

Clinical Characteristics of Patients Presenting to Child Neurology Outpatient Clinic with Headache: A Single Center Experience

Baş Ağrısı ile Çocuk Nöroloji Polikliniğine Başvuran Hastaların Klinik Özellikleri: Tek Merkez Deneyimi

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ABSTRACT

Aim: This study aimed to investigate the clinical and etiological characteristics of children presenting with headache, considering both acute and chronic cases. By distinguishing between primary and secondary headaches, it was aimed to assess the prevalence of underlying pathologies and determine the necessity of further diagnostic evaluations.

Material and Methods: The records of 500 patients aged 3-17 years who visited a tertiary pediatric neurology clinic between January 2023 and January 2024 were retrospectively reviewed. Data included age, gender, pain characteristics, associated symptoms, headache subtypes, neuroimaging findings, and treatments. Headaches were classified according to the International Headache Society criteria.

Results: Among the patients, 64.8% (n=324) were female. Acute headaches were present in 137 (27.4%) patients, while 363 (72.6%) patients had chronic headaches. Secondary causes were identified in 56.2% (n=77) of acute headaches, most commonly sinusitis (36.5%, n=50) and hypertension (12.4%, n=17). Among primary acute headaches, migraine (23.4%, n=32) and tension-type headache (20.4%, n=28) were the leading diagnoses. Overall, in all 500 patients, migraine (28.6%, n=143) was the most common diagnosis, followed by tension-type headache (27.8%, n=139). Refractive errors and hypertension were observed in 4.6% (n=23). Idiopathic intracranial hypertension was also diagnosed in 0.8% (n=4).

Conclusion: Most childhood headaches are primary and manageable with a detailed history and physical examination. However, secondary causes such as sinusitis, hypertension, and nutritional deficiencies should be considered in the differential diagnosis. Neuroimaging and laboratory evaluations are recommended for patients with abnormal findings. Understanding headache etiology can improve diagnosis, management, and quality of life.

Keywords: Headache; migraine; tension-type headache; child; pediatric neurology.

ÖZ

Amaç: Bu çalışmanın amacı, hem akut hem de kronik olguları göz önünde bulundurarak baş ağrısı ile başvuran çocukların klinik ve etiyolojik özelliklerini araştırmaktır. Primer ve sekonder baş ağrıları arasındaki ayrımı yaparak, altta yatan patolojilerin prevalansını değerlendirmek ve ileri tanı yöntemlerinin gerekliliğini belirlemek amaçlanmıştır.

Gereç ve Yöntemler: Ocak 2023 ile Ocak 2024 tarihleri arasında üçüncü basamak bir pediatrik nöroloji kliniğine başvuran 3-17 yaş arası 500 hastanın kayıtları geriye dönük olarak incelendi. Veriler, yaş, cinsiyet, ağrı özellikleri, eşlik eden semptomlar, baş ağrısı alt tipleri, nörogörüntüleme bulguları ve tedavi bilgilerini içermektedir. Baş ağrıları, Uluslararası Baş Ağrısı Derneği kriterlerine göre sınıflandırıldı.

Bulgular: Hastaların %64,8'i (n=324) kadındı. Akut baş ağrısı 137 (%27,4) hastada, kronik baş ağrısı 363 (%72,6) hastada mevcuttu. Akut baş ağrılarının %56,2'sinde (n=77) sekonder nedenler, en sık sinüzit (%36,5, n=50) ve hipertansiyon (%12,4, n=17), belirlendi. Primer akut baş ağrıları arasında migren (%23,4, n=32) ve gerilim tipi baş ağrısı (%20,4, n=28) önde gelen tanılardı. Genel olarak, 500 hastada migren (%28,6, n=143) en sık tanı iken, bunu gerilim tipi baş ağrısı (%27,8, n=139) takip etti. Refraksiyon kusurları ve hipertansiyon %4,6 (n=23) oranında gözlemlendi. Ayrıca %0,8 (n=4) idiyopatik intrakranial hipertansiyon tanısı konuldu.

Sonuç: Çocukluk çağı baş ağrılarının çoğu primer nedenlidir ve ayrıntılı öykü ve fizik muayene ile yönetilebilir. Ancak sinüzit, hipertansiyon ve nutrisyonel eksiklikler gibi sekonder nedenler ayrı ayrı tanıya dikkate alınmalıdır. Anormal bulguların varlığında nörogörüntüleme ve laboratuvar testleri önerilmektedir. Baş ağrısının etiyolojisini anlamak tanı, tedavi ve yaşam kalitesini iyileştirmeye katkı sağlayabilir.

