channel blockers are useful for hypertension, but cause constipation and orthostatic hypotension. If weight loss is required, topiramate is a potential answer, although this may result in mental clouding. The use of botulinum toxin shows promise as well.

It is important to state the expectations of preventative therapy to the patient and the family. Preventative therapy may improve the headaches, but it will not eliminate the headaches in the short term. After 1 month of an effective therapy, a reasonable expectation would be to have less frequent severe headache episodes, and a decrease in the intensity of the continuous, 24 hours a day, 7 days a week headache. It is rare to see complete resolution of the headaches after a short period of time. Once a trend towards improvement is seen, the dose of medication is adjusted for optimal control of the headaches, and the patient is continued on the preventative path for at least 6 months of good (but rarely complete) symptom control.

Hemicrania continua is a rare headache syndrome, occurring in approximately 1% of chronic daily headache patients. It is a persistent unilateral headache pain. The pain may be characterized by a stabbing sensation, and may be associated with autonomic changes. It is important to recognize this entity since these patients may respond to daily doses of indomethacin to ameliorate this condition.

Pain control at the time of the headache is a very difficult problem for patients. Analgesics that are typically effective for episodic migraine headaches are not very effective for chronic daily headaches. Most patients report that pain relievers are not effective for the continuous, 24 hours a day, 7 days a week headache. It is reasonable to discourage patients from trying to use analgesics to treat the continuous headache, since this may result in analgesic overuse and a potential analgesic rebound headache. In contrast, for the more severe intermittent headache episodes with migrainous qualities, analgesics should be considered. Pain approaches can include the use of migraine pain relievers such as indomethacin, triptans, or non-steroidal anti-inflammatory agents. Compounds that contain caffeine, barbiturates, opiates, or that have a high potential for rebound should be limited or avoided in their use. Patients typically find that when the preventative medication starts working, then the pain analgesics will become more effective also.

Some headache centers will aggressively try to treat the headache pain with intravenous protocols. Several approaches are used alone or in combination. Dihydroergotamine is effective for status migrainous, and some patients will get pain relief for their chronic headache pain. Valproate also comes in an intravenous (IV) formulation as well and has been used to abort severe headache episodes. Finally, some patients respond to a short-term use of oral steroids or IV steroids. These approaches seem to be most helpful for patients who have the recent onset of daily headaches. Many patients will feel better while hospitalized for these treatments, but may revert back to their typical headache after leaving the hospital. The hospitalization does provide the patient an opportunity for education about headaches, introduction to biofeedback, and physical therapy.

Non-pharmacological approaches to the headaches are also very important. Because of the chronic nature of the pain, some patients will benefit from a consultation with a psychologist to at least be introduced to the techniques of relaxation therapy and biofeedback, as well as address issues of mood and anxiety. Mood problems and anxiety frequently coexist with chronic daily headache. The mood problems may precede or follow the onset of the headache. It is possible to resolve the problems with mood without affecting the headache, and in other patients it is possible to improve the headaches without improving the mood problem. Chronic daily headache should be considered a primary headache syndrome and not a mood disorder. Both the symptoms of headache and mood need to be addressed.

Many of the patients have also been ill for months to years and have become physically ‘deconditioned’. Starting a reconditioning exercise program is very important. Patients should be encouraged to start slowly. With our most severely affected patients, we will have them do 10 minutes of aerobic exercise a day and then increase that amount by 10% a week. The key is to be slow but persistent in their increased activity level. A physical therapy consultation can be useful in these situations.

There are important environmental factors that play a role in these headaches. There is an interesting seasonal variability in the degree of chronic daily headache symptoms. Most patients will do better in the summertime, and frequently have a worsening of their headaches at the start of the school year. Therefore, September and October are particularly bad times for the worsening of headaches. In some patients, one can observe that the need for a preventative medication is greatly reduced in summertime, but may need to be increased again in the autumn. The reason for this variability is unknown, but may relate to such factors such as stress, loss of sleep, bright lights in the school, decreased access to exercise, decreased time for relaxation, and propensity of some adolescents to skip breakfast in order to make it to school on time.

School absence is a significant problem. Once patients have been out of school for a period of weeks, it is very difficult for them to return to a regular school schedule. Frequently, patients will observe that after returning to 2 or 3 days of a full-day schedule, they come back home with a more severe headache. Some patients do best with a gradual reintroduction into the school system. These patients have more success returning to school on an abbreviated schedule, often with one or two class periods that are around the lunch hour. It is difficult for these patients to start off with early morning classes, since many of them have sleep disturbances and lack a full night’s sleep.

Follow-up should be scheduled on a routine basis until symptoms come under good control. It is not unusual to make frequent adjustments in management, and it may take months before matching up the right preventative medication or the right therapeutic approach with the individual patient. This author finds it very difficult to work with these patients over the phone. Although the parents can describe...
the pain with a number from a pain scale over the phone. It is harder for the parents to describe the qualitative nature of the pain, as well as the patients’ affect, mood, function, and appearance. These target symptoms are just as valuable treatment indicators as their pain scale.

Outcome
There is limited data looking at the outcome of chronic daily headache in children.6,20,23 It is not unusual to see children who have chronic daily headaches persisting for months to years. It is hoped that with successful identification of this syndrome and aggressive pharmacological and non-pharmacological management, that the average duration of chronic daily headache in children could be considerably less.

In this author’s experience with adolescents with chronic migraine, when patients do get better, typically their sleep improves first, then their severe migraine episodes become less frequent, and this is followed by an improvement in their continuous headaches. When these young people do show significant improvement, often they will return to their pre-morbid state, which in essence is to become a patient with episodic migraines.

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References