Chronic frequent headache in the general population

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Chapter 9

Chronic frequent headache in children and adolescents

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Abstract

Few data are available on chronic frequent headache and analgesic overuse in children and adolescents and there are no specific criteria for headache in children. The objective was to describe the clinical features of children with chronic frequent headache and examine the usefulness of the International Classification of Headache Disorders-II. We retrospectively reviewed all charts of 79 children and adolescents (< 16 years) with headache on ≥ 15 days per month presenting to the outpatient clinic of the Department of Neurology of the Leiden University Medical Center between 1994 and 2001. We classified their headaches according to the International Classification of Headache Disorders-II. Fifty-seven (72%) children had chronic frequent headache for more than six months, with a duration of more than four hours a day in 60% of them. Quality, severity and location of pain varied. Sixty patients (76%) used analgesics, ten patients more than one type. Thirteen patients (16%) used analgesics daily. In one third of patients, headache led to frequent school absenteeism and sleeping problems. Twenty-eight (35%) patients could be classified, 17 (22%) as chronic tension-type headache, five (6%) as chronic migraine and six (8%) as probable medication overuse headache. Fifteen patients (19%) didn't fit into any category, and 36 (46%) couldn't be classified due to insufficient data. We conclude that chronic frequent headache in children is a serious disorder which leads to frequent school absenteeism and sleeping problems. A relatively large number of patients overuse medication. It remains difficult to classify their headaches with the new criteria for headache disorders.

Introduction

Headache is a common disorder in children and adolescents. In the Netherlands, 23% of schoolchildren between the age of 10 and 17 years report weekly headaches, 13% suffer from headaches a few times per week.[1] Chronic frequent headache (CFH) is a collective term for primary headaches occurring on ≥ 15 days per month, lasting more than four hours a day. In adults, the prevalence of CFH is around 4%.[2,3] The actual prevalence of CFH in children has not been determined, but is estimated to be around 0.9%.[4]

The 2nd, revised, edition of the International Classification of Headache Disorders (ICHD-II) includes four types of CFH: chronic migraine (CM), chronic tension-type headache (CTTH), new daily persistent headache and hemicrania continua.[5,6] This classification was primarily developed for headache disorders in adults. There are no specific criteria for children, which makes it difficult to classify their headaches.[7,8]

Overuse of acute headache medication is the most frequent cause of CFH in adults. Headache frequency may increase in headache-prone patients with intake of ergotamine or triptans on ≥ 10 days/month, or analgesics, opioïds or combination medication on ≥ 15 days/month. Few data are available on analgesic overuse headache in children and adolescents. In tertiary headache centres about 30% of children with CFH use analgesics daily.[7,9] Vasconcellos et al[10] retrospectively reviewed charts of children with headaches seen in a paediatric headache clinic. Most patients with CFH and analgesic overuse successfully discontinued their analgesics, which reduced the mean headache frequency from 27.5 to 5.4 days per month (a reduction of 80%).

This is a retrospective study of children presenting to the outpatient clinic of the Department of Neurology for evaluation of frequent headaches. We describe the clinical features of children with CFH and discuss the usefulness of the ICHD-II in this group of children.[5]

Methods

We retrospectively reviewed all charts of children and adolescents (< 16 years) presenting with headache to the outpatient clinic of the Department of Neurology of the Leiden University Medical Center between January 1994 and January 2001. Patients were coded in

the hospital database as migraine, tension-type headache or headache of unknown origin. We identified patients with CFH, which was defined as headache on ≥ 15 days per month, without an underlying serious medical condition.