Anahtar kelimeler: Baş ağrısı; migren; gerilim tipi baş ağrısı; çocuk; pediatrik nöroloji.

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INTRODUCTION

Headaches are quite common in childhood and are among the most frequent reasons for visits to pediatric neurology clinics. They can negatively impact children's physical health, school performance, and family relationships, significantly reducing their overall quality of life (1).

According to the International Classification of Headache Disorders, 3rd edition (ICHD-3), headaches are classified into two main categories: primary headaches and secondary headaches (2). Primary headaches occur without an identifiable underlying disease and include migraine, tension-type headache (TTH), trigeminal autonomic cephalalgias (TACs), and other primary headache disorders. Secondary headaches arise due to an underlying medical condition, such as infections, trauma, vascular disorders, or systemic diseases. Common causes of secondary headaches in children include sinusitis, hypertension, refractive errors, nutritional deficiencies, idiopathic intracranial hypertension, and structural abnormalities (2,3).

Although childhood headaches lead to significant concern among families, a child with a normal neurological examination rarely indicates a serious disease. Migraine and TTH are the most common causes of headaches in childhood, followed by sinusitis and epilepsy (1,3,4).

The classification of headaches into acute (<3 months) and chronic (≥ 3 months) is important for determining the likelihood of underlying pathology. Acute headaches are more frequently associated with secondary causes, such as infections and hypertension, while chronic headaches are more likely to be primary (1,5). Therefore, this study aimed to evaluate the clinical and etiological characteristics of pediatric patients presenting with headaches, considering both acute and chronic cases, by distinguishing between primary and secondary headaches, and to assess the necessity of laboratory and imaging investigations in this population.

MATERIALS AND METHODS

Study Design and Ethics

This retrospective observational study included a total of 500 patients who presented with headache complaints at the Pediatric Neurology Outpatient Clinic of Ankara Etlik City Hospital between January 2023 and January 2024. Each patient was included only once in the study, and multiple admissions of the same patient were excluded. Patients were divided into two age groups, ≤ 11 (3-11) years and ≥ 12 (12-17) years, based on previous studies indicating that headache characteristics and prevalence may vary with pubertal status (1). Research suggests that while headaches are equally common among boys and girls in early childhood, the prevalence increases significantly in females after puberty due to hormonal influences. Therefore, age 11 was chosen as a cut-off point to assess potential differences in headache characteristics before and after puberty. Ethical approval was obtained from the Ankara Etlik City Hospital Ethics Committee on 24.01.2024, with decision number 2024-077.

Inclusion Criteria

This study included pediatric patients aged 3 to 17 years who presented with headache complaints to the pediatric neurology outpatient clinic. Patients with complete medical records containing demographic data, headache

characteristics, associated symptoms, and diagnostic findings were included. Headache classification was conducted according to the ICHD-3 (2). In cases where secondary etiologies, such as sinusitis or hypertension, were diagnosed based on clinical findings, the headache was classified as secondary. Patients were categorized according to the most prominent etiology, and dual classification was not applied.

Exclusion Criteria

Patients with incomplete or missing medical records were excluded from the study. Additionally, those with a history of significant neurological disorders such as epilepsy, brain tumors, or neurodegenerative diseases were not included. Patients whose headaches were attributed to trauma or postoperative conditions were also excluded from the analysis.

Statistical Analysis

The collected data were analyzed using the IBM SPSS v.20.0 software package. Normality was assessed using the Shapiro-Wilk test. The chi-squared test was utilized to examine relationships between categorical variables. Results are presented as frequencies and percentages, and a p-value <0.05 was considered statistically significant.

RESULTS

Patient Characteristics

A total of 500 patients aged between 3 and 17, 324 (64.8%) female and 176 (35.2%) male, were included. Headache was more common in female patients ($p < 0.001$).

Of the patients, 202 (40.4%) were in the 3-11 age group, and 298 (59.6%) were in the 12-17 age group. Headaches were statistically more common in the 12-17 age group compared to the 3-11 age group ($p < 0.001$).

