To identify the clinical profile of children (7-18 Years) presenting in General Pediatrics O.P.D with recurrent headache using international classification of headache disorders 3rd Edition (Beta Version)

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Abstract

Introduction: Recurrent headaches are affecting quite significant proportion of children and have proven significant adverse impact on various aspects of life besides transition to adulthood headache. Headache should therefore no longer be allowed to remain a nonspecific symptom, rather every headache should be assigned a definite category at the very first encounter. Literature review reveals higher diagnostic rates with the use of new (and relatively lesser used by researchers) classification- International Classification of Headache Diseases 3 (beta version).

Material & Method: Cross sectional study, Pediatrics general OPD at a tertiary level hospital in Ghaziabad consecutive (7 to 18 years) children with recurrent headache (more than 3 episodes in last one year) were enrolled after consent. Children suspected of having secondary headache were excluded. Headache was categorized using ICHD 3 (beta version). A structured questionnaire addressing all diagnostic points was filled, followed by clinical examination. Refraction and ENT examination were done only if suggestive symptoms were present.SPSS version 22 was used for calculation of frequencies and chi square test.

Results: Total 106 eligible children were enrolled, among them primary headache subtypes (ICHD code 1. to 4.) TTH and migraine could be diagnosed in 31(29.2%) and 30 (28.3%) cases respectively. Secondary headache subtypes (code 5 To 12) due to uncorrected refractive errors (code11.3.2) was detected in 13 (12.3%) participants. 14 (13.2%) cases had recurrent rhino-sinusitis (code 11.5.2). 18(16.9%) children were placed in unspecific category (code 14.2). Strong positive association of migraine was found with family history of headache and overweight.

Conclusion: The use of ICHD 3 beta version could successfully categorise majority of children presenting with recurrent headache, with only clinical evaluation and without investigatory support at first visit.

Keywords: Primary headache, Children, ICHD 3 beta version

Introduction

Universal affliction of humankind by headache.[(1)] signifies the importance of this symptom. It is a complaint observed quite commonly during childhood with reported prevalence ranging from 15% to over 50%.[(2-7)] Headaches particularly recurrent ones, can be quite disabling due to high frequency and severity. Now a days more and more cases of recurrent headaches are proven to be one or another subtype of primary headache. The prevalence of primary headaches compared to earlier years is increasing.[(2)]

Primary headache besides likelihood of continuing into adulthood, are also responsible for poor quality of life impacting academic performance and causing work absenteeism. Despite so many harmful consequences in children, who are incapable of giving required details of headache, often it is difficult to distinguish between various subtypes of primary headache. A recent review article[(5)] highlights that throughout the world there is paucity of hospital based studies covering the detailed aspects of paediatric and adolescent headache. Most of the available knowledge is derived from population based studies, school surveys[(4-8)] or extrapolations of data obtained from studies done on adult patients.

To deal with primary headache efficiently, a clinician must know the existing clinical profile of primary headache in the population being served and its association with commonly implicated triggers.[(7,8,9)] The previously reported diagnostic rates for migraine and tension-type headaches are as low as 40%, which may be attributed to under-application of ICHD criteria.[(10)] The present study was an attempt to categorise the children coming in general Pediatrics OPD with recurrent headache, using ICHD 3 (Beta version)[(11)] which has expanded the probable categories and no longer requires remission of the underlying causative disorder before the headache diagnosis and can offer a diagnosis in first-visit.

Material and Methods

Study design: Cross sectional hospital based study. Patients were enrolled from Pediatrics general OPD of a tertiary level hospital in Ghaziabad.

Sampling: All consecutive 7 to 18 years old children presenting with recurrent headache (more than 3 episodes in last one year) were enrolled after informed parental or guardian consent (inclusion criteria). As the diagnosis is essentially clinical, so it was must that the child should be old enough to tell the characteristics of headache correctly, coherently and reliably. Thus the age group selected was 7-18 years.

Period of study: 18 months starting from Jan 2015 to June 2016.

Ethical clearance was taken from the institute ethics committee.

Exclusion criteria

1. Children who were suspected of having secondary headache (due to meningitis, encephalitis, seizures or with intracranial space occupying lesions etc.) or CNS trauma cases.
2. Children who could not recall headache details or those with poor cognitive ability(due to inability to respond correctly to questions)

Headache diagnosis was made using International Classification of Headache Disorders 3(beta version).[11]

- **Outcome variable** – primary headache sub type
- **Predictor variables** were unilateral or bilateral headache, frequency, character, site of headache, presence of aura and autonomic findings (nausea, vomiting, photophobia, phonophobia) associated with pain, avoidance of physical activities.

