

RESEARCH ARTICLE

COMPREHENSIVE ASSESSMENT OF THE RELATIVE FREQUENCY OF SLEEP DISORDERS IN MIGRAINE AND NON MIGRAINE IN 6- TO 14-YEAR-OLD CHILDREN

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Abstract

Objective

Headaches are common during childhood. In addition, sleep disorders are common problems in children, too. Although it is commonly thought that headache and sleep problems are related, there is not enough evidence to confirm this relationship. Finding evident relations between these problems would help practitioners a lot to make earlier diagnosis and plan treatment modalities for both problems as soon as possible. This study aimed to assess the relative frequency of sleep disorders in migraine and non migraine children.

Material & Methods

In a cross sectional study, 148 children were enrolled in migraine (60) and non migraine (88) groups. They were aged 6 to 14 years. Migraine group consisted of patients who had definite migraine according to IHS (International Headache Society) criteria. Ten sleep problems (snoring, nightmares, sleep walking, sleep talking, bedtime struggle, bruxism, sweating during sleep, excessive daytime sleepiness, insomnia in early or mid night and sleep apnea) were compared between 2 groups. Fisher exact and chi square tests were used for making comparisons.

Results

We found relationships between night sleep and daytime headaches. Some of these relationships were easy to explain but for some others, finding complicated explanations are necessary.

Our findings showed that bruxism, sleep walking, early and midnight insomnia was significantly higher in migraine children. There was a common etiology for headache and sleep disorders. Also, parents and migraine children were well familiar with the effect of relaxation on decreasing migraine episodes. They provided appropriate facilities for night sleep for this reason.

Conclusion

we found relationships between night sleep and daytime headaches. Some of these relationships were easy to explain but for some others, finding complicated explanations are necessary.

Keywords: migraine, sleep disorder, headache.

Introduction

Headaches are common during childhood and become increasingly more frequent during adolescence (1). This complaint is the most common reason that brings children to pediatric neurologists and migraine is the most common acute recurrent headache syndrome (1,2). Headaches are divided into primary and secondary

categories. Migraine and tension headaches are primary headaches without underlying pathology. On the other hand, a headache which has an organic underlying disease such as brain tumor, increased intracranial pressure, systemic disease, drug toxicity, ear-nose and throat problems is considered as secondary.(3)

In addition to headache, sleep disorders are common problems in children, too. Although it is commonly thought that headache and sleep problems are related, there is not enough evidence explaining this relationship (4,5). Finding evident relationships between these two problems would help practitioners to make earlier diagnosis and plan treatment modalities for both problems as soon as possible (5).

About 25% of all children experience sleep problems at some point during childhood (6). Children receiving sleep hygiene training have been found to have a lower prevalence of headaches than those without education (5). The incidence of somnambulism may be also increased in children with migraine and has been proposed as a minor diagnostic criterion of migraine (7).

In 2002, Ayatollahi et al evaluated a random sample of 1868 teenaged females (11-18 years old) and reported an overall prevalence rate of 6.1% for migraine in Iran (8). According to Miller et al., the rate of snoring among children with migraine was 23% (9). Torok et al studied snoring in 11- to 15-year-old schoolchildren and it was found that headache was more common in children who snored frequently (10).

In another study, Bruni et al. reported a rate of 2.9% for snoring in children with migraine headache (11). Additionally, children suffering from migraine were found to have a high frequency of somnambulism in an investigation performed by Barabas et al (12). Headache is also associated with excessive daytime sleepiness. Increased sleepiness has been shown to be associated with headache in previous studies performed in children (10,12). Finally, pediatricians may find it beneficial to ask about daytime sleepiness, narcolepsy, and insomnia when treating a headache patient. Furthermore, it is assumed that treating underlying sleep disorders may also treat the headache and improve daily function and quality of life for the child (5).

This study aimed to assess the relative frequency of sleep disorders in migraine and non migraine children.

Material & Methods

Patients

In a cross sectional study, 148 children were enrolled in a 2-year study period from August 2007 to August 2009. They were selected from patients in pediatric neurology clinics affiliated to two main university hospitals in Isfahan, Iran: Alzahra Hospital and Amin Hospital. Sixty children were assigned to migraine group and the rest of them with no evidences for migraine formed the control group (88 patients). All children were aged 6 to 14 years.

All parents signed written informed consent forms which had been approved by the Iranian Ministry of Health before study initiation. Also, this study was carried out according to the guidelines defined by the Committee of Medical Ethics in Isfahan University of Medical Sciences. Eligible subjects in the migraine group were patients who had definite clinical migraine according to IHS (International Headache Society) criteria.

All patients in both groups were enrolled if they had had no other diseases or history of using medications with identified effects or side effects on sleep in the preceding 2 months. (Drugs such as benzodiazepines, barbiturates, anti-depressants or even anti-histamines)

Design

Patients were categorized into two groups. They were examined by a pediatrician (or pediatric neurologist) for the evaluation of IHS criteria and other underlying diseases.

A questionnaire including demographic information, IHS criteria of migraine, and 10 sleep problems (snoring, nightmares, sleep walking, sleep talking, bedtime struggle, bruxism, sweating during sleep, excessive daytime sleepiness, insomnia in early or mid night and sleep apnea) was completed for all children in both groups by the examining pediatrician based on the history taken from the children's parents. In this phase, an informed consent form was also signed by parents.

