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ORIGINAL ARTICLE

Migraine patients have a higher prevalence of PTSD symptoms in comparison to chronic tension-type headache and healthy subjects: a case–control study

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ABSTRACT

Objective: Headache is one of the most common disorders and has a heavy socioeconomic burden on both patients and society. Previous studies have demonstrated a high prevalence of psychological issues (e.g. depression and anxiety) in headache and especially migraine patients. The current study was designed to evaluate the prevalence of post-traumatic stress disorder (PTSD) symptomatology in chronic migraine (CM), chronic tension-type headache (CTTH) and healthy subjects.

Material and methods: CM and CTTH subjects were selected consecutively from patients referring to the department of neurology clinic at Shafa Hospital, Kerman University of Medical Sciences, Kerman, Iran. PTSD symptomatology was assessed using PTSD checklist civilian version-Persian edition (PCL-C). Control subjects were enrolled from the family members of headache patients who did not have any history of headache. Chi-square test was used to analyse data and $p < .05$ was considered statistically significant.

Results: Of the 60 control subjects, 5 had a PTSD symptomatology (8.3%); this prevalence was 13.3% for CTTH and 40% for CM groups. CM patients had a significantly higher prevalence of PTSD symptomatology in comparison to CTTH and control subjects ($p < .05$). With reference to gender, most of the subjects with PTSD symptomatology were female.

Conclusion: Results of the current study demonstrated that CM patients have a higher prevalence of PTSD symptomatology compared to another chronic headache condition (CTTH) and healthy subjects, which should be considered while treating CM patients. Further studies in larger populations are demanded.

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Introduction

Chronic headaches are one of the most prevalent disorders, affecting a large number of people and putting a large burden on the individuals and society.[1]

Chronic migraine (CM) is a relatively common disorder affecting about 2.4% of the general population.[2] It is commonly co-morbid with psychological conditions including depression (80%),[3] anxiety (70%) [3,4] and chronic fatigue (66%).[5] There exists a complex interaction among these pathologies that lead to the co-exacerbation of the diseases.[6–9]

Chronic pain patients are at an increased risk of being diagnosed with psychiatric disorders such as anxiety, depression and mood disorders.[10–12] Previous studies have demonstrated that CM patients have a higher level of PTSD symptoms in comparison to healthy subjects and episodic migraine patients.[6–8,13–16] There are also reports of high incidence of PTSD symptoms in chronic tension-type headache (CTTH) patients, as well.[11] Of interest, it is reported that more than 50% of patients with post-traumatic headache also develop post-traumatic stress disorder (PTSD).[10]

Since the treatment of PTSD and other anxiety disorders needs expertise and specialty, the task of orofacial pain specialists and neurologists is to screen for such conditions and refer the subjects suspected of having co-morbid psychological problems to psychologist. In this way, the treatment outcome will be improved profoundly in chronic pain patients.[17]

CM and CTTH are two distinct entities and different neurotransmitters and brain regions are involved in the pathogenesis of these disorders.[18] Previous studies have merged these two conditions and to our knowledge, there is no study comparing the prevalence of PTSD in CTTH, CM and control subjects separately. Thus, the objective of the current study was to evaluate the prevalence of PTSD symptoms in these two headache conditions versus control subjects.

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Methods and materials

The current study was approved by Kerman University of Medical Sciences Ethics committee (Ethics Code: KNRC/92/7). All the procedures were performed after informed consent was signed by the subjects.

Sample size was calculated based on the data provided by other studies [8] regarding the prevalence of PTSD symptoms in CM patients ($n = 30$ for headache groups, $n = 60$ for control subjects; Power =80%) CM and CTTH subjects were consecutively selected from patients referred to the Department of Neurology clinic at Shafa hospital, Kerman University of Medical Sciences, Kerman, Iran between January and September 2013. Control subjects were selected from subjects without a history of headache and have come to the hospital along other patients attending for a complaint other than headache and were sex and age matched to the headache subjects. This control group was chosen to minimize the effect of socioeconomic parameters on the study subjects.

CM and CTTH were diagnosed based on ICHD-II criteria.[19] Patients fulfilling the criteria for CM and CTTH were enrolled in the study and after taking informed consent from them, Persian PTSD check list civilian version (PCL-C) was filled by them. PCL-C is a 17-item questionnaire that evaluates the symptoms of PTSD in the subjects. Each item is rated from 1 (not at all) to 5 (extremely) and evaluates the response of the individual to the three major subscales of DSM-IV criteria (re-experience, arousal and avoidance/numbing). The overall score is calculated and total score >44 is considered as having a positive PTSD symptomatology.[20] The Persian version of PCL-C is validated by Ahmadi et al. and is demonstrated to have sufficient reliability and validity in an Iranian population.[21]

Data were collected and analysed using SPSS 16 (IBM, Dallas, TX). Chi-square test was used to compare the prevalence of PTSD among the three groups. $p < .05$ was considered statistically significant.

Results

The current study was performed on 30 CM patients, 30 CTTH patients and 60 subjects. CM subjects were 5 males (16.7%) and 25 (83.3%) females with a mean age 30 ± 7.24. CTTH subjects were 5 males (16.7%) and 25 females (83.3%) with a mean age of 29.93 ± 7.24 (Table 1). Control subjects comprised 8 (13.3%) male and 52 (86.7%) female subjects. The mean age of control subjects was 31.16 ± 5.79 years old.

