Recurrent Headaches in Japanese Children: 128 Cases

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Summary: One hundred and twenty-eight cases with chronic recurrent headaches were studied in Japanese children with regard to classification, the detailed clinical features, genetic data, and electroencephalographic and computed tomographic findings. The 128 children were classified into the following classes: 1) vascular headaches of migraine type, 46 %, 2) muscle-contraction headaches, 21 %, 3) psychogenic headaches, 14 %, 4) traction headaches, 2 %, 5) unclassifiable, 17 %. Clinical characteristics of migraine in children is summarized as unilateral (60 %) paroxysmal headaches localized in the frontal or temporal areas (76 %), sometimes with preceding symptoms (28 %) and almost all with nausea and/or vomitings (80 %). The frequency of headaches in 128 children was more than once a week (67 %) but the duration was shorter (77 %, less than a few hours) than those in adults. Appropriate classification of recurrent headaches in children and differentiation from epileptic headaches are also described.

Key words: recurrent headaches — migraine — muscle-contraction headache — classification of headaches — electroencephalogram

Introduction

Recurrent headaches during childhood are a relatively common and frequently benign symptom. However, to children, whose daily life or school life is disturbed due to frequent headaches, they are not necessarily benign.

Although there have been many general reports concerning recurrent headaches or migraine in children (Michael et al. 1952; Burke et al. 1956; Bille 1962; Ziegler et al. 1967; Prensky 1976; Millichap 1978), there are few that describe the situation in Japan (Kato 1977; Aritaki et al. 1979; Nomura 1983), and none in detail.

The present study was undertaken to determine in detail the clinical, laboratory and genetic data of 128 Japanese children

with recurrent headaches and, furthermore, to make valid comparisons between the Western and Japanese data sets. An orderly classification of recurrent headaches in children with a clear differentiation of these and epileptic headaches was attempted.

Patients and Methods

A total of 128 children below the age of 15 years visited our Department of Pediatrics between January 1981 and December 1982, with recurrent headaches. Having taken a detailed history careful physical and neurological examinations were made, aided by electroencephalography and computed tomography.

We employed and followed the recommendations of the Ad Hoc Committee on Classification of Headaches which reported in 1962. Headaches which do not conform to these criteria are separately identified in our report as "unclassifiable".

A diagnosis of migraine was made when a child with paroxysmal headaches presented at least two of the following features: 1) unilateral or pulsatile head pain, 2) visual or other transitory aura, 3) nausea and/or vomiting, 4) a history of migraine in the parents or siblings. These criteria for diagnosis vary slightly from those of Holguin (1967).

Results

Classification and population

The children were classified as follows: 1) vascular headaches of migraine type, 59 cases (46 %), 2) muscle-contraction headaches, 27 cases (21 %), 3) psychogenic headaches, 18 cases (14 %), 4) traction headaches, 3 cases (2 %), and 5) unclassifiable, 21 cases (17 %), (see Table 1).

There were 70 boys and 58 girls in the study group. Among those with migraine, there were no overall differences between males and females. However, with "classic" migraine, there was a higher ratio of females to males as compared with "common"

migraine ($p < 0.05$). With muscle-contraction headaches, there were twice as many males as females (Table 1).

The age range at onset was from 3 to 14 years, with an average of 8.9 years. Of all those cases in which the headaches was the presenting complaint, 70 % were first seen during their primary school life (age ranged from 7 to 12 years). Seven patients, 12 % of all children with migraine had their first attack before the age of 5 years.

Location of headaches

In 76 % of the cases in the migraine groups combined the headaches were localized in the frontal or temporal areas. Twenty-three of these always experienced unilateral headaches, 10 unilateral or bilateral, and 24 patients always bilateral. Of all those with muscle-contraction headaches, 74 % had location in the bioccipital or generalized areas. Almost all experienced bilateral headaches (Table 2).

