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KINESIOPHOBIA (FEAR OF MOVEMENT) LEVEL AMONG PATIENTS WITH DIAGNOSIS OF CERVICOGENIC HEADACHE

Poziom kinezjofobii (strach przed ruchem) u pacjentów ze zdiagnozowanym szyjnopochodnym bólem głowy

Janusz Kocjan

Medical University of Silesia, School of Medicine, Katowice, Poland

Summary

Introduction: Cervicogenic headache (CGH) is a syndrome characterized by chronic hemicranial pain that is referred to the head from either bony structures or soft tissues of the neck. Several previous studies reported limitation of physical activity among subjects suffer from headaches symptoms. However, still is little known about kinesiophobia phenomenon among patients with CGH symtoms.

Purpose: The main purpose of the present study was to assess kinesiophobia level in this group of patients.

Material and methods: A total of 47 CGH patients were examined. The control group consisted of 224 healthy subjects. Following questionnaires were used: Kinesiophobia Causes Scale (KCS), Visual Analogue Scale (VAS), Laitinen Pain Scale (LPS).

Results: The mean values in KCS scale for each of study groups were as follows: DB [biological domain] = 36,3 ± 16,8 vs 24,7 ± 13,5; PD [psychological domain] = 52,6 ± 17,4 vs 24,7 ± 13,5; overall [KCS] = 44,5 ± 16,1 vs 32,3 ± 12,2. Significant correlation of headache severity with overall kinesiophobia index and kinesiophobia domains were noted.

Conclusions: Overall kinesiophobia level is not higher in CGH group compared to control group. However the kinesiophobia level is strongly associated with headache severity.

Key words: kinesiophobia, fear of movement, cervicogenic headaches

BACKGROUND

Cervicogenic headache (CGH) has been characterized by pain that starts in the neck or occipital area and can move to other areas of the head [1-3]. In 2004, the International Headache Society (IHS) recognized the term cervicogenic headache in the classification of headache disorders and suggested new diagnostic criteria [4]. According to latest, newest 3rd *edition* of IHS [5], the CGH diagnosis including following criteria:

A. Any headache fulfilling criterion C

B. Clinical, laboratory and/or imaging evidence of a disorder or lesion within the cervical spine or soft tissues of the neck, known to be able to cause headache

C. Evidence of causation demonstrated by at least two of the following:

1. headache has developed in temporal relation to the onset of the cervical disorder or appearance of the lesion

2. headache has significantly improved or resolved in parallel with improvement in or resolution of the cervical disorder or lesion

3. cervical range of motion is reduced and headache is made significantly worse by provocative manœuvres

4. headache is abolished following diagnostic blockade of a cervical structure or its nerve supply

D. Not better accounted for by another ICHD-3 diagnosis [5].

Several previous studies reported limitation of physical activity among subjects suffer from headaches symptoms [6-8]. In the cross-sectional analyses, low physical activity was associated with higher prevalence of migraine and non-migraine headache. In both headache groups, there was a strong linear trend of higher prevalence of 'low physical activity' with increasing headache frequency. The result of the study indicate that physical inactivity among headache-free individuals is a risk factor for non-migraine headache and that individuals with headache are less physically active than those without headache [6]. Another study demonstrated that primary headache (mixed headache) was associated low physical activity followed by medium physical activity. Low physical activity was significantly associated with pure Tension Type Headache (TTH) and coexistent headache in the adjusted analysis. Association of pure migraine with low and medium physical activity, and coexistent headache and pure TTH with medium physical activity did not reach statistical significance. Low activity level is highest in chronic headach compared to episodic headache. Conclusions Lower level of leisure-related physical activity is associated with primary headaches. Furthermore, the association is strongest for coexistent headache followed by pure TTH and pure migraine [7]. Robberstad noted that adolescents with Migraine Headache (MI) and TTH are less physical active, compared to those without recurrent headaches. Among junior high school students (13-15 years), there was no significant association between headache and physical activity.

Among high school students (16-18 years) however, 46 % of those without recurrent headache were physically active > 4 hours/week, compared to 29,6 % and 35,8% for those with MI and TTH respectively. Among the 13 to 15 year olds there was a significant relation between migraine and smoking, and for both headache diagnosis among the 16 to 18 year olds. There was a significant relation between BMI > 25 and weekly/daily recurrent headaches in both age groups, most evident for migraine, but also for TTH among the 13 to 15 year old adolescents [8].

Kinesiophobia (fear of movement) strongly contribute to limitation of physical activity in many cases of clinical diseases [9-11]. However, still is little known about intensification of this phenomenon among subjects suffering due to cervicogenic headaches.

