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Original article

Primary headaches in pediatric patients with chronic rheumatic disease

Derya Uluduz [a,*], Mustafa Emir Tavsanli [a], Uğur Uygunoğlu [a], Sabahattin Saip [a], Ozgur Kasapcopur [b], Aynur Ozge [c], Gulhan Orekici Temel [d]

[a] *Istanbul University, Cerrahpasa Medical Faculty, Neurology Department, Istanbul, Turkey*
[b] *Istanbul University, Cerrahpasa Medical Faculty, Pediatrics Department, Istanbul, Turkey*
[c] *Mersin University School of Medicine, Neurology Department, Mersin, Turkey*
[d] *Mersin University School of Medicine, Biostatistics Department, Mersin, Turkey*

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Abstract

Objectives: To assess the presence, prevalence and clinical characteristics of primary headaches in pediatric patients with chronic rheumatic diseases such as juvenile idiopathic arthritis (JIA) and familial Mediterranean fever (FMF), and to analyze the common pathophysiological mechanisms. *Study design:* In this noncontrolled, cross-sectional study, a semi-structured 53 item headache questionnaire was administered to subjects with FMF and JIA, and interviewed a total sample size of 601 patients younger than16 years of age. The questionnaires were then analyzed according to the International Headache Society's diagnostic criteria. *Results:* Children with FMF ($n = 378$) and JIA ($n = 223$) were studied. Each group was then divided into two subgroups according to whether the subjects reported headache or not. 29.5% of subjects with FMF reported having migraine, 37.6% probable migraine and 32.9% tension type headache (TTH). In JIA group 28.2% were diagnosed with migraine; 41.2% with probable migraine and 30.6% with TTH. No significant difference was found between all subjects with ($n = 258$) and without ($n = 343$) headache for variables such as living in a crowded family ($p = 0.95$), being the first child in the family ($p = 0.63$), academic achievement of the child ($p = 0.63$), high education level (higher than high school) of the mother ($p = 0.52$) and father ($p = 0.46$). The presence of systemic disease was reported not to be effecting the daily life at the time of evaluation by 90.2% of the children with headache and 91.0% of the children without headache ($p = 0.94$). 81.4% of the children reported their headaches were not aggravating with the exacerbation periods of their systemic disease. Family history of hypertension was reported higher by the subjects with headache (13.5% with headache and 4.0% without headache $p = 0.001$). Diabetes mellitus was also reported higher (5.8% with headache; 0.5% without headache; $p = 0.006$). Family history of headache was reported in 28.2% of the patients with headache whereas it was 17.4% of the patients without headache ($p < 0.001$). Family history of headache was reported in 28.2% of the FMF subjects with headache whereas it was 17.4% of the patients without headache ($p < 0.001$). For JIA patients a positive family history for headache was obtained in 25.9% of children with headache notably in migraineurs (81.8%). *Conclusion:* Patients with JIA and FMF should be asked specifically about accompanying primary headaches particularly migraine headaches as they may be additional disabilities for these patients.

Keywords: Primary headache disorders; Systemic lupus erythematosus; Rheumatoid arthritis; Demography

1. Introduction

Headache is commonly reported during childhood and becomes increasing more frequent during the

* Corresponding author. Address: Istanbul University, Cerrahpasa School of Medicine, Neurology Department, Istanbul 34340, Turkey. Tel.: +90 2124143000; fax: +90 2125470415.
E-mail address: deryaulu@yahoo.com (D. Uluduz).

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teenage years, particularly in adolescent females. Tension type headache (TTH) is the most common primary headache disorder in childhood (50.9%) followed by migraine [1]. The frequent or recurring patterns of migraine headaches occurred from 3% in the preschool years, to 4–11% by the elementary school years, and then up to 8–23% during the high school years [2–10].

