

ORIGINAL ARTICLE

CO-OCCURRING NECK-PAIN WITH MYOFASCIAL DYSFUNCTION IN PATIENTS WITH EPISODIC MIGRAINE

DOI: 10.36740/WLek202202119

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The aim: To determine the influence of co-occurring neck pain with cervical myofascial dysfunction on the development of psychoemotional disorders and the number of analgesics taken in patients with episodic migraine.

Materials and methods: The study included 92 patients, 24 male and 68 female, mean age 42.5±15.5 years. Three groups were identify based on type headache: 1) both episodic migraine and cervicogenic headache with neck pain; 2) episodic migraine only; 3) neck pain only. Visual analogue scale (VAS) for pain syndrome, Migraine Disability Assessment (MIDAS) score, Headache Impact Test (HIT-6), Neck Disability Index, State-Trait Anxiety Inventory (STAI), Beck's Depression Inventory (BDI) and numbers days with analgesics intake were assessment.

Results: In patients, who suffered on episodic migraine combine with cervicogenic headache and neck pain number days with headache was more ($p=0.000052$), intensity attack was higher ($p=0.003750$) and number days with analgesics intake was greater ($p=0.000003$), compare with group with migraine only. The depression and anxiety state was more significant in patients with migraine and co-occurring neck pain comparable with migraine alone, but we found no significance differences between groups with migraine with neck pain and neck pain only. We observed significant correlation between STAI and Neck Disability Index ($r=-0.5155$), Neck Disability Index and HIT-6 ($r=-0.4819$). No correlation found between VAS for migraine, MIDAS and STAI and BDI.

Conclusions: Our study demonstrate, that co-occurring neck pain in patients with episodic migraine increasing of numbers days with headache, negatively impacts on mood disorders, daily activity and associated with greater acute analgesics use.

KEY WORDS: episodic migraine, neck pain, psychoemotional disorders, analgesic intake

Wiad Lek. 2022;75(2):433-437

INTRODUCTION

Migraine affects an estimated 12% of the population. Approximately 2.5% of persons with episodic migraine progress to chronic migraine, which affects 1% to 2% of the global population. Migraine progression is associated with higher headache-related disability/impact, medical and psychiatric comorbidities, health care resource use, direct and indirect costs, lower socioeconomic status, and health-related quality of life [1]. Latest Global disease estimate and public health failure revealed that migraine was the second most disabling condition worldwide [2]. Part of the burden of migraine comes from its greater-than-chance association with a number of other disorders. Migraine is comorbid with epilepsy, depression, anxiety disorders, bipolar disease, and other pain disorders. Headache pain intensity was associated with higher risk for comorbidities and co-occurring conditions [3]. Diseases are said to be co-occurring if the same person has more than one disease. Approximately 15% of persons with migraine met criteria for acute medication overuse [4]. Overuse of analgesics is common problem in patients with primary headache especially in persons who suffered of other pain syndrome such neck or low back pain and self-medicate [5]. Under-

standing comorbidity has implications for revealing disease pathophysiology and clinical care.

THE AIM

The aim of this study to research the influence of co-occurring neck pain with cervical myofascial dysfunction on the development of psychoemotional disorders and the number of analgesics taken in patients with episodic migraine.

MATERIALS AND METHODS

We evaluated consecutive 92 patients, male 24, female 68, age ranged from 18 to 58 (mean 42,5±15,5 years). All patients divided for three groups. Group I included 31 patients (male/female 4/27) with episodic migraine (with typical aura 7 and without aura 24 patients) and co-existing neck pain. Group II included 30 patients (male/female 9/21) with episodic migraine (with typical aura 6 and without aura 24) without neck-pain. III group included 31 patients (male/female 11/20) with cervicogenic headache (CH) and neck pain. Episodic migraine were diagnosed according to the International Classification of Headache