The following clinical features were recorded: demographic variables and headache characteristics, including frequency, duration, quality, severity, location and aggravating factors. Headache was considered severe if the child could no longer participate in daily activities because of headache, moderate if the child could still participate but in a lower tempo and mild if headache didn't interfere with daily activities. Associated symptoms, including nausea, photo- and phonophobia, were considered present only when patients reported presence "most of the times" or "always". Frequency of medication and caffeine use, co-morbidity, family history, sleeping problems, school absenteeism and psychological problems possibly contributing to headache were also noted. When a variable could not be found in the charts, it was recorded as unknown. Patients were classified according to the ICHD-II.[5]

Results

Two hundred and seven patients were coded in the hospital database as migraine, tension-type headache or headache of unknown origin. We identified 79 (38%) children and adolescents with CFH. There were 32 boys and 47 girls, a ratio of 1:1.5. Mean age at presentation was ten years with a range of two to 15 years. The mean frequency of headache days per month was 28 (SD 5.7). Fifty-seven (72%) children had CFH for more than six months at presentation (Table 1).

Table 1 Duration of chronic frequent headache at presentation

	N = 79 n (%)
1-3 months	9 (11)
4-6 months	12 (15)
>6 months	57 (72)
Unknown	1 (1)

Headache duration per day was more than four hours in 47 (60%) patients (Fig. 1).

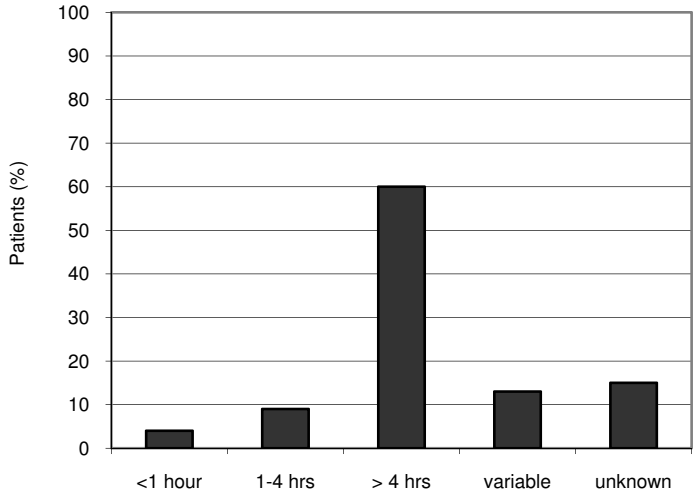

Figure 1 Duration of headache per day

Quality, severity and location of pain varied (Fig. 2). In 23 (29%) patients headache was severe. A frontotemporal location was noted 44 times, which is 51% of all locations noted (Table 2). Some numbers in the table and figure add up to more than 79 and 100% respectively, because several patients described more than one pain quality, location of pain and aggravating factor. Twenty-one (27%) patients had ≥ 2 migraine headache characteristics and 19 (24%) had ≥ 2 tension-type headache characteristics.

Table 2 Location of pain

	N = 79* n (%)
Frontal	36 (46)
Temporal	8 (10)
Occipital	7 (9)
Top of head	7 (9)
Other	23 (29)
Unknown	6 (8)

* Several patients described more than one location of pain.

