

## QUESTIONING AGGRAVATION OF THE HEADACHE DURING MIGRAINE ATTACKS

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*Abstract:* While questioning patients about “aggravation of the headache by routine physical activity”, sensitivity of “walking stairs” and “lifting a heavy object” versus “head movements” and “bending down” in terms of aggravating the headache was aimed to be determined. Eighty-one migraine patients were questioned about the aggravation of their headaches with two sets of question groups. (The first set: “walking stairs” and “lifting a heavy object”; The second set: “rotating the head side to side” and “bending down”). 38 and 72 patients gave clear answers to the first and second set of questions respectively. Clear information was obtained from the first and second group of questions by 38 and 72 patients respectively. Some patients with severe migraine headaches may prevent themselves from rigorous daily activities while they could bend or make sudden head movements inadvertently during the attack. We think that aggravation of the headache due to head movements or bending down during migraine attacks seems more sensitive than walking stairs or lifting a heavy object to migraine patients.

*Key words:* migraine; aggravation; central sensitization; physical activity; head movements; bending down

### INTRODUCTION

Migraine headache is often made worse by activities requiring physical effort such as ascending stairs, moving around rapidly or lifting [1] and some conditions other than requiring physical effort such as coughing, holding one's breath, bending over or rotating the head side to side [2]. “Aggravation of headache by physical activity” was included in International Headache Society's (IHS) “migraine without aura” criteria [3], as one of the four sub-criterion of “C” (Table 1). IHS questions this criterion by “walking stairs” or a similar routine physical activity [3].

Our observation is that when questioning aggravation of headache by “walking stairs” or similar routine activities such as lifting which depends on physical effort such as “lifting” generally do not transmit information about whether or not this sub-criterion is met. We noticed that although some patients gave unclear or negative answers to aggravation of the headache during “walking stairs” or “lifting”, they

spontaneously reported that their headaches were aggravated by effortless simple movements such as “rotating the head side to side” or “bending down”.

Our aim was to determine the sensitivity of “activities requiring physical effort” such as “walking stairs” and “lifting” in contrast to simple head and body movements such as “rotating the head” and “bending down” in questioning headache aggravation.

### MATERIAL AND METHOD

Consequent 103 patients who consulted our outpatient headache clinic and were diagnosed as migraine according to IHS criteria [3] were candidates for the study. The only inclusion criterion was “pulsating quality” of pain for the patients “migraine with aura”. As we wanted to study on “aggravation with physical activity” sub-criterion in migraine patients; we considered “migraine without aura” diagnosis independent of this criterion. So, in addition to “pulsating quality”, we required that “migraine without aura” patients meet one more “C” sub-criterion such as “unilateral location” or “moderate/severe intensity” to ensure that patients met “C” of “migraine without aura” criteria (Table 1). After these exclusion criteria were met, 77 patients with “migraine without aura” and 4 patients with “migraine with aura” were included in the study.

In order to evaluate the sensitivity of “activities requiring physical effort” in contrast to effortless “simple head/body movements” in questioning aggravation of the headache; two different sets of questions were composed. The first set questioned aggravation of the headache with “activities requiring physical effort” such as “walking stairs” and “lifting a heavy object”. The second set questioned aggravation of the headache with effortless “simple head/body movements” such as “rotating the head side to side” and “bending down” (please see appendix). Aggravation of the headache with one of these conditions in each question set was accepted as the question set's being “sensitive”.

In statistical analyses, while age was accepted as numerical variable; gender, replies to the two sets of questions was accepted as categorical variables. Categorical variables were expressed as frequencies and percentages. Answers given by the patients to the first and the second set of questions were compared with McNemar chi-square test. Significance level was

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determined as 0.05. Statistical analyses were carried out with SPSS version 11.5.

## RESULTS

Seventy-two patients were females and nine patients were males. Mean age was  $37.16 \pm 11.46$  (range=16-64 years). The first set of questions (walking stairs and lifting a heavy object) were answered by 38 patients (46.9%) as "aggravates my headache", by 9 patients (11.2%) as "does not aggravate my headache" and 34 patients (41.9%) as "I do not know" (Table 1). Second set of questions (head turning side to side and bending down) answered by 72 (88.9%) patients as "aggravates my headache", by 3 patients (3.7%) as "does not aggravate my headache" and by 6 patients (7.4%) as "I do not know" (Table2).

Of the 72 patients who answered the second set of questions as "aggravates my headache"; 36 answered the first set of questions as "aggravates my headache", 28 as "I do not know" and 8 as "does not aggravate my headache" (Table 3). There was no patient answering the second set of questions as "does not aggravate my headache" while answering the first set of questions "aggravates my headache". There were 2 patients who answered the first set of questions as "aggravates my headache" while answering the second set of questions as "I do not know" (Table 3). These differences in distribution of the an-

Table 1. "Migraine without aura" diagnostic criteria.