AIM OF THE STUDY

The main purpose of the present study was to assess kinesiophobia level in group of patients suffering from cervicogenic headaches. Additionally goals was to determine the relationships between pain severity causes by headches and kinesiophobia level, as well as, was to investigate potentially differences in fear of movement due to gender and time of CGH.

MATERIAL AND METHODS

Participants

A total of 47 patients met the study criteria (age between 18 and 65 year, headache duration at least 3 months, no other illness such as: rheumatoid arthritis, cervicobrachialgia, cancer, psychiatric disorders and no trauma history) and completed the questionnaires. Patients were diagnosed according to the criteria of The Cervicogenic Headache International Study Group [5]. On average, participants were 39,53 years old (SD= 8,11; range= 30-48) and most of all (65%) were females. The duration time of CGHs ranged from 5 to 48 moths, with a mean duration of 9,2 months (SD=3,7 months).

The control group was 224 (98 females and 126 males between 30-60 years). It was a person who had not been diagnosed with any chronic illness. Mean age of respondents: 51.2 ± 13.8 years (women: 51,8 ± 14,6 years, men: 53,7 ± 12,2 years).

Measures

Kinesiophobia Causes Scale (KCS) is used to diagnose and identify the causes of motor passivity. The questionnaire consist of 20 closed questions, assessed in a range from 0 to 100 – a higher score indicating a higher fear of movement. Kinesiophobia factors are grouped into two domains. The biological domain (BD) is an average of values of: morphological parameters, an individual need for stimulation, energetic resources, the power of biological drives. The psychological domain (PD)

is an average of values of: self-acceptance, self-assessment of motor predispositions, the state of mind and susceptibility to social influence. The total score of kinesiophobia (KCS) is an average value of BD and PD [12].

Visual Analogue Scale (VAS) originated from continuous visual analog scales developed in the field of psychology to measure well-being. It is often used in epidemiologic and clinical research to measure the intensity or frequency of various symptom such as pain intensity. The most simple VAS is a straight horizontal line of fixed length, usually 100 mm. The ends are defined as the extreme limits of the pain. A higher score indicates greater pain intensity [13].

Laitinen Pain Scale (LPS) besides measuring pain intensity simultaneously allows assessing other factors assisting pain, namely: taking pain killers, intensity of pain occurrence, limiting motor activity. The patient assesses each of the examined factors on a 5-degree scale in the range from 0 to 4, where: 0 means: without pain, does not occur, no help; 1 means: mild, periodical, does not occur, without medicine, no help; 2 means: strong, frequent, big doses, demanding partial help; 3 means: very strong, very frequent, permanent, big doses, demanding partial help; 4 means: not sustainable, continuous pain, permanently very big doses, demanding full help [14].

Statistical analysis

Obtained data were analyzed using the Statistica StatSoft version 10.0. Statistical analysis included perform of descriptive statistics: means and standard deviations. Differences between groups were evaluated using t-student test. Correlations were tested by the Pearson r coefficients. Statistical significance was set at $P<0,05$.

RESULTS

First, descriptive statistics of VAS and LPS scale were performed. The results are presented in Table 1. Data obtained in KCS scale for clinical and control group are given in Table 2, while in Table 3 the gender differences of kinesiophobia were demonstrated. Correlations of pain due to CGH with kinesiophobia were contained in table 4.

Table 1. VAS (Visual Analogue Scale) and LPS (Laitinen Pain Scale) - descriptive statistics and level of differences

Variables	Clinical group	Control group	P value
	Mean ± SD	Mean ± SD	
VAS	6,1 ± 2,4	0,2 ± 0,1	**<0,001**
LPS: pain	2,8 ± 1,1	0,1 ± 0,0	**<0,001**
LPS: taking pain killers	2,5 ± 1,0	0,3 ± 0,1	**<0,001**
LPS: intensity of pain occurrence	2,4 ± 1,0	0,1 ± 0,0	**<0,001**
LPS: limiting motor activity	2,7 ± 1,3	0,1 ± 0,0	**<0,001**

Table 2. KCS: kinesiophobia – descriptive statistics and level of differences

Domains and causes of kinesiophobia	Clinical group	Control group	P value
	Mean ± SD	Mean ± SD	
morphologic parameters	26,2 ± 17,3	26,0 ± 11,3	0,889
individual need for stimulation	42,9 ± 16,9	33,3 ± 16,5	**0,015**
energetic resources	30,6 ± 18,2	26,7 ± 10,7	0,754
power of biological drives	45,7 ± 15,8	32,8 ± 14,9	**<0,001**
Biological Domain [BD]	36,3 ± 16,8	24,7 ± 13,5	**0,011**
self-acceptance	38,5 ± 19,3	40,2 ± 18,4	0,918
self-assessment of motor predispositions	60,7 ± 21,2	38,5 ± 17,6	**<0,001**
state of mind	58,6 ± 23,6	41,1 ± 17,3	**<0,001**
susceptibility to social influence	52,8 ± 19,8	39,6 ± 13,9	**<0,001**
Psychological Domain [PD]	52,6 ± 17,4	39,9 ± 15,8	**<0,001**
Total score of Kinesiophobia [KCS]	44,5 ± 16,1	32,3 ± 12,2	**0,025**