– 3rd edition [6]. Duration of the disease ranged from 3 months to 32 years, a frequency of 4 to 7 attacks per month (average frequency of 5.4). Neck pain was assessed by reporting neck pain for more than 3 months and intensity 3 on the numerical scale of pain. Exclusion criteria was other primary headache or secondary headaches, arterial hypertension, ischemic heart disease, anamnesis of stroke, diabetes mellitus, other pain syndromes, pregnancy. Radiography of the cervical spine with functional load was performed for all patients; as a result, severe degenerative-dystrophic changes in the spine, disc herniation and root compression phenomena were excluded. All of the patients presented with the muscle tonic disorders due to of various grade scoliosis of the cervical and thoracic spine (29 patients), functional blockade of the joints of the cervical spine (31 patients) accompanied by tension of pericranial muscles and reflex muscle-tonic syndromes of the cervical region (cervicalgia, cervicobrachial syndrome). A visual analogue scale (VAS) was used to evaluate the dynamics of the quantitative characteristics of the pain syndrome, according to which patients were assessing the intensity of the pain syndrome of a migraine attack in the range from 1 to 100 mm [7; 8]. The MIDAS (Migraine Disability Assessment) scale was used to assess the effect of migraine on daily activity and performance for 3 months [9]. A quantitative assessment of the impact of the severity of subjective and objective symptoms of headache was carried out using the “Headache impact test” - “HIT-6” TM [10], which is a questionnaire that allows to determine the degree of influence of headache on the patient’s daily activities. The number of points indicates the severity of the negative impact of a headache on a patient’s life. The questionnaire consists of six questions with five possible answers for each one of them corresponding to a certain number of points. Neck Disability Index [11]. Mood and depression disorder evaluated according the Beck Depression Inventory (BDI), two subscales are distinguished in this technique: points 1-13 present the cognitive-affective subscale (CA) and points 14-21 present the subscale for somatic manifestations of depression (SP) [12]. To assess the level of personal anxiety the Spilberger-Hanin’s anxiety scale was used [13]. All patients completed a headache and neck pain diary for to calculate presence or absence headache, headache frequency and duration, the number of days with analgesics intake.

The work performed in accordance with the principles of the World Health Association Helsinki Declaration “Ethical Principles of Medical Research with Human Involvement as Object of Study”. Before inclusion in the study, patients and their relatives were inform with the study protocol and signed voluntary informed consent.

The statistical analyses were carried out with the SPSS statistical package (10.0 Version). Results are expressed as mean and error standard of the mean ($M \pm m$) for the studied parameters. Statistical analysis was conducted with a confidence level of 95%. A p-value less than 0.05 was considered statistically significant. To analyze the normal distribution of the variables, the Kolmogorov-Smirnov test

was used. The difference in the mean values of indicators in the groups was confirmed by parametric analysis of variance ($p < 0.05$). For pairwise comparison of groups, the Scheffe test was used. Association between characteristics was ascertained using Pearson’s correlation.

RESULTS

The results of the study showed that the number of days with headache for 3 months in patients from group I with a co-occurring of migraine and cervicogenic headache and neck pain was significantly greater than in the group with migraine only, but did not differ significantly from group III with neck pain without migraine (figure 1). The intensity of pain during a migraine attack on the VAS scale was higher and the disability according to the MIDAS questionnaire was more significant in patients I groups versus group II (table I). Degree of influence of headache on the patient’s daily activity according HIT-6 was more substantial in group with co-occurring of migraine and cervicogenic headache and neck pain comparable with group with migraine alone or neck pain alone.

When evaluating psychoemotional disorders, it was noted that the level of the state and trait anxiety was the lowest in patients group II with episodic migraine only in comparison with groups of patients who had neck pain. The level of depression in the examined patients was generally insignificant, but the lowest was in patients group II with migraine alone. Number days with analgesic intake per month was greater in I group of patients (figure 2).

Our data showing that patients with migraine alone almost use simple analgesics such acetaminophen (paracetamol) or ibuprofen, or triptan for treatment acute attack. Patients with co-occurring migraine and neck-pain often intake combine analgesics (acetaminophen+metamizole sodium+coffeine) or non-steroidal anti-inflammatory drugs (NSAID), and 6 (19.35%) of them had sigh of medication overuse - >10 day for month. Patients with neck pain only often used NSAID. The majority of patients with episodic migraine and neck pain used acute medications for headache more than one class of medication. The rates of monotherapies were highest in NSAIDs, although the majority used at least one additional class of medication.