The mean age at presentation was 11.98 ± 3.8 years, and there was a difference in gender distribution according to age. In the 3-11 age group, there was no statistically significant difference in headache prevalence between male and female patients ($p = 0.091$). However, headache was significantly more common in females compared to males ($p < 0.001$) in the 12-17 age group (Table 1).

Characteristics of the Pain

The most common pain type was throbbing, reported by 286 (57.2%) patients. This was followed by tightening pain in 113 (22.6%) patients, unspecified pain in 42 (8.4%) patients, stabbing pain in 39 (7.8%) patients, explosive pain in 14 (2.8%) patients, and pressure-like pain in 6 (1.2%) patients. Majority of patients, 191 (38.2%) experienced a headache duration of 1-4 hours, while 133 (26.6%) patients had headaches lasting all day, 129 (25.8%) patients had short-duration headaches lasting only a few minutes, and 47 (9.4%) patients had headaches lasting 4-8 hours. Patients were also asked about symptoms that accompanied their headaches (Table 2).

Classification of Headaches and Secondary Etiologies

The patients were classified according to the ICHD-3 diagnostic criteria (Table 3). The number of patients diagnosed with primary headache was 282 (56.4%), and the number of patients diagnosed with secondary headache was 138 (26.0%). Migraine was the most common final diagnosis, identified in 143 (28.6%) patients, followed by TTH in 139 (27.8%) patients. Among 138 patients diagnosed with secondary headache,

Table 1. Gender distribution of patients by age groups

	3-11 years (n=202)	12-17 years (n=298)	Total (n=500)
Gender, n (%)			
Female	121 (59.9)	203 (68.1)	324 (64.8)
Male	81 (40.1)	95 (31.9)	176 (35.2)
p	0.091	<0.001	

Table 2. Symptoms accompanying a headache

Symptom, n (%)	(n=500)
Photophobia	182 (36.4)
Phonophobia	169 (33.8)
Nausea	154 (30.8)
Vomiting	53 (11.8)
Woken by Pain	92 (18.4)

Table 3. Final diagnosis of the patients according to the International Classification of Headache Disorders, 3rd edition

Diagnosis	(n=500)
Primary Headaches, n (%)	
Migraine	143 (28.6)
Tension-type headache	139 (27.8)
Other primary headache disorders	0 (0.0)
Secondary Headaches, n (%)	
Headache attributed to trauma or injury to the head and/or neck	0 (0.0)
Headache attributed to cranial or cervical vascular disorder	0 (0.0)
Headache attributed to a nonvascular intracranial disorder	10 (2.0)
Headache attributed to a substance or its withdrawal	38 (7.6)
Headache attributed to infection	0 (0.0)
Headache attributed to a disorder of homeostasis	23 (4.6)
Headache or facial pain attributed to a disorder of the cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, or other facial or cervical structure	67 (13.4)
Headache attributed to a psychiatric disorder	0 (0.0)
Neuropathies & Facial Pains and Other Headaches, n (%)	
Unclassified	80 (16.0)

3 (10.0%) patients had both vitamin D and vitamin B12 deficiencies, while 2 (6.7%) patients had both vitamin D deficiency and iron deficiency anemia.

Patient Evaluation

For diagnostic purposes, patients underwent neurological examinations, blood pressure monitoring, ophthalmological evaluations, blood tests, electroencephalography (EEG), and cranial magnetic resonance imaging (MRI).

Neurological examinations were normal in 496 (99.2%) patients, and papilledema was identified in 4 (0.8%) patients. Blood pressure was normal in 399 (79.8%) patients, not monitored in 78 (15.6%) patients, and hypertension was detected in 23 (4.6%) patients. All of the hypertensive patients reported occipital and/or vertex pain and were referred to the pediatric nephrology department. Ophthalmological examination was normal in 286 (57.2%) patients, refractive errors were found in 23 (4.6%) patients, hypertensive changes were found in 6 (1.2%) patients, and papilledema was present in 4 (0.8%) patients. Four patients with papilledema underwent lumbar puncture. Three patients with elevated cerebrospinal fluid (CSF) pressure were diagnosed with PTC and started on acetazolamide treatment. One patient had normal CSF pressure and was

38 (7.6%) had headaches attributed to a substance or its withdrawal (30 diagnosed with nutritional deficiency, and 8 diagnosed with drug abuse headache), 10 (2.0%) had headaches related to intracranial nonvascular diseases (4 patients with Chiari malformation, 3 intracranial lipomas, and 3 patients with PTC), 23 (4.6%) patients had headaches related to homeostasis disorders (all diagnosed with arterial hypertension), and 67 (13.4%) patients had headache related to cranium, neck, eyes, ears, nose, sinuses, teeth, mouth, and other facial and neck structures (55 patients with sinusitis, 12 patients with ocular refractive error). In addition, 80 (16.0%) patients had headaches that could not be classified (Table 3).