After all questionnaires were completed, sleep problems were compared between the two groups and demographic data was analyzed.

Statistical analysis

Fisher exact and chi square tests were used for making

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comparisons. Values were presented as mean \pm standard deviation (SD). A p-value less than 0.05 was considered significant. SPSS (ver15) software was used for statistical analysis.

Results

Of a total 148 enrolled patients, 60 children who met IHS criteria were assigned to the migraine group and the remaining 88 were grouped in the non migraine group. Using T-Test, mean age of the children in the 2 groups was compared but there was no significant difference (P value 0.96). Of 60 patients in the migraine group, 31 were female and 29 were male. In the non migraine group, we had 46 female and 42 male children. No significant difference was detected in male/female ratio between

two groups when chi square was applied (P value 0.94) Snoring, nocturnal enuresis, sleep apnea, bedtime struggle, sweating during sleep, nightmares, bruxism, sleep walking, insomnia in early night, insomnia in mid night, sleep talking, and excessive daytime sleepiness were compared between two groups. After analysis, no significant difference was noted in nightmare, sweating during sleep, snoring, enuresis, sleep apnea and bedtime struggle between the groups but day time sleepiness and sleep talking were significantly more in non migraine children than those in the migraine group. Regarding early and mid night insomnia, sleep walking and bruxism, they were significantly more detected in children with migraine compared to non migraine children. The details are shown in Table 1.

Table 1: Comparing sleep problems in migraine and non migraine groups

Sleep problem	Migraine Group Number (percent)	Non Migraine Group Number (percent)	P Value (Test)
Snoring	12 (20%)	12 (13.6%)	0.15 (Chi Square)
Nocturnal enuresis	3 (5%)	7 (8%)	0.21 (Chi Square)
Sleep apnea	0	0	1 (Fisher exact test)
Bedtime struggle	3 (5%)	21 (23%)	0.32 (Chi Square)
Sweating during sleep	0	3 (3.4%)	0.2 (Fisher exact test)
Nightmares	20 (33.3%)	35 (43.1%)	0.21 (Chi Square)
Bruxism	18 (30%)	11 (12.5%)	0.004 (Chi Square)
Bleep walking	4 (6.7%)	1 (1.1%)	0.04 (Chi Square)
Insomnia in early night	13 (21.7%)	9 (10.2%)	0.03 (Chi Square)
Insomnia in mid night	15 (21.7%)	6 (6.8%)	0.04 (Chi Square)
Sleep talking	5 (8.3%)	18 (20.5%)	0.04 (Chi Square)
Excessive daytime sleepiness	0	6 (6.8%)	0.04(Fisher exact test)

Forty-one (68.3%) children in the migraine group and 57 (64.8%) in the non migraine group had experienced at least one type of sleep problem which was not significantly different (P value 0.33).

In migraine patients, 22 children had experienced sleep problems prior to imitation of migraine headaches while in 11 children, migraine and sleep problems began at the same time.

In 4 patients, headaches were followed by sleep problems and in 23 patients, no time relationship between initiation of migraine headaches and sleep problems was detected.

Discussion

Description of the relationship between disrupted or insufficient sleep and childhood migraine was the scope of this article. In this study, it was shown that 57 (64.8%) children in the non migraine group and 41 (68.3%) in the migraine group had experienced various forms of sleep disorder while some studies have reported that only 25% of all children are affected by sleep disorders (6).

Our findings showed that sleep problems in our studied population, either those with migraine or those with no migraine, were much more frequent than other populations. Any investigation regarding sleep in

children must underscore the relationships between sleep problems and mood, performance, and behavior. These items could better clarify the differences.

In a similar study, a total of 3047, 6- to 12-year-old apparently healthy primary schoolchildren were studied in Hong Kong. The prevalence of sleep symptoms was listed as follows: habitual snoring (10.9%), witnessed sleep apnea (1.5%), nocturnal enuresis (5.1%), and sleep teeth grinding (20.5%) which are close to our findings (13).

Regarding the type of sleep problems, day time sleepiness and sleep talking were significantly more in non migraine children than those in the migraine group. It could be explained by more attention of both parents and migraine children to sleep hygiene. Migraine Patients come to understand that appropriate night sleep could decrease daytime headache, so they instantly become educated in using night sleep for daytime headache free.

Also, parents of these children were well familiar with the effect of relaxation on decreasing migraine episodes. They provide their children with appropriate facilities for night sleep for this reason. These findings could explain why daytime sleepiness was less in the migraine group.

However, this finding was in contrast to other studies (4,14). In addition, since early and mid night insomnia were much more frequently seen in migraine patients, it was expected that reverse findings be achieved. However, we suggest more investigations with numerous patients to explain these controversies.

Our findings showed that bruxism, sleep walking, early and midnight insomnia were significantly higher in migraine children. This is a very important issue because it shows the common etiology of headache and sleep disorders which could be beneficial in treating or decreasing sleep disorders and headache episodes.

In conclusion, there are relationships between night sleep and daytime headaches. Some of these relationships are easy to explain but for some others, finding complicated explanations are necessary.

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