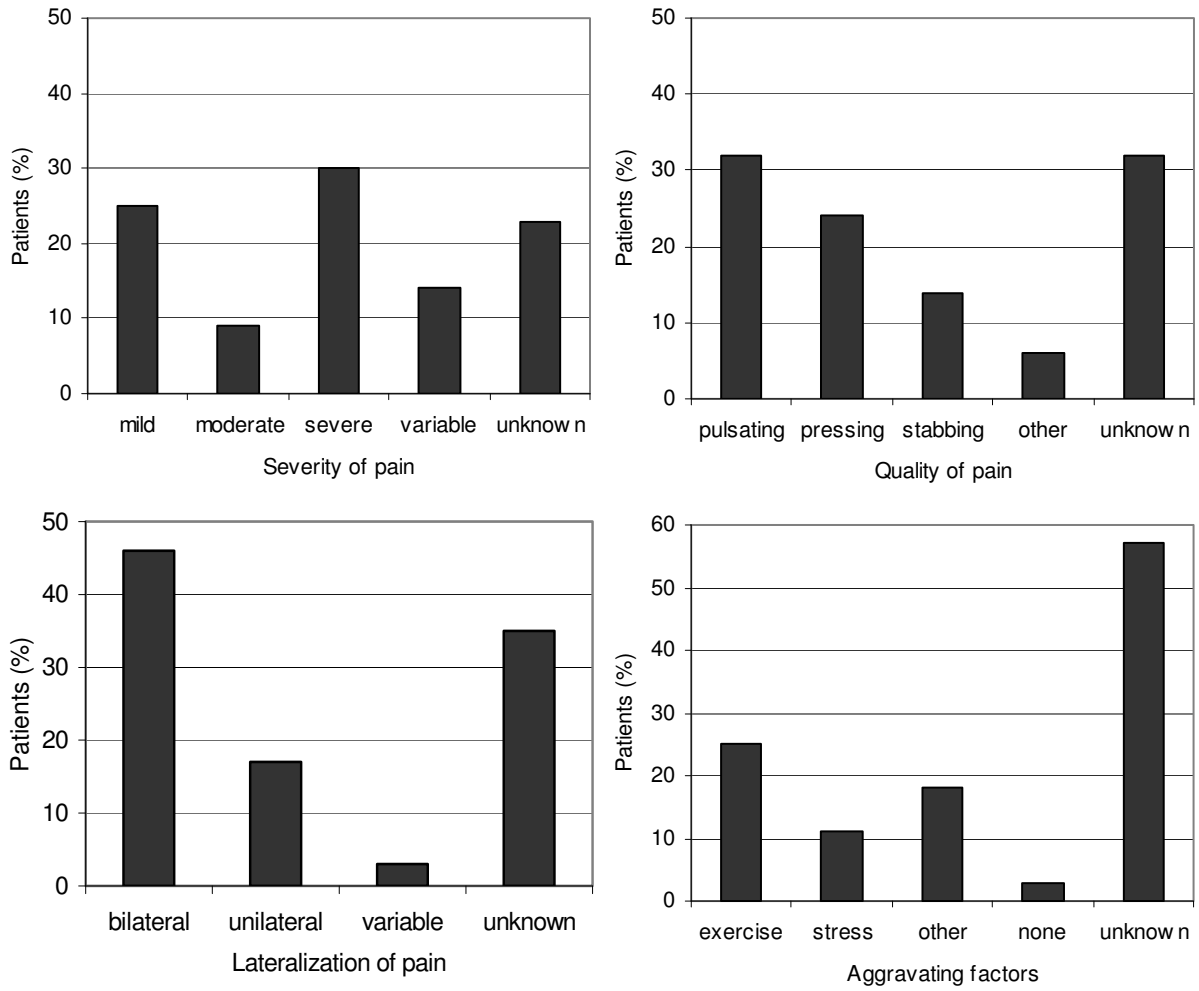

Figure 2 Headache characteristics.

Presence of associated symptoms is shown in Figure 3. In 20 patients (25%) nausea was sometimes present, in seven patients (9%) usually or always.

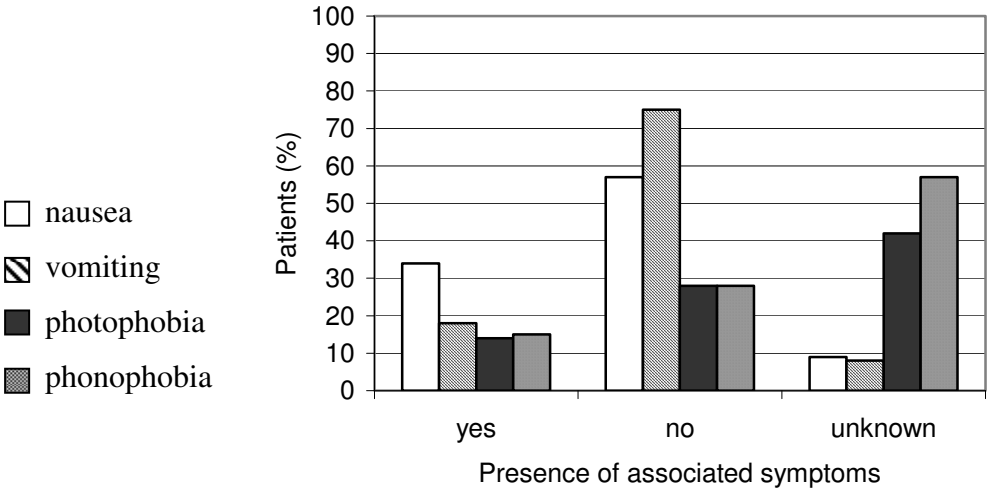

Figure 3 Presence of associated symptoms.