Thirty patients had headaches caused by nutritional deficiencies, which improved with treatment. These deficiencies included vitamin D deficiency in 11 (36.7%) patients, vitamin B12 deficiency in 9 (30.0%) patients, and iron deficiency anemia in 5 (16.7%) patients. Additionally,

recommended to continue to follow without treatment due to the infrequency of headaches. EEG was conducted in 61 (12.2%) patients, and focal anomaly was detected in only 1 (0.2%) patient; however, it was not considered consistent with epilepsy, and patients were followed up without any medication.

Cranial MRI was performed on 482 patients, with normal results in 361 (72.2%) patients. In the remaining 121 patients, 41 (8.2%) had sinusitis, 33 (6.6%) had arachnoid cysts, and 47 (9.4%) had nonspecific lesions that could not explain the headache. Neuroimaging was not performed in 18 (3.6%) patients.

When evaluating the treatments of the patients, the majority (n=255, 51.0%) of them were managed without any treatment. Among those who received medication, the treatments were as follows: calcium channel blockers to 59 (11.8%), antibiotics to 44 (8.8%), nutritional support to 39 (7.8%), antihistamines to 26 (5.2%), beta-blockers to 23 (4.6%), and acetazolamide to 3 (0.6%). Follow-up care was recommended for 22 (4.4%) patients in child psychiatry, 17 (3.4%) patients in nephrology, and 3 (0.6%) patients in neurosurgery. For the remaining patients, glasses were provided to 7 (1.4%) patients due to refractive

errors, and surgery was performed on 2 (0.4%) patients. One patient with Chiari malformation underwent surgery by neurosurgery, and another with a sinus retention cyst was operated on by otolaryngology (Table 4).

DISCUSSION

Headache is one of the most common complaints in childhood, and its prevalence increases with age (6-10). Consistent with the literature, the present study found that headaches were more frequently reported among adolescents aged 12-17 years compared to children aged 3-11 years. This difference may be attributed to the fact that older children are better able to articulate their symptoms, increased academic and social stress, as well as lifestyle changes such as irregular sleep patterns and dietary habits. In this study, although no significant difference was observed in headache prevalence between genders in the 3-11 age group, headaches were more commonly reported in female patients in the 12-17 age group, suggesting that headaches become more common in adolescent females. In some studies, the frequency of headaches in males and females is close to each other until the age of seven, but increases in females afterwards (5,11). This could be attributed to the influence of sex hormones becoming more active with age (1,11). Findings of the present study support the hypothesis that hormonal factors may contribute to the gender disparity observed in adolescent headache prevalence.

Primary headaches are the most frequent type in childhood, with migraine being the most common etiology (12,13). In one study, migraine ranked first (57.9%), followed by sinusitis (16.5%) and TTH (12%) (14). The reason why non-specific headache was the third most common type may be due to the rapid access to subspecialty clinics in Turkey. Consequently, children with headaches related to upper respiratory infections or short-term stress, typically managed in general pediatric clinics, may present to pediatric neurology clinics. This situation could partially explain the lower proportion of secondary headaches observed in this study compared to general pediatric settings.

When the patients were classified based on headache duration as acute (<3 months) and chronic (≥3 months). A total of 137 (27.4%) patients had acute-onset headaches, while 363 (72.6%) patients had chronic headaches. Among

patients with acute headaches, 77 (56.2%) had secondary headaches, whereas 60 (43.8%) had primary headaches. When classifying secondary headaches in patients with acute headaches, sinusitis was identified in 50 (36.5%) patients, hypertension in 17 (12.4%) patients, refractive error in 8 (5.8%) patients, and PTC in 2 (1.5%) patients. Among patients with acute headaches diagnosed with primary headache etiology, 32 (23.4%) had migraine, while 28 (20.4%) had TTH. These findings emphasize the importance of differentiating between primary and secondary causes in acute headache presentations to avoid unnecessary investigations and to guide appropriate management.