Frequency and duration of headaches

The frequency of the headaches was greater than once a week in 86 patients (67 %), greater than once a month but less than once a week in 20 (16 %), less than once a month in 10 (8 %) and unknown in the remainder. We found that a total of 30 patients (23 %) experienced

TABLE 1
Classification of recurrent headaches in 128 children

Classifications	Male	Female	Total	(%)
Vascular headaches of migraine type	29	30	59	46.1
"classic" migraine	6	9	15	
"common" migraine	23	21	44	
Muscle-contraction headaches	18	9	27	21.1
Psychogenic headaches	10	8	18	14.1
Traction headaches	2	1	3	2.3
Unclassifiable	11	10	21	16.4
Total patients	70	58	128	100

TABLE 2
Location of headaches in 128 children

Location	Migraine	Muscle-contraction headaches	Psychogenic headaches	Unclassifiable
Frontal	23	4	2	3
Retroocular	4	0	0	0
Temporal	22	0	3	2
Parietal	3	2	1	2
Occipital	4	13	3	2
Generalized	2	7	5	10
Unknown	1	1	4	2
Unilateral	23	0	2	1
Unilateral and bilateral	10	1	2	2
Bilateral	24	25	10	16
Unknown	2	1	4	2

headaches every day prior to their visit to our department.

The duration of the headaches was variable for each individual. We analysed frequency statistics based on an individual's headaches all being of similar duration and set equal to the duration of his shortest headache. In 15 patients (12 %), the headaches lasted only several minutes. Ninety-nine patients (77 %) described the duration as being less than a few hours. Only 12 patients (9 %) had headaches of duration greater than half a day. No one had headaches of longer than a day.

Preceding and associated symptoms

Preceding symptoms were seen only in migraines, in 17 of the 59 patients (29 %). Visual auras were the most common symptoms (53 %) characterized by scotomas, sparkling lights, blurring of vision and photophobia. Somatic sensory symptoms were the second most common (29 %) and were described as numbness in extremities and difficulty to walk from tingling in the legs.

Nausea and/or vomiting was observed in almost all migraines. Nausea and/or vomiting was not observed to such a great extent with muscle-contraction headaches. This difference in frequency of nausea

and/or vomiting was statistically significant ($p < 0.05$). Other associated symptoms were described as acute abdominal pain, general fatigue and pallor or flushing of the face.

Precipitating causes and family history

In the present study, precipitating causes could not be always determined. Sixteen patients described such causes as school examinations, rainy or cloudy weather, excitement, fatigue, or other environmental changes. There were no girls who described menstruation as precipitating causes.

Positive histories of chronic recurrent headaches in the parents or siblings were obtained in 38 patients (30 %) of the present study. Of these, there were more (68 %) migrainous than muscle-contraction headaches (14 %). This difference was statistically significant ($p < 0.05$).

Electroencephalographic and computed tomographic findings

The electroencephalograms were recorded in 73 patients of the 128 in the present study. The EEG was abnormal in 16 patients (22 %). Slow dysrhythmias were recorded in 2 patients, paroxysmal discharges in 11, and both the former and latter in 3. Spikes or spike and wave com-

TABLE 3
Electroencephalographic findings in 73 children with recurrent headaches

Types of headaches	Normal	Abnormal	Total	Slow dysrhythmias	Spikes		Slow waves	
					Focal	Diffuse	Focal	Diffuse
Migraine	29	9	38	3	2	2	2	2
Muscle-contraction headaches	14	2	16	1	1	0	1	0
Psychogenic headaches	7	3	10	1	1	1	0	0
Unclassifiable	7	2	9	0	0	1	1	0
Total patients	57	16	73	5	4	4	4	2

TABLE 4
Classification of recurrent headaches in comparison of 3 series

Types of headaches	Millichap (1978)	Kato (1977)	Our cases
Migrainous	42 (42 %)	43 (29 %)	59 (46 %)
Non-migrainous	58 (58 %)	33 (22 %)	48 (37 %)
Muscle-contraction	18	27	27
Psychogenic	21	6	18
Seizure equivalents	18	—	—
Traction	1	—	3
Combined*	—	18 (12 %)	—
Unclassifiable	—	56 (37 %)	21 (17 %)
Total patients	100	150	128

* combined migrainous and muscle-contraction headaches

plexes in 8 patients (they were generalized in 4, focal in 4) and slow waves in 6 (generalized in 2, focal in 4), (Table 3).

