

# Recurrent Headaches in Children – An Analysis of 47 Cases

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## Summary

In a retrospective analysis of paediatric referrals to a Neurology Outpatient Clinic, the largest single category of 47 patients (32%) presented with acute recurrent headache. There were 30 girls and 17 boys. Age of onset ranged from 4 to 11 years ( $8.35 \pm 1.98$ ) and duration of headache from half month to 42 months ( $19.2 \pm 11.9$ ). Only 6 children were unable to describe the quality of their pain. Using conventional criteria, 43 of the children could be classified as classical migraine (10), common migraine (20), basilar migraine (3), ophthalmoplegic migraine (1) and tension headache (9). None had any positive physical signs, and all responded to simple measures.

**Key Words:** Childhood headache, Migraine, Tension headache

## Introduction

Headaches can be described as the Cinderella of paediatric neurology. Although it is the most common single complaint in neurology outpatient departments<sup>1</sup> most paediatric text books only dedicate a page or two to this topic. Possibly because of this our knowledge about the exact pathophysiology of recurrent headache is still superficial<sup>2</sup> and treatment has largely been empirical<sup>3</sup>. An analysis of all new paediatric referrals to the Neurology Institute of Kuala Lumpur over 2 years confirmed that headache was the most common complaint, making up 32% (47/147) of new referrals, followed closely by epilepsy 27% (40/147). These two complaints constituted 59% of all new cases. We report here an analysis of the 47 cases of headache.

## Materials and Methods

A retrospective analysis was made of all new referrals to the Paediatric Neurology Clinic at the Neurology Institute, Kuala Lumpur Hospital between 1 January 1992 to 31 December 1993. The case notes of

children presenting with a chief complaint of recurrent headache were selected and analysed in detail. The following were studied: race, sex, age of onset, duration of headache, headache characteristics, presence of hemicrania, visual aura, quality of pain, duration of attacks, associated symptoms such as photophobia, nausea and vomiting, family history, physical signs, investigations and response to treatment. Headaches were classified by a modification of the International Headache Society Diagnostic criteria as this is not considered suitable for children<sup>4,5</sup>. Children who had 3 of the following characteristics namely hemicrania, throbbing pain, nausea and or vomiting, and photophobia were classified as migraine. If in addition there was a visual aura, they were classified as classical migraine<sup>6</sup>. A diagnosis of basilar migraine was made if 3 of the following were present: throbbing headache, vertigo, tinnitus, fainting spells, paraesthesiae in cranial nerve distribution, nausea and or vomiting<sup>1</sup>. Attacks of headache complicated by ophthalmoplegia that resolved completely were diagnosed as ophthalmoplegic migraine<sup>1</sup>.

Children who had attacks of bitemporal or frontal pressing pain, not associated with visual aura, nausea, vomiting or photophobia were classified as having tension headache (IHS Diagnostic criteria). Children who had attacks of tightening or pressing pain who also had attacks of hemicrania or nausea and vomiting or photophobia were classified as migraine/tension headache.

### Results

A total of 147 new paediatric referrals were received during the period of the study. Forty-seven patients (32%) presented with headache, 40 patients (27%) presented with epileptic fits, 8% had neuromuscular problems, 6% developmental delay, 6% behavioural disorders, 4% cerebral palsy, 4% learning disorders and the remaining 13% consisted of miscellaneous disorders including some of non-neurological origin.

Of the 47 who had headache, there were 30 Malays, 11 Indians and 6 Chinese. This merely reflected the racial distribution of the 147 cases namely 106 Malays, 21 Indians and 20 Chinese. Interestingly there were 30 girls and only 17 boys giving a ratio of 1.7 to 1, which is the reverse of most population based studies in this age group<sup>1</sup>. The sex ratio for the 147 new cases studied was 3 boys to 2 girls.

The age of onset varied from 4 to 11 years with a mean of 8.35 years (SD = 1.98). The duration of headache before being seen ranged from 2 weeks to three and a half years, with a mean of 19.2 months

**Table I**  
Age of onset in years

Age	No. of patients
< 5	2
5 - 6	7
7 - 8	15
9 - 10	16
11 - 12	7
Total	47

**Table II**  
Duration of headache

Duration (months)	No. of patients
< 3	10
4 - 6	6
7 - 12	10
13 - 18	0
19 - 24	9
25 - 36	3
37 and above	9
Total	47

(SD = 11.9). The frequency distribution for age of onset and duration is shown in Tables I and II.

The site of headache is shown in Table III. Twelve children had visual aura, consisting of a darkening of the visual fields, sometimes with a bright border. None had experienced a colourful fortification spectra. Of

**Table III**  
Site of headache

Hemicrania	23
Bitemporal	6
Frontal	4
Occipital	2
Unable to localise	12
Total	47

**Table IV**  
Type of pain

Throbbing	24
Tight/pressing	9
Not sure	6
Not available	8
Total	47

these 12, 1 had basilar migraine and 1 ophthalmoplegic migraine. The type of pain experienced by the children is shown in Table IV.

Twenty children experienced nausea and vomiting and 16 children had photophobia preferring a dark room during attacks. No data was available about phonophobia.

In 13 children, the headache lasted less than 1 hour, 16 had pain for 1-4 hours, and in 15 the attacks lasted more than 4 hours. Data was not available for 3 cases.

Twelve children suffered loss of school days because of headache, but according to the parents none had suffered a deterioration of school performance as a consequence of the headaches.

Based on criteria mentioned earlier, the 47 cases were classified as shown in Table V. The sole case of ophthalmoplegic migraine had recurrent attacks of throbbing headache and ophthalmoplegia of the right eye lasting up to half a day. All 9 children classified as tension headache were girls. Of the 2 unclassified cases, 1 was a girl referred for headache who actually had attacks of screaming and hair pulling lasting a few minutes each time and eventually responded to psychiatric intervention. The other a boy, presented with 2-week history of headache after school reopened which resolved when he was changed to the morning session.