In I patients group there was a correlation between the number of days with headache and trait anxiety ($r=0.4159$) and number days with combined analgesics ($r=0.4279$), also in this group NDI correlated with HIT-6 ($r=-0.4819$). In III group significance correlation found between number of days with headache and BDS ($r=0.4761$), NDI with State anxiety ($r=-0.5155$), Trait anxiety ($r=0.51690$) and number days with combined analgesics ($r=0.4445$). In II patients group with migraine only significance correlation found only between days with headache for 3 months c days with simple analgesics ($r=0.5053$).

Thus, our study showed that the co-occurring of episodic migraine with cervicogenic headache and neck pain is associated with an increase in anxiety manifestations, an increase in the number days with headache for 3 months

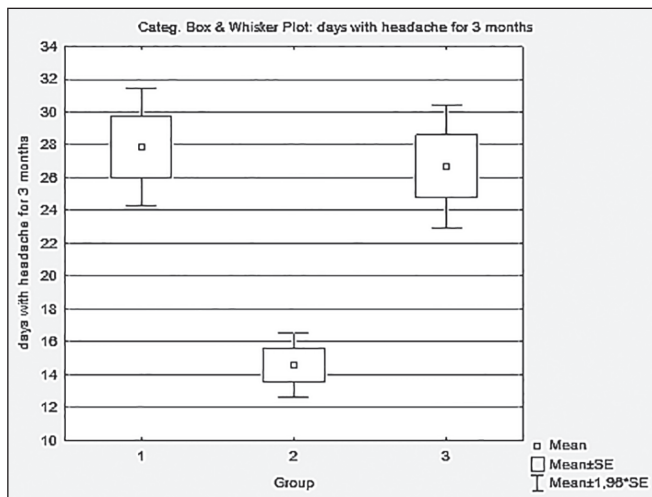


Fig. 1. Differences between groups to number day with headache for 3 months ($p < 0.05$).

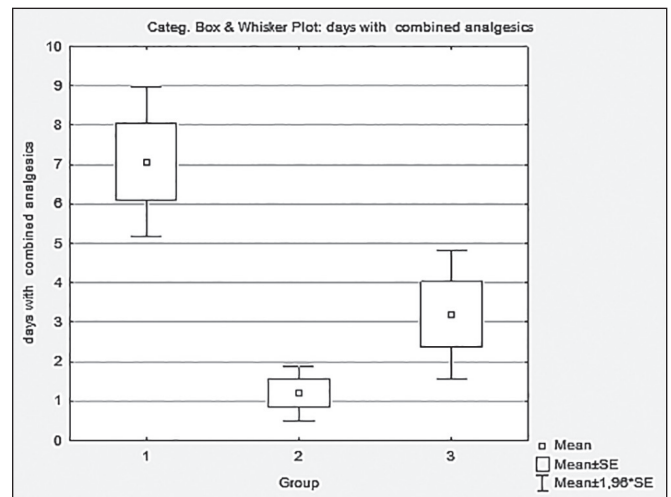


Fig. 2. Differences between groups to number day with combine analgesic intake ($p < 0.05$).

Table I. General characteristics for different headache group patients

Characteristics	Group I n=31	Group II n=30	Group III n=31	P value
Number days with headache for 3 months	27,87±1,84	14,60±1,01	26,71±1,91	p=0,000052
VAS of migraine	8,77±0,17	7,96±0,20	0	p=0,003750
VAS of CH	4,87±0,24	0	6,83±0,25	p=0,000001
MIDAS	42,8±3,11	30,03±1,39	0	p=0,000482
HIT-6	62,09±0,70	56,63±0,75	58,06±1,47	p=0,000001
State anxiety	48,19±1,01	42,40±0,95	47,52±1,09	p=0,000001
Trait anxiety	51,80±0,81	47,03±0,92	50,25±0,81	p=0,000002
Beck Depression Scale	8,80±0,86	5,40±0,47	8,93±0,84	p=0,000001
Neck Disability Index	11,25±0,84	2,90±0,16	15,12±0,77	p=0,000001
Number days with simple analgesics per month	1,90±0,75	3,63±0,53	3,87±0,75	p=0,094177
Number days with combined analgesics/ triptans per month	7,06±0,96	1,20±0,35	3,19±0,83	p=0,000003

and an increase in the number of days with the use of combined analgesics.