The use of headache medication is listed in Table 3. Sixty patients (76%) used analgesics, of which ten patients used more than one type. Thirteen patients used analgesics daily, which is 24% of the 55 patients with a known frequency. Caffeine use was recorded in nine charts. One patient drank four cups of tea per day, the others drank less or nothing at all. Nine patients were currently using or had used prophylactics in the past; four tried beta-blockers with no success, two of them also tried pizotifen without success, five patients had only tried pizotifen, with two achieving a self-reported moderate effect.

Table 3 Headache medication use

	N = 79 n (%)
Analgesics	60 (76)*
Paracetamol	52 (66)
Acetylsalicylic acid	6 (8)
NSAID	6 (8)
Combination preparation	6 (8)
Prophylactics	9 (11)
Beta-blocker	4 (5)
Pizotifen	7 (9)
Other	6 (8)

* Ten patients used more than one type of analgesic. NSAID = non-steroidal anti-inflammatory drugs.

In seven patients the diagnosis analgesic-induced headache was recorded. They were advised to withdraw all headache medication for three months. In three patients headache frequency reduced dramatically, but in one patient daily headache returned after a few months. One patient started propanolol prophylaxis simultaneously and was complete headache free. Headache returned after tapering of propanolol, but was less frequent. One patient still had daily headaches after withdrawal. Two patients were lost to follow-up.

Sixteen patients (20%) had a history of head injury. Six patients (8%) had a co-morbid neurological disorder; epilepsy (2), psychomotor retardation (2), Down's syndrome (1), and

hemiparesis due to perinatal asphyxia (1). Twenty-four patients (30%) had other non-neurological disorders (Table 4).

Table 4 Other non-neurological disorders

	N = 79 n (%)
Asthma	12 (15)
Urogenital disorder	3 (4)
Diabetes type I	2 (3)
Eczema	1 (1)
Haemophilia B	1 (1)
Aortic Stenosis	1 (1)
Constipation	1 (1)
Ear-nose-throat problems	1 (1)
History of psittacosis	1 (1)
History of haemolytic uremic syndrome and hypertension	1 (1)
None	55 (70)

Three children with asthma were treated with salbutamol, which can cause headache as an adverse-event. Additional problems were noted in 16 (20%) patients; insecurity (3), attention-deficit-hyperactivity-disorder (2), behavioural problems (2), inability to make friends (2), anxiety (1), compulsive disorder (1), somatisation (1), irritability (1), stressful life-event (1), linguistic deficiency (1), and achievement pressure (1). Twenty-two patients (28%) experienced stressful family events, such as divorce and chronically ill family members. Frequent school absenteeism because of headache occurred in 28 (35%) patients, seven (9%) didn't go to school at all. Twenty-five (32%) patients reported sleeping problems. Family history for headache was positive in 40 patients (51%), of which 23 (29%) had first-degree family members with migraine.

The classification of patients according to the ICHD-II is presented in Table 5. We were able to classify 28 (35%) patients, the majority had chronic tension-type headache. The following 15 (19%) patients could not be classified because their features didn't match any category.

Five patients used analgesics daily, but three had not used them for three months, and two had too many migraine features. Three patients had chronic tension-type headache characteristics, but one patient had nausea and photophobia as well and two were sometimes vomiting. Six patients had headache characteristics of chronic migraine, but three of them had no associated symptoms at all and three were only "sometimes" nauseated without other associated symptoms. One patient had chronic migraine with a duration of less than three months. Thirty-six patients (46%) could not be classified due to insufficient data. Two of these patients used analgesics on a daily basis.