In the present study, nutritional deficiencies were identified in 30 patients, and headache improvement was observed following appropriate supplementation. However, establishing a direct causal relationship between nutritional deficiencies and headaches remains complex. While deficiencies in vitamin D, vitamin B12, and iron have been reported as potential triggers for headaches, they are not necessarily definitive causes. Many nutritional deficiencies, including vitamin D, vitamin B12, and iron deficiency, have been reported as potential triggers for headaches rather than definitive causes. Iron deficiency anemia is associated with chronic daily headaches, TTH, and migraines, according to previous studies (15-17). Similarly, low vitamin D levels have been correlated with increased migraine frequency and duration in pediatric patients (18,19). Additionally, vitamin deficiencies have been associated with headaches, with B12 deficiency often manifesting as a neurological symptom, including headaches (19,20). In this study, nutritional deficiencies were classified as secondary headache etiologies based on the observed resolution of symptoms following appropriate supplementation. However, this does not establish a direct cause-and-effect relationship, as other coexisting factors may have contributed to symptom relief. Further prospective studies with controlled interventions are necessary to determine the extent to which nutritional deficiencies independently contribute to headache pathophysiology. Given these findings, a holistic assessment of patients with headaches, including screening for possible nutritional deficiencies, remains essential for comprehensive patient management.

Although an ophthalmological examination is not mandatory, it can be beneficial in the diagnosis of refractive errors, especially in patients who have not previously been evaluated by an ophthalmologist. In this study, 319 (63.8%) patients underwent ophthalmological examination, of whom 286 (89.6%) had normal findings, and 23 (4.6%) had refractive errors. Headache complaints were resolved after the use of corrective glasses in 6 patients. There are conflicting reports regarding the role of refractive errors in the literature. In one study, headaches improved in 76.4% of patients regardless of whether they had a refractive correction between two follow-up visits, but no statistically significant difference was found between the two groups with and without correction (20). Another study identified headache associated with refractive error (HARE) as the most common type, with a rate of 64%, and found myopia in most patients, similar to two other studies (21,22). Although childhood headaches do not generally seem to be caused by eye diseases, it may

Table 4. Treatment types of patients

Treatment Type, n (%)	(n=500)
No treatment	255 (51.0)
Calcium channel blockers	59 (11.8)
Antibiotics	44 (8.8)
Nutritional support	39 (7.8)
Antihistamines	26 (5.2)
Beta-blockers	23 (4.6)
Child psychiatry follow-up	22 (4.4)
Nephrology follow-up	17 (3.4)
Glasses for refractive errors	7 (1.4)
Acetazolamide treatment	3 (0.6)
Neurosurgery follow-up	3 (0.6)
Surgery	2 (0.4)

be more beneficial to perform an ophthalmological examination to detect potential refractive errors before diagnosing a primary headache.

In this study, hypertension was identified as the etiology of headache in 23 (4.6%) patients, and in 6 (1.2%) of these patients, the ophthalmological examination also revealed hypertensive changes. It is estimated that between 1% and 4% of children have high blood pressure, with adolescents having a higher prevalence rate than younger children. Elevated blood pressure, however, is more widespread, impacting 10% to 20% of children and adolescents (23). Headaches related to hypertension are typically pulsatile and occur on both sides of the head, subsiding once blood pressure is brought under control (24). In light of the findings, routine blood pressure measurement should be an integral part of headache evaluation in children.

The ophthalmological examination also revealed papillary edema in 4 (0.8%) of patients. PTC is characterized by elevated intracranial pressure (ICP) in the absence of brain tissue abnormalities, hydrocephalus, or infections, with normal CSF composition and no identifiable secondary causes (25). Papilledema, due to elevated ICP, is the primary ophthalmologic sign of PTCs in both children and adults. However, it has been reported that PTCs can rarely occur without papilledema (26). In the present study, elevated CSF pressure was observed in all but one of these patients, leading to the initiation of acetazolamide treatment. All 4 patients experienced headaches that were particularly severe in the mornings, and none showed any cranial MRI findings indicative of PTCs.

The relationship between epilepsy and headaches, particularly migraines, is complex and has been studied for many years. While many publications mention that epilepsy and migraines are comorbid conditions, a recent large cohort study involving 65,407 individuals reported that migraines occurred at similar rates in patients with and without epilepsy. In the present study, the focal anomaly was detected in only one of the patients who underwent EEG; however, it was not considered consistent with epilepsy, and follow-up was planned without initiating medication. Therefore, an EEG may be considered if there are signs suggestive of seizures that could produce symptoms similar to those associated with headaches, but a routine EEG is not recommended in headache evaluation in the absence of such findings.