Headaches might give a clue for silent neurological involvement in chronic rheumatological disorders such as systemic lupus erythematosus (SLE), Behçet's disease (BD), rheumatoid arthritis and familial Mediterranean fever (FMF), but there is no extensive and accurate data indicating the correlation between primary headaches in those patients [11–13]. Also a meta analysis did not reveal an association between SLE and migraine [14]. Juvenile idiopathic arthritis (JIA) is the most common chronic rheumatic illness in children and is a significant cause of both short- and long-term disabilities. Neurological involvement is a rare condition in patients with JIA, but primary headaches particularly tension type headache, might be encountered depending on depression and anxiety in terms of the severity of such a debilitating chronic diseases. Pediatric periodic syndromes usually indicate migraine-related condition including cyclic vomiting, benign vertigo and abdominal migraine. FMF is an inherited childhood periodic fever syndrome with recurrent painful attacks affecting the abdomen, chest or joints [15]. These two entities might have a common pathophysiological mechanism as they are mostly expressed with the same triggering factors and sharing a periodicity and painful attacks. Although the hallmark symptom of FMF is abdominal pain; primary headaches might accompany as well [15,16].

Since now the presence and prevalence of primary headaches in children with chronic rheumatologic diseases have not been emphasized. The aim of this prospective, clinical based multidisciplinary designed study was to determine the prevalence and clinical characteristics of primary headaches in JIA and FMF.

2. Methods

2.1. Selection of the cases

Patients with JIA and FMF ages younger than 16 (mean age 11.95 ± 2.6 years, ranged 6–16 years) referred from a tertiary clinic of Pediatric Rheumatology Research Center were included in this study. The definite diagnoses of JIA and FMF were made under the supervision of the same pediatric rheumatology expert (OK) according to the clinical characteristics and laboratory findings of the patients and depending on the definition criteria [16]. Patients were recruited during a routine clinic visit. Informed consent was obtained from the parents according to the procedures of the institutional review board.

2.2. Evaluation of the cases and diagnosis of headache

The patients with a diagnosis of FMF or JIA more than 1 year and who were in remission period were randomly directed to neurology clinic by the pediatric rheumatologist during their control visits. Data were collected from one parent, who was accompanying to the child, during the evaluation session after obtaining a written informed consent. Information of sociodemographics, presence and characteristics of the headache, medical history of the family were included in a semi-structured 53 item questionnaire performed by a neurologist (MET). The first part of the questionnaire was asked to all patients and aimed to determine the socio-demographic variable influencing headache. The second part was answered by the patients who had headache at least for 6 months in which the frequency and duration, intensity, localization, quality of pain, associated symptoms, aggravating factors, medical and headache history of the family has been recruited. Although the questions about the characteristics of the headache led us to make a diagnosis according to The International Classification of Headache Disorders-II (ICHD-II), the final diagnosis was made by another neurologist during a face-to-face interview (DU) [17]. Neurological examinations were performed by neurologists under the supervision of specialized neurologist of the Headache Center (SS). Patients with abnormal neurological examination and a neurological disorder were excluded.

The children were asked to mark out the location of their pain on the head figures, shown in the questionnaire. We only selected patients with TTH and migraine diagnosis, suffering headaches at least for 6 months and have attack frequencies of at least once a month. The terms 'migraine' and 'probable migraine' were used. This decision was based on headache description fulfilling ICHD-II migraine criteria A–D in a context outside disease flares and not attributed to another disorder. Participants meeting all but one of the diagnostic criteria for migraine headache classified as 'probable migraine'.

2.3. Statistical analysis

SPSS software 11.5 (Chicago, IL, USA) and MedCalc®v11.0.1 were used for statistical analysis. Distribution of the variables was evaluated using Shapiro Wilks test. Results were reported as mean ± SD when normally distributed. For that the variables not having normal distribution, median and quartiles (25% and 75%) or '%' values were given. Unpaired *t*-test was used for continuous data when normally distributed. Categorical and parametric data were compared with appropriate methods (Mann Whitney *U* test or *z* test). p-value < 0.05 was considered to be statistically significant.