DISCUSSION

In our study we examined relationship between migraine and cervicogenic headache and neck pain. Migraine is a highly prevalent headache disorder of people worldwide. Neck pain also one of the most common complaints in medicine, affecting 14–71% of adults. Different features of neck pain such as pericranial muscle tenderness, myofascial referred pain from neck muscles, and the dysfunction of the joints of the upper cervical spine have been associated with headache. Many migraine sufferers report neck discomfort and stiffness before and/or during an attack [14]. Comorbid and co-occurring diseases are risk factors for the progression of episodic migraine to chronic migraine. Pericranial tension and pain are one of the reasons for the

decline in the quality of life of patients with migraine in the period between attacks [15]. “Multimorbidity” is associated with acute medication overuse and chronification of migraine [16].

Co-occurring migraine and neck pain is most likely associated with dysfunction of antinociceptive systems and trigeminal-cervical system, which leads to activation of motor neurons and the formation of muscular-tonic syndrome and myofascial dysfunction in the head and neck. In some studies described that noxious stimuli from the cervical structures and muscles may play role in the pathogenesis of migraine headache by enhanced of central sensitization. Prolonged nociceptive stimuli from the neck structures could be important for producing continuous afferent bombardment of the trigeminal nerve nucleus caudalis, and, hence, activation of the trigeminovascular system. Clinical findings suggest a relationship between migraine headache on the one hand and neck pain, or

neck-muscle stiffness or tenderness, on the other hand. In addition, there is convergence of trigeminovascular and cervical-muscle nociceptive afferents in the area of the upper cervical cord, referred to as trigeminocervical nucleus. [17]. Analgesic overuse may induce alterations in nociceptive neural networks, and it has been reported that patients without a previous history of headache taking analgesics on a regular basis for other conditions do not develop chronic headache [18]. Subgroups of migraine identified by comorbidity classes at cross-section predicted progression from episodic migraine (with ≥ 1 comorbidity at baseline) to chronic migraine. The relationship of comorbidity group to chronic migraine onset remained after adjusting for indicators of migraine severity, such as MIDAS [19]. Results of studies confirm that chronic neck and low-back pain are highly prevalent in the general population, but they indicate that the association between analgesic overuse and chronic headache is stronger than the association between analgesic overuse and chronic neck or chronic low-back pain. This study also showed that the association between analgesic overuse and headache is stronger for migraine than nonmigrainous headache. Higher intake of analgesics among headache sufferers simply reflects a more severe pain in this group than in those with neck pain [20].

Migraine is highly comorbid with both mood and anxiety disorders. The presence of a comorbid mood disorder predicts greater decreases in disability over the course of behavioral and pharmacological migraine treatment. Presence of neck pain in patients with migraine is associated with poorer treatment response [21; 22]. The high number of individuals with analgesic overuse has important clinical implications, and physicians should be aware of the potential risk of analgesic overuse among those with chronic pain, especially among those with migraine. Information about the hazards of frequent intake of symptomatic medication is important, and prophylactic treatment should possibly be considered at an early stage to prevent an “overuse” pattern and subsequent risk for medication overuse headache. Our study confirms the association between episodic migraine, neck pain and psychoemotional disorders.

CONCLUSIONS

1. Patients with co-occurring migraine and neck-pain with myofascial dysfunction had greater number days with headache for 3 months, more intensive pain during attack and greater disability according to MIDAS.
2. Co-occurring neck-pain in patients with episodic migraine associated with mood and anxiety disorders.
3. In patients with combined episodic migraine and neck-pain observed increase number days with analgesic intake especially combine analgesic that may be risk for chronification headache. Neck pain is a better predictor of adverse treatment outcome of headache. Evaluating and correcting myofascial dysfunction in migraineurs patients is an important step towards optimizing interventions for migraine care to better manage their condition, improve their ability.

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Conflict of interest:

The Authors declare no conflict of interest.

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Received: 30.03.2021

Accepted: 27.10.20221

A - Work concept and design, B - Data collection and analysis, C - Responsibility for statistical analysis, D - Writing the article, E - Critical review, F - Final approval of the article