In this study, cranial MRI was performed on 96.4% of patients, with normal results observed in 72.2%. Only 3.6% of patients did not undergo neuroimaging. This MRI utilization rate is notably higher than those reported in some international studies. Several factors contribute to the frequent use of MRI in pediatric headache evaluation in Turkey. Firstly, tertiary healthcare centers in Turkey offer relatively easy access to advanced imaging modalities, leading to a lower threshold for ordering MRI scans. Additionally, parental anxiety plays a significant role, as families often request neuroimaging to rule out serious underlying conditions, even when clinical findings do not indicate a necessity. Moreover, clinicians may opt for MRI scans preemptively to exclude secondary causes of headaches and to address medicolegal concerns.

The decision to perform cranial imaging in pediatric headache cases remains a critical consideration. While addressing parental concerns is important, unnecessary

imaging can lead to increased healthcare costs and incidental findings that may prompt further unwarranted investigations, adding psychological and financial burdens to families. According to guidelines from the American Academy of Pediatrics, neuroimaging should be reserved for cases with abnormal neurological features, systemic symptoms, sudden changes in headache patterns, or chronic daily headaches. Similarly, the American Academy of Neurology recommends imaging only in patients with abnormal neurological examinations or red flag symptoms suggestive of secondary pathology (27,28).

Given these international recommendations, we emphasize that MRI should be utilized selectively based on clinical judgment rather than as a routine diagnostic tool. The high MRI rates observed in this study highlight the need for further research to evaluate the appropriateness of imaging indications in pediatric headache cases. Future studies focusing on optimizing MRI use in clinical practice may help refine decision-making and improve healthcare efficiency while minimizing unnecessary investigations.

Headache treatment can be categorized into four main headings. The first is lifestyle modifications, which include regulating sleep and nutrition, increasing physical activity, and reducing stress levels. The second category is acute attack management, encompassing treatments such as nonsteroidal anti-inflammatory drugs (NSAIDs), 5-HT₁ agonists, and triptans. The third category involves prophylactic treatment, recommended for patients experiencing four or more episodes per month. Prophylaxis options include supplements, tricyclic antidepressants, antiseizure medications, and antihypertensive drugs. The fourth and final category is complementary therapies, such as cognitive-behavioral therapy, biofeedback therapy, yoga, relaxation techniques, acupuncture, and hypnosis (1,5). In this study, the majority of patients were managed without treatment. While some of these patients experienced nonspecific short-term headaches, others were diagnosed with migraine or TTH but were not treated if they reported fewer than four headaches per month. Among patients diagnosed with migraine, calcium channel blockers and beta-blockers were the most commonly preferred treatment options.

This study has several limitations that should be acknowledged. First, its retrospective design inherently limits the completeness and accuracy of the collected data, as information was reliant on medical records rather than standardized prospective data collection. Certain headache characteristics, such as autonomic symptoms, exacerbating factors (e.g., stress, hunger, or sunlight exposure), and detailed descriptions of aura, may not have been consistently documented. Additionally, while nutritional deficiencies were identified in some patients, the lack of a control group and the observational nature of the study prevent definitive conclusions regarding their causal role in headache development. Furthermore, the study was conducted in a tertiary pediatric neurology clinic, which may have led to a referral bias, potentially affecting the generalizability of the findings to the broader pediatric population. Future prospective studies with standardized data collection and controlled interventions are needed to further validate these findings and better understand the complex interplay between headache characteristics, etiologies, and contributing factors in pediatric patients.

CONCLUSION

A thorough history, together with physical and neurological examinations, is usually sufficient to identify the cause of childhood headaches. Appropriate assessment and investigations should be carried out in patients with abnormal findings on history or examination. Eliminating triggering factors can often be challenging, but it remains a highly effective approach. It is important to remember that although most childhood headaches are primary, they are an important and common health problem that can have a major impact on quality of life. When necessary, treatment strategies should be tailored to the patient, ranging from lifestyle modifications and acute attack management to prophylactic and complementary therapies. Early and appropriate intervention can significantly reduce the frequency and severity of headaches, improving both the child's overall well-being and daily functioning.

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