### 1.1 Migraine without aura

#### Diagnostic criteria:

- A. At least 5 attacks fulfilling B-D
- B. Headache attacks lasting 4-72 hours (untreated or unsuccessfully treated)
- C. Headache has at least two of the following characteristics:
  1. Unilateral location
  2. Pulsating quality
  3. Moderate or severe intensity (inhibits or prohibits daily activities)
  4. Aggravation by walking stairs or similar routine activity
- D. During headache at least one of the following:
  1. Nausea and/or vomiting
  2. Photophobia and phonophobia
- E. At least one of the following:
  1. History, physical-and neurological examinations do not suggest one of the disorders listed in groups 5-11
  2. History and/or physical and/or neurological examinations do suggest such disorder, but it is ruled out by appropriate investigations
  3. Such disorder is present, but migraine attacks do not occur for the first time in close temporal relation to the disorder

Table 2. Percentage of the patients' answers to the two sets of questions.

Questioning Aggravation of the Headache		"Aggravates my headache"	"Does not aggravate my headache"	"I do not know"	Total
<b>Activities Requiring Physical Effort</b>	Walking Stairs/ Lifting a Heavy Object	38 (46.9%)	9 (11.2%)	34 (41.9%)	81 (100%)
<b>Simple Movements</b>	Rotating the head/ Bending Down	72 (88.9%)	3 (3.7%)	6 (7.4%)	81 (100%)

Table 3. Comparison of answers of the two sets of questions.

		Rotating the Head / Bending Down		
		"Aggravates my headache" (n = 72)	"Does not aggravate my headache" (n = 3)	"I do not know" (n = 6)
<b>Walking Stairs/ Lifting a Heavy Object</b>	"Aggravates my headache" (n = 38)	36	0	2
	"Does not aggravate my headache" (n = 9)	8	1	0
	"I do not know" (n = 34)	28	2	4

swers given to the two sets of questions were statistically significant (McNemar chi-square;  $p < 0.001$ ).

## DISCUSSION

The results of the present study indicate the following: (i) the first set of questions yielded 47% positive answers while the second set of questions yielded 89% positive answers; (ii) the answer "I do not know" was obtained from the first set of questions 42% while this ratio was 7% in the second set of questions. Positive answers that were obtained from the second set of questions were nearly two-fold of the first set of questions and, unclear answers were nearly six-fold in the first set of questions when compared to the second set of questions.

In questionnaire studies, relatively high proportions of missing values were observed about "aggravation of headache with physical activity". Proportions of missing values about "aggravation of headache with physical activity" was 10% in headache diaries in Russel et al.'s study [4] and they explained that most patients remained still during the migraine attacks. A similar explanation was given in Hammalinen et al.'s study with children [5]. The fact that most of the children were bedridden during their headache attacks could be interpreted as avoidance of "aggravation by routine physical activity". Some of these children said, however, that they lay down in order to relieve their headache more quickly, and thought that normal physical activity itself did not actually aggravate headache intensity.

Studies which were conducted with semi-structured interviews, yielded high positive responses to aggravation of the headache with physical activity in patient populations up to 96% [6, 7, 8]. The flexibility of the clinical interview improves validity of the information [9]. During questioning "aggravation of headache with physical activity" needs to be clarified and should be explained to the patients exactly what the interviewer needs to know. The interviewer should ask follow-up questions to ensure that accurate information is obtained.

During the migraine attacks, even normal pulsation of arterial pressure that causes small brain movements that press the dura against the bone could be sufficient to activate meningeal C-fiber nociceptors if they are sensitized [2]. Because of that, minor head movements may also make migraine headaches worse. For example, even if the jostling is as minute as riding in a car, migraine may be aggravated [10].

Some patients with severe migraine headaches may prevent themselves from rigorous daily activities and this behaviour may cause false negative answers or may cause missing values when they are being questioned about aggravating factors. However, they could bend or make sudden head movements inadvertently during the attack.

We think that questioning the aggravation of the headache due to head movements or bending down during migraine attacks seems to be more sensitive than the questioning aggravation of the headache with rigorous physical activities such as walking stairs or lifting. When interviewer cannot obtain clear in-

formation while questioning aggravation of the headache with activities requiring physical effort; questioning some simple head and body movements such as "rotating the head" and "bending down" may provide beneficial information.

*Appendix:* Questioning headache aggravation with two sets of questions:

First set of questions:

1. Does your headache aggravate while walking stairs?
2. Does your headache aggravate while lifting a heavy object?

Second set of questions:

1. Does your headache aggravate while rotating your head side to side?
2. Does your headache aggravate while you are bending down?

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