Methodology A structured questionnaire (based on Children HARDSHIP Questionnaire)[12] having all the necessary diagnostic criteria was filled. It was asked whether all headaches experienced by the participants were of one or >1 type: those with >1 type were asked to keep in mind only the subjectively most bothersome type. A detailed neurological examination was done in every participant to rule out the underlying CNS pathology. The refraction and ENT examination was done by respective departments only in cases, where doubt of implicated conditions was aroused because of associated symptomatology. Diagnosis was made after careful analysis of responses using ICHD 3 beta version.

Statistics: SPSS version 22 was used. Frequencies were calculated. Chi square test was done wherever applicable and P value of 0.05 or less was taken as significant.

Results

In present study total 106 eligible children were enrolled. Headache (HA) was commoner in females (58.4%). Majority of (around 90%) children were 10 years or older. The subtypes of headache found were as follows in the order of decreasing frequency –TTH (29.2%), migraine(28.3%), HA due to recurrent rhino-sinusitis(13.2%), HA due to refractive errors (12.2%), unspecified HA (16.9%) as seen in Table 1. Majority of children complained of progressively increasing severity and frequency of headache. Among TTH cases, frequent episodic TTH was commonest subtype, followed by infrequent episodic, chronic TTH and then probable TTH. In Migraine cases, commonest subtype was migraine without aura followed by probable migraine and migraine with aura. Migraine attacks were usually during morning hours or when child was hungry, while TTH was commoner in school hours. Majority of migraine cases had unilateral headache. The commonest location of headache in cases of migraine was fronto- temporal area. Photophobia and phonophobia were commoner than other symptoms. Nausea was commoner than vomiting. Throbbing character of pain was reported by approximately fifty percent cases of migraine while pressing character of pain was complained by nearly sixty percent cases of TTH. Limitation of physical activity was common in all types of headache. Severity of HA was more in migraine cases as compared to TTH cases. Aura was uncommonly reported symptom and only visual aura was reported by 6.6 % cases of migraine Table 2. Strong positive association was found between migraine and family history of headache, and also with overweight / obesity.

Table 1: Categorisation of headache according to ICHD 3rd Edition (Beta version)

ICHD Category	Diagnosis	N	%
1.	Migraine	30	28.3
1.1	Migraine without aura	16	53.3
1.2	Probable migraine	11	36.7
1.5	Migraine with aura	3	10
2.	TTH	31	29.2
2.1	Infrequent episodic TTH	8	25.8
2.2	Frequent episodic TTH	14	45.1
2.3	Chronic TTH	6	19.4
2.4	Probable TTH	3	9.6
11.3.2	HA due to refractive errors	13	12.2
11.5.2	HA due to recurrent rhino- sinusitis	14	13.2
14.2	HA unspecified	18	16.9

Table 2: **Diagnostic characteristics of two important categories of Primary headache**

Characteristic pointers in clinical profile		**Migraine**	**TTH**
		N =30 (%)	**N =31 (%)**
Age	7-10 yrs	03 (10.0)	03 (09.7)
	>10-15 yrs	09 (30.0)	12 (38.7)
	>15- 18 yrs	18 (60.0)	16 (51.6)
Duration of HA	less than 2 hrs	11 (36.7)	06 (19.4)
	>2 hrs if untreated	16 (53.3)	03 (09.7)
	Last whole day	03 (10.0)	22 (70.9)
Frequency of HA	< 1 per month	13 (43.3)	08 (25.8)
	1 to 14 per month	16 (53.3)	17 (54.8)
	>15 per month	01 (03.3)	06 (19.4)
Character of pain	throbbing	16 (53.3)	08 (25.8)
	Band like	14 (46.6)	23 (74.2)
limitation of activity with HA		29 (96.7)	04 (12.9)
Severity of HA moderate to severe		22 (73.3)	07 (22.5)
Location of HA unilateral		26 (86.6)	19 (61.3)
Nausea with HA		28 (93.3)	08 (25.8)
Vomiting with HA		16 (53.3)	01 (03.2)
Photophobia with HA		03 (10.0)	06 (19.4)
Phonophobia with HA		19 (63.3)	15 (48.4)

Discussion

Correct classification of the headache disorder is a prerequisite for targeted treatment and prophylaxis.[13,14] Just a minority of people with headache disorders worldwide are diagnosed by headache experts. The reported diagnostic rates for migraine and tension-type headaches are as low as 40%, which may be attributed to under-application of ICHD criteria.[10] It was encouraging to see that in present study, the use of ICHD 3(beta) classification, the diagnosis (whether migraine or TTH or various other subtypes or un specific group) could be made with quite certainty in 83% cases attending Pediatrics OPD with recurrent headache in first visit. Nearly 17% (18) cases were placed in un-specified (code 14.ICHD 3 beta) subtype.