Table 3. KCS: kinesiophobia – descriptive statistics and gender differences

Domains and causes of kinesiophobia	Males group	Females group	P value
	Mean ± SD	Mean ± SD	
morphologic parameters	24,4 ± 14,2	27,1 ± 17,1	0,713
individual need for stimulation	38,9 ± 15,4	45,6 ± 17,4	0,098
energetic resources	28,5 ± 17,6	33,1 ± 19,9	0,434
power of biological drives	48,8 ± 16,1	42,2 ± 15,2	0,221
Biological Domain [BD]	35,1 ± 15,9	37,0 ± 16,9	0,776
self-acceptance	33,7 ± 18,8	44,3 ± 19,8	**0,026**

self-assessment of motor predispositions	63,8 ± 20,4	55,3 ± 21,5	**0,046**
state of mind	56,1 ± 22,7	59,0 ± 23,4	0,583
susceptibility to social influence	53,4 ± 22,8	51,9 ± 16,7	0,676
Psychological Domain [PD]	51,7 ± 17,3	52,5 ± 17,8	0,865
Total score of Kinesiophobia [KCS]	43,4 ± 16,4	44,8 ± 16,0	0,854

Table 4. Correlations of pain causes by CGH and kinesiophobia

Variables	DB	PD	KCS
VAS	**0,46****	**0,41*****	**0,58*****
LPS: pain	**0,43*****	**0,44*****	**0,53*****
LPS: taking pain killers	**0,23****	**0,24****	**0,27****
LPS: intensity of pain occurrence	**0,42****	**0,33****	**0,51*****
LPS: limiting motor activity	**0,46*****	**0,42*****	**0,59*****
Time of CGH lasting	**0,11***	**0,16***	**0,22***

Notes: *p<0,05; **p<0,01; ***p<0,001

DISCUSSION

The classification of cervicogenic and other types of headache is controversial as it relies mainly on clinical symptoms, which vary greatly between individuals and may also vary over time. It has been questioned whether cervicogenic headache is an independent entity or a tension type of headache with a cervical trigger or migraine [15,16]. Cervical headaches are estimated to affect approximately 2.5% of the adult population and account for 15–20% of all chronic and recurrent headaches [17]. Previously findings showed that presence of any type of headache is associated with limitation of physical activity level [6-8]. Other studies strongly emphasize the role of kinesiophobia in modification of physical activity level [9-11]. The study presented here aimed to assess kinesiophobia (fear of movement) level in this group of patients and determine relationship between severity of CGH and intensification of kinesiophobia phenomenon.

Mean values of kinesiophobia presented in Table 2 indicate to moderate intensity of fear of movement in CGH patients. Compared to the control group, statistically significant differences between group not revealed only in three factors: morphologic parameters, energetic resources, self-acceptance. The highest average values in CGH group were observed in the following factors: self-assessment of motor predispositions, state of mind, susceptibility to social influence. Like to previous studies, higher kinesiophobia level was reported in the biological domain - relative to the psychological domain. Gender differences were poorly observed. Significant differences were noted in two from eight factors: self-acceptance, self-assessment of motor predispositions. In case of both

domains, as well as, overall KCS index significant differences were no found (See Table 3).

Kori et al., in original definition of kinesiophobia, suggest that fear of movement is associated with vulnerability to painful injury or re-injury [18]. Other authors suggest multidimensional construct of kinesiophobia phenomenon that include biological and psychosocial factors [12]. In case of CGH patients seems that both definitions apply. Performing physical activity leads to inducing of headache symptoms and fear of movement is related to previous painful experience (according to Kori definition). From other side, significantly high mean values in 2 kinesiophobia factors (XXX) emphasize the impact of second notion of fear of movement, where biological and psychological aspects play important roles.

In table 4, the correlation analysis of severity headache symptoms and kinesiophobia were presented. Relationship: higher pain intensity – higher fear of movement level was observed. All factors of LPS scale were positively correlated with kinesiohobia domains and overall KCS index. Similar results were reported in VAS scale.

CONCLUSIONS

At the base of obtained results we certainly may draw a conclusion that overall kinesiophobia level is not higher in CGH group compared to control group. However the kinesiophobia level is strongly associated with headache severity.

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