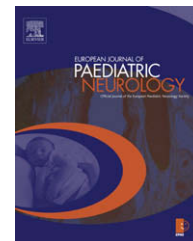




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Original article

Temperament traits of children with episodic tension-type headaches

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ABSTRACT

Background: The association between headache and stress is discussed. A powerful source of stress and the ways of relation between stress and headache can differ. The individual vulnerability to stress may be related to one's temperament.

Objective: The purpose of the present study was to evaluate the role of temperament traits in children with episodic tension-type headaches (ETTH).

Methods: We examined 120 children, 6–16 years of age, in the Department of Developmental Neurology of the Medical University of Gdansk. All children were diagnosed with ETTH. The control group consisted of 60 age-matched children without headaches. The following instruments of assessment were used: survey-interview, EAS Temperament Survey (Buss and Plomin), and Stress Response Scale (Chandler). The results were evaluated using statistical analysis.

Results: Our results showed differences in temperament traits in children with ETTH compared to children without headaches. The former demonstrated greater temperament instability, i.e., higher emotionality, an intensified level of fear, a lower level of vigour, and a higher level of shyness compared to the control group.

Conclusion: Children with ETTH have some different traits than children without headache.

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1. Introduction

Tension-type headaches (TTH) are the most common type of primary headache. There are reports indicating a varied frequency of occurrence of TTH in diverse countries.^{1–3} Population research has revealed that the occurrence of TTH in children is 17–69%.^{4–6} This variation is due largely to differences in frequency, duration, and severity of headache episodes. The classification for TTH, developed in 1988 by the International Headache Society (IHS),⁷ and revised in 2004,⁸ further classified TTH into an episodic form (ETTH) and

a chronic form (CTTH) based on headache frequency and the presence or absence of a coexisting disorder involving the pericranial muscles.

According to the IHS (International Headache Society) classification, the occurrence of TTH, especially in its prolonged form, is related to psychological factors.⁸ It has been suggested that episodic pain is the response to stress, fear, emotional conflict, and fatigue, whereas the chronic form of the disease results from persistent fear or depression.⁹

The association between headache and stress is discussed.^{10,11} It has been suggested that headache must take

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into account the interactions of social and psychological factors, completed with biological aspects.¹² The ways of relation between stress and headache can differ. Stress can be a predisposing factor to headache onset in person with preexisting vulnerability,¹³ can exacerbate the progression of the headache¹⁴ and can precipitate individual headache episodes.¹⁵ A powerful source of stress can be different. In children with headaches, over-sensitive reactions to everyday life events and daily hassles have been shown.¹⁶ It is important to clarify that this individual vulnerability may be related to one's temperament. Temperament is defined as individual differences in emotional and behavioural style; temperament manifests early in life and remains constant throughout life.¹⁷ The characteristics of temperament may influence the response to stress through a modification of psychological and biological states.¹⁸ Such states are considered to be influenced by the activity of serotonin and some theories suggest that disturbances in serotonin transmission system.^{19,20}

The clinical significance of temperament as a factor significantly modifying the perception and reaction to stimuli, as well as emotions in children with TTH, has not been thoroughly investigated or elucidated. Mazzone et al.²¹ have compared the characteristics of temperament children with TTH, migraine and healthy. If the association of temperament with TTH can be evaluated and defined, such findings may be helpful in the prevention of headaches or in treatment planning.

2. Materials and methods

2.1. Subjects

One hundred twenty children and adolescents, 6–16 years of age (mean, 11.7 ± 2.8 years), were included in this study. All study subjects were hospitalized in the Department of Developmental Neurology of the Medical University of Gdansk between 2000 and 2006 due to headaches; they were diagnosed with ETTH according to the IHS 1988 classification⁷ and second version.⁸ Other somatic diseases were excluded. Neurologic and neuroimaging (i.e., CT or MR) studies and EEGs were without aberration. The characteristics of the headaches and the subjects are in Table 1.

The control group consisted of 60 healthy children, 6–16 years of age (mean, 11.4 ± 3.6 years); gender ratio (F/M) – 30:30, who had never had a headache. They were recruited from the clinic during routine pediatric check-ups. The healthy children were chosen according to the age and gender of the children with headaches.

2.2. Questionnaires and interviews

We used structured interview to assess the features of episodes of headaches in the ETTH group. Both groups were investigated using the Emotionality–Activity–Sociability–Shyness (EAS) Temperament Survey.²² The EAS Temperament Survey assesses the temperament, which is assumed to be a complex of hereditary components of personality that appear in early life.²³ The EAS Temperament Survey consists of the following four scales: activity (A), emotionality (E), sociability (S) and shyness (Sh). Activity represents a person's

Table 1 – Subject demographics and clinical characteristics.

Episodic tension-type headache, n = 120	
Gender ratio (F/M)	60:60
Mean age (range)	11.7 (6–16)
Mean number of headache episodes per week	2
Mean duration (h) of headache attacks (range)	4 (1–10)
Most frequent pain intensity	Middle/moderate
Most frequent localization headache	Bilateral-forehead
Most frequently the time of the day headache attacks	Afternoon
Accompanying symptoms (percent)	35
Take medications (percent)	45
Response to pharmacotherapy (complete pain reduction) (percent)	20
Mean age of headache onset	10.5
Headache family history (percent)	45

general level of energy output. Emotionality refers to the intensity of emotional reactions, and consists of the following three components: distress (D), fear (F), and anger (An). Sociability relates to a person's tendency to affiliate and interact with others. Shyness refers to inhibited and tense behaviour with strangers and a tendency to escape from social interactions with them. Parental ratings in children under 13 years and the self-assessment for adolescents were used for temperament assessment. Mothers and adolescents rated each statement on a 5-point Likert-type scale, ranging from 0 (i.e., not typical of the child) to 5 (i.e., very characteristic of the child). The coefficient alphas, a measure of internal consistency, were as follows: E = 0.66, A = 0.74, S = 0.81, and Sh = 0.75, using the normative Polish children's population.²⁴

The reaction to stressful situations was evaluated according to the Stress Response Scale (SRS).^{25,26} The Polish adaptation of the SRS consists of 59 statements, describing various paradigms of behaviour in a stressful situation, e.g., withdrawal, inhibition, hyperactivation, and somatic reactivity.²⁷ The items are rated by frequency of occurrence on a 6-point scale, ranging from 0 to 5. Increased or extreme results indicate a low resistance to stress. The coefficient alphas were 0.9 for the total score using the normative Polish children's population.

2.3. Statistical analysis

The mean value or median and standard deviation were used for describing quantitative variables. For comparison of arithmetical means of quantitative variables of data which was not normally distributed, a non-parametric U Mann–Whitney test for two independent samples was performed; for normal distributions, an independent samples Student's t-test was used. The assessment of the relationship between measurable parameters of headaches that followed a normal distribution was determined with Pearson's correlation coefficient (r). Differences amongst more than two groups were tested with a one-way ANOVA. Values at $p \leq 0.05$ were considered

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