Table 5 Diagnosis according to ICHD-II

	N = 79 n (%)
Chronic migraine	5 (6)
Chronic tension-type headache	17 (22)
Probable medication-overuse headache	6 (8)
Not classifiable	15 (19)
Insufficient data	36 (46)

ICHD-II = International Classification of Headache Disorders 2nd edition.

Discussion

We retrospectively studied the clinical features of 79 children and adolescents with CFH presenting to a secondary paediatric neurology outpatient clinic over a period of seven years. Sixty percent of the patients had (near-) daily headaches for more than six months, which lasted for more than four hours a day. CFH occurs at any age, our youngest patient was only two years old. In at least one third of the patients, headache led to frequent school absenteeism and sleeping problems.

At least 13 (16%) of our patients used analgesics daily. The frequency of analgesic use wasn't always recorded because at the time not all physicians were familiar with medication-overuse-headache. We expect that the actual percentage of analgesic overuse in our population is higher. Of the seven patients who were advised to discontinue their headache medication, headache frequency reduced dramatically in four. Although these numbers are too small to draw any conclusions on the effect of withdrawal, a high success percentage in children has

been reported. Hering-Hanit et al[11] described a group of 26 adolescents with CFH and almost-daily analgesic intake. Withdrawal of analgesics led to complete cessation of all headaches in 20 patients, and to intermittent episodic headache in five patients.

This is the first attempt to classify children and adolescents with (near-) daily primary headaches according to the ICHD-II. Of the 43 patients of whom we could find sufficient data, six patients (14%) could be classified as probable medication overuse headache (PMOH). Seven patients, who couldn't be classified because their features didn't match any category (5) or because there was insufficient data on headache characteristics (2), used analgesics on a daily basis, which would logically make them candidates for probable medication-overuse headache (PMOH). The diagnosis PMOH however, requires a duration of overuse of three months and tension-type headache characteristics. These two criteria are in our opinion not practical. We advise withdrawal of all headache medication when a child presents with daily headaches and daily analgesic intake, regardless the duration of overuse and headache characteristics. If frequency of analgesic use would be the only criterion for PMOH, then 29% (13 out of 45 patients) would be classified as such.

Of the 28 classifiable patients, the majority had CTTH (61%), and only five (18%) had CM. This is in agreement with a prospective study done by Abu-Arafeh in a tertiary headache clinic.[12] The majority of children with almost daily headache could be classified as CTTH, and one third had a combination of CTTH and migraine according to the 1988 criteria of the International Headache Society.[6] He made use of headache diaries to diagnose children more accurately. Maybe we would find more associated symptoms in our population when patients and parents kept a headache diary and were specifically asked about these symptoms. Both Hershey and Koenig[9] found that most children and adolescents with CFH have migraine headache characteristics and associated symptoms. [7] We do not have an explanation for these differences.

A major limitation of our study is the retrospective study design. We had to rely on data recorded by different physicians with varying expertise in headache. Missing data could not be retrieved, which resulted in the fact that 46% of patients could not be classified.
We found a relatively high percentage of asthma in our population. In 1994, the prevalence of diagnosed asthma in schoolchildren was 6.2% in the Netherlands.[13] The prevalence of asthma

in children aged six to thirteen in our population is 14%. Only three children used salbutamol, which can cause headache as an adverse-event. Frequent use of paracetamol has been positively associated with asthma, but this doesn't seem to play a role in our population since only three children with asthma used paracetamol.[14] Asthma has been associated with headache, migraine in particular, but a pathophysiologic explanation has not been found so far.[15]

In conclusion, CFH is a serious disorder which can occur at any age and leads to significant school absenteeism and sleeping problems. A significant percentage of patients overuse headache medication. Withdrawal of all headache medication is the appropriate therapy, regardless the duration of overuse or type of headache characteristics. We could classify 65% of the patients with sufficient data of which the majority had CTTH according to the ICHD-II. A prospective study in the general population is needed to study the prevalence of children and adolescents with CFH and accurately describe the headache characteristics and medication use and test the efficiency of the ICHD-II.

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