Table 1. Demographic characteristics of subjects enrolled in the current study.

	Age (mean ± SD)	Gender: *n* (%)
Control	31.16 ± 5.79	Male: 8 (13.3%) Female: 52 (86.7%)
CM	30 ± 7.24	Male: 5 (16.7%) Female: 25 (83.3%)
TTH	29.93 ± 7.24	Male: 5 (16.7%) Female: 25 (83.3%)

There was no significant difference in age and gender distribution among three groups of the study.

Prevalence of PTSD symptoms was significantly higher in CM patients (40%) in comparison to CTTH (13.3%) and control (8.3%) subjects (chi-square, $p = .001$) (Figure 1).

In the next step, PTSD symptoms were evaluated in different groups according to gender. Of the subjects in the control group, all the five subjects who scored higher than normal in PCL-C were female. In CM group, 10 subjects were female and 2 were male (female to male ratio of 5:1). One subject with PTSD symptoms in CTTH was male and the other three were female (Table 2).

Discussion

Results of the current study revealed that CM subjects had a significantly higher prevalence of PTSD symptoms in comparison to CTTH and control subjects. CTTH patients and control subjects had PTSD symptomatology similar to previous studies conducted on the general population (13.3% and 8.3%, respectively).

CM and CTTH are two distinct entities with different clinical presentation and underlying mechanisms. Brain stem activity and sensitization at first and second neurons in the pain pathway correspond for migraine attacks, while increased pericranial myofascial pain sensitivity might contribute to the pathophysiology of CTTH.[22] Though a vast body of studies are available regarding the neurobiology of CM, neurobiology of CTTH is not fully understood yet and further studies are warranted to clarify the exact mechanisms involved. Results of the current study demonstrated that PTSD symptomatology is significantly different in CM and CTTH subjects. Though the exact reason for this difference is not clear, but it seems that different neurobiological

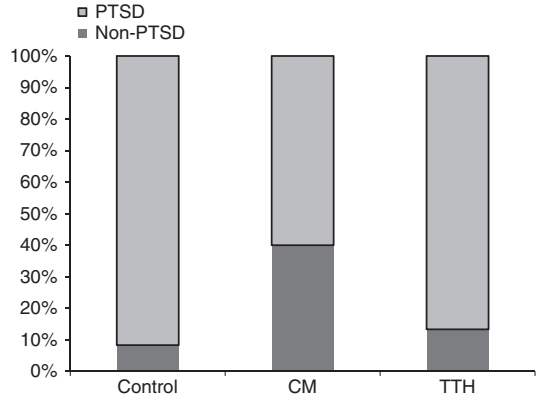

Figure 1. Percentage of PTSD in the control (8.3%), chronic migraine (CM) (40%) and tension-type headache (TTH) (13.3%). As demonstrated, CM patients have a higher chance to be diagnosed with PTSD in their first session as compared to control and TTH patients using the SCL-C screening tool.

Table 2. Subjects with PTSD symptomatology according to gender.

	Male (*n*, %)	Female
Control	–	5 (100%)
CM	2 (16.66%)	10 (83.33%)
CTTH	1 (25%)	3 (75%)

All the subjects in the control group and most of the subjects in chronic migraine (CM) and chronic tension-type headache (CTTH) with PTSD symptomatology were female.

mechanisms correspond for these differences and further studies evaluating the effect of different pharmacological agents on these co-morbid conditions are suggested in future studies.

Previous studies have demonstrated a high prevalence of PTSD symptoms in CM patients. Peterlin et al. demonstrated that both episodic migraine and CM sufferers have a high prevalence of PTSD symptoms in comparison to the general population.[8]

De Leeuw et al. evaluated the prevalence of life-time stressors and PTSD symptomatology in 80 cm or CTTH and compared it with chronic masticatory muscle pain (CMMP) subjects. They demonstrated that both headache and CMMP subjects had a relatively high level of exposure to one or more major traumatic stressors. They also reported that the prevalence of PTSD symptomatology is higher in CM or CTTH subjects in comparison to the range reported for the general population, though no control group was recruited in their study,[11] a limitation which was tried to be resolved in the current study.

Sherman et al. reported a high prevalence of PTSD symptomatology in fibromyalgia (FM) patients (>50%). FM is also a chronic debilitating pain condition similar to CM, thus this high prevalence of PTSD symptomatology in both disorders might imply screening procedures for psychiatric disorders in chronic pain conditions such as CM and FM.[23]

Female CM subjects comprised most of the subjects with PTSD symptomatology in their respective group. This finding is not unexpected due to the fact that both migraine and PTSD are more prevalent in female subjects and sex hormones play an important role in development and maintenance of both diseases.[6,8] Due to the low number of subjects in the current study, further studies with greater sample sizes are warranted to evaluate the association of gender with PTSD and CM.

Our study has some limitations as well. The low number of patients in CM and CTTH groups is the major limitation of the current study. Further studies with a larger sample size are required to estimate the prevalence of PTSD symptomatology in CM and CTTH patients. Another limitation to the current study is that it does not reach a cause and effect association between headaches and PTSD. Further longitudinal studies are needed to assay such causal relationship between chronic headache conditions and PTSD.

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Disclosure statement

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