Clinical profile of primary headache cases found in present study was –majority of participants were in early to middle adolescence with preponderance of girls in all subtypes of headache as has been reported by various previous researchers.[19,20] This observation has been explicitly explained by Pan A. K et al.[1] They reviewed that among headache cases gender ratio is boys > girls (3-7 years), boys = girls (7-11 years), and girls > boys (15 years). The possible explanations are hormonal influences associated with puberty and suppressing socio economic factors in females.

Important categories and subtypes of primary headache found among migraine cases were - migraine without aura and probable migraine. This observation is in concordance with the results of other hospital based studies from India[15] as well as abroad.[12,16]

Among TTH category of HA - in present study frequent episodic subtype was commonest, similar to the study by Kim B-K, et al,[12] but contrary to the observations of various previous researchers.[15,17] The most plausible explanation for this finding could be that majority of participants in present study were above 10 years of age and the age accounts for more variance than gender in cases of primary headache[18] on severity, duration and frequency. The second explanation could be that TTH may remit or may change to frequent episodic character as found by Ravi Gupta et al[19] in their study among students of 9th to 12th standard, among whom progression in terms of severity and frequency was found in around thirty percent students.

Another important point highlighted in present work was- nausea was commoner than vomiting as is also mentioned by Straube et al,[21] in their recent review article, with increasing age the frequency of vomiting decrease.

The fascinating point about ICHD 3 (Beta version) is that it accommodates almost all headaches and gives a category and subtype to all. In present study also, among recurrent headache cases due to secondary causes (Code 5. to 11. ICHD 3 beta), it was found that 13 subjects were having refractive errors (subtype 11.3.2. of ICHD 3 beta) and 14 participants were having recurrent rhino-sinusitis (subtype 11.5.2). Kim B-K, et al[12] in their study using the new classification found that patients presenting with headache, attributed to chronic rhino-sinusitis were responsible for higher classification rates of Headaches besides some other conditions when comparing the diagnosis rates with use of ICHD II versus with ICHD 3 beta classifications. In a study from Thailand[22] it was found that rhino-sinusitis attributes to headache in around 12% children studying in class 7th. According to Ekiki et al[23] in 54 (23.7%) patients attending their hospital for complaints

of headache allergic rhinitis and asthmatic bronchitis were the most commonly associated diseases.

A recent study from Nepal[24] as well as other Ophthalmological studies on headache have reported the causative association of different ocular diseases like acute glaucoma, uveitis, optic neuritis[25] and visual anomalies like refractive errors and accommodative and vergence deficiencies with headache.[26] The uncorrected refractive errors are often believed to be associated with frontal and/or occipital headache.[27] Eye strain as a direct cause of headache has long been debated.[28,29] Very frequently a careful eye examination and a possible correction of the defect has been observed to reduce headache symptoms.[30]

Positive and significant association has been found with obesity[21] and positive family history of headache[7,19] in agreement with observations of Malik et. al.[30]

The major Strength of the present study was selection of participants of age 7 yrs. and above and reliable face to face interview to know details of headache, so internal validity of the study is good.

Second point would be, higher diagnosis rates of patients with headache on their first visit to medical facility due to the use of latest classification (ICHD 3Beta).

Main limitations of study which we would elaborate are, that the data cannot be used to represent the general population because of sample bias (due to the hospital setting) so poor external validity. International Headache Society very categorical states that the placement of patient in unspecified category should be avoided, unless he is dead or unavailable or can't communicate, yet in present research due to various reasons ranging from inability to get all required diagnostic investigations to rule out the other possibilities, to loss of patient in follow-up before conclusive evidence in the form of headache diary become available, we were forced to place 18 cases in unspecified category.

Scope for future research would be to know various co-existing psychiatric conditions and include psychological evaluation to rule out or replace undiagnosed cases from unspecified group to correct diagnostic category.

Conclusion

Headache which are recurrent, affecting quite significant proportion of population, have proven significant adverse impact on quality of life besides transition to adulthood headache should no longer be allowed to remain a nonspecific symptom. Rather every headache should be assigned a definite category at the very first encounter using ICHD 3 beta classification and should be dealt sternly.

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