**Table V**  
**Classification of headache**

Common migraine	20
Classical migraine	10
Basilar migraine	3
Ophthalmoplegic migraine	1
Tension headache	9
Migraine/tension headache	2
Unclassified	2
	47

Seven out of 10 children with classical migraine had a positive family history (only headache in parents were considered), including 2 cases in whom both parents had migrainous headache. This compared to 11 of 20 cases with common migraine and 2 out of 9 cases with tension headache. In the 18 children with migraine who had a positive family history, the ratio of mothers to fathers was 2:1 (12:6).

Apart from tension headache which was only found in girls, the sex distribution for the other classes of headache were similar.

None of the children had any positive physical findings on clinical examination. One girl with classical migraine also had generalised epilepsy. Eight children had a skull X-ray before being seen and 4 had a CT scan, 2 before the referral. In the 2 patients who had a CT scan after being seen at the clinic, one developed headache after surgery for a sebaceous cyst in the occipital region and the other scan was done on the parents insistence. All the skull X-ray and CT scans were reported normal.

### Outcome

Thirteen children, 6 with tension headache, 1 with basilar migraine with fainting spells, 3 with common migraine and 1 with classical migraine were treated with reassurance and advised to lie down and take paracetamol during attacks. One child with classical migraine with epilepsy improved when her epilepsy was controlled with sodium valproate. Another 9-year-old boy with classical migraine for 1 year experienced almost complete resolution when his associated learning disorder (dyslexia) was picked up and rehabilitation started. The remaining children were given prophylactic treatment. 15 received propranolol and 13 pizotifen, the latter was used if there was a personal or family history of asthma. Two children, one with tension headache and one with common migraine responded to flunarizine after the other 2 drugs failed to control their symptoms.

### Discussion

The population prevalence of headache in childhood has been estimated as 37% at 7 years and up to 70%

in early adolescence<sup>1</sup>. Recently Sillanpää<sup>8</sup> reported a prevalence of 19.5% in 4,405 five-year-old children studied prospectively in Finland. It should therefore come as no surprise that headache constituted the largest single group of referrals received during the study period.

Headache can be classified as acute, acute recurrent, chronic non-progressive and chronic progressive. All the children in this study had acute recurrent headaches, returning to normal health between attacks. The population prevalence studies in children with acute recurrent headache generally refer to migraine. In these studies more boys than girls are affected by migraine in the first decade with the ratio reversing in adolescence<sup>1,4</sup>. There is no data on the prevalence of tension headache in childhood, probably because many workers believe that primary headache is a continuum between tension headache and migraine, with classical migraine being the most severe end of the spectrum<sup>2</sup>. However the IHS Diagnostic Criteria recognises the two as separate entities and this has been substantiated in a recent prospective epidemiology study<sup>9</sup>. Although this is a retrospective study, in only 2 of 47 cases was there diagnostic confusion between tension headache and migraine. 33% of children classified as tension headache in this study had attacks lasting more than 4 hours, compared to 30% of children with classical migraine. This is in keeping with the experience of Rasmussen *et al*, and is contrary to the continuum hypothesis. All the children classified as tension headache were girls. Although this is interesting, the numbers are too small to allow any meaningful conclusions. Twelve children suffered a loss of school days as a consequence of their headaches. They were all described as average or good students by their parents. As this is a retrospective study it is difficult to say if school phobia may have contributed to their symptoms, which resolved with prophylactic medication. Another weakness of this study was the scant information in the case notes about precipitating factors.

Sixteen of 28 children with migraine had a positive family history, including 2 in whom both parents were involved. However given the prevalence of migraine in the community this is no longer considered a reliable diagnostic feature<sup>10</sup>. The ratio of mothers to

fathers probably reflects the sex distribution of migraine in the general population.

Four children had migraine variants, 3 basilar and 1 ophthalmoplegia. When combined with the other 30 children with migraine, giving a denominator of 34, this gives an incidence of 2.8% for basilar and 2.9% for ophthalmoplegic migraine. This is much higher than the figure (2.3% for basilar and 0.3% for ophthalmoplegic migraine) from larger series using the same diagnostic criteria<sup>1</sup> and probably reflects the nature of case selection in a tertiary centre.

Interestingly only 6 children, all under 7 years were unable to describe their pain. This is consistent with the experience of Chu *et al*<sup>4</sup> but contradicts Abu Arafah<sup>11</sup> recent report that young school children with headache were unable to describe the quality of their pain.

Only 15 of 34 children with migraine had attacks lasting 4 or more hours. This is in keeping with the study of Mortimer *et al*<sup>7</sup> who feels that headache duration of 4 hours mentioned in the International Headache Society (IHS) diagnostic criteria is not applicable to children under 12 years.

All the children responded to simple measures and standard anti-migraine drugs. Some feel that the drugs mainly have placebo effect<sup>10</sup> while others feel that they are truly effective<sup>3</sup>. The methodological limitations of this study do not allow any comment on treatment efficacy.

## Conclusion

Acute recurrent headaches are common in children. The onus is on the examining paediatrician to exclude progressive headaches due to structural disorders. A history of return to normal health between attacks, an analysis of associated phenomenon and the absence of physical signs allow a clinical diagnosis of primary headache to be made in the vast majority of cases, without resorting to radiological investigations. Serial observations over a period of time to establish the benign nature of the disorder is the most useful investigative tool. Once correctly diagnosed, most of the children respond to simple measures enabling them to enjoy their childhood to its full.

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