Plain computed tomography was carried out on 52 patients. Findings were all normal except in 3 patients, in whom the traction headaches were the result of a brain tumor.

Discussion

The classification of the Ad Hoc Committee (1962) is used generally for chronic recurrent headaches in adults. In the present study, an unclassifiable type was observed in 17 %, so that the classification does not necessarily extend to include children. Koch and Melchior (1969) pro-

posed a simpler classification of headaches, recognizing only migrainous and non-migrainous types in childhood.

In the series of Millichap (1978), 100 children with recurrent headaches were subsequently divided into 42 % migraine type headaches, and 55 % of non-migrainous type headaches. In the only other Japanese study, Kato (1977) reported that migrainous headaches accounted for 29 % of a total 150 patients. Muscle-contraction headaches accounted for 22 %, and combined headaches for 12 %. In the two Japanese series, counting those unclassifiable to be in the non-migrainous group, then the frequency of migrainous and non-migrainous headaches was about the same, comparing Japanese with American series (Table 4). The simple classification there-

fore into two major categories, as proposed by Koch and Melchior (1969), seems to be useful in classification of recurrent headaches in children.

In our series, 70 % of the 128 patients complained of their first headache between 7 and 12 years of age. In migraine patients, there was a similar age of first onset, and the age of predilection were similar, to the previous report (Trued, 1974). In the series of Western children, 18-35 % with migraine type, complained of headaches before their fourth or fifth year (Holguin et al. 1967; Krupp et al. 1953; Vahlquist, 1955). However, in Japanese children (including our series) there was a low incidence of onset at ages less than the fifth year (Kato, 1977; Aritaki et al. 1979; Nomura, 1983). Since other clinical features are also similar between the Western and the Japanese, this age discrepancy cannot be easily ascribed to racial origin.

Clinical characteristics of migraine are summarized as follows: 1) unilateral (60 %) paroxysmal and pulsatile headaches; 2) localized frontal or temporal areas (76 %); 3) sometimes with preceding symptoms (28 %); 4) mostly associated with nausea and/or vomiting (80 %); 5) frequency at more than once a week (67 %), here the duration was shorter (77 % at less than a few hours) than those in adults.

These characteristics and incidence accord with results reported previously with regard to unilateral headaches (Bille, 1956; Holguin et al. 1967; Vahlquist, 1955), preceding symptoms (Prensky, 1976), associated symptoms (Burke et al. 1956; Holguin et al. 1967; Koch et al. 1969), frequency (Michael et al. 1952; Bille, 1962) and duration (Burke et al. 1956; Vahlquist, 1955) of headaches.

Electroencephalographic abnormalities observed in these studies vary greatly (22-99 %) in children with migraine (Michael et al. 1952; Burke et al. 1956; Bille, 1962; Ziegler et al. 1967; Millichap

1978; Whitehouse et al. 1967). Differences must result from the variability of diagnostic criteria in migraine and recording conditions of EEGs in each series.

Both Prensky (1976) and Millichap (1978) stressed that children with migraine should be distinguished from epilepsy, by criteria for epilepsy or seizure equivalents. With a high incidence of electroencephalographic abnormalities in children who have migraine but not epilepsy, these two views of Prensky and Millichap seem to be warranted. When a child with recurrent paroxysmal headaches shows any electroencephalographic abnormalities, we should not use anticonvulsants immediately, lest the diagnosis is confused with that of epileptic headache. Migraine must be diagnosed from adequate, careful consideration of the detailed clinical features and the family history.

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