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Original

Prevalence of compulsion in migraine patients and its association with analgesics abuse

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Abstract

Introduction
Migraine, is one of the most prevalent types of headaches, affects around 15% of people world wide, more common among women, causes a great effect in the quality of life of the individual. With the purpose to mitigate the pain and the associated symptoms of the migraine crisis the patients overuse drugs. The medication-overuse headache (MOH) is an emerging problem, due to the possibility of developing psychiatric disorders like obsessive compulsive disorder (OCD).

Objective
Determine a prevalence of OCD in migraine patients, evaluating different scopes of it, including the association or not with drug abuse.

Methods
A cross-sectional study with 117 patients of both sexes, older than 18 years old. Three questionnaires were used: Barratt Impulsiveness Scale (BIS-11); Obsessive Compulsive Inventory-Revised (OCI-R) and the Migraine Disability Assessment (MIDAS).

Results
Findings suggest that individuals with a medication-overuse profile have a higher tendency to develop compulsive symptoms and the seriousness of the migraine symptoms is extremely related to medication-overuse headache.

Conclusion
The study showed that patients with medication-overuse headache have a higher tendency to develop compulsive behavior.

Keywords:
Migraine
Medication-overuse
Obsessive compulsive disorder (OCD)

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Introduction

Migraine, among the various clinical forms of headache, is one of the most commonly prevalent, affecting around 15% of the world's population, predominantly women, and having an intense impact on the individual's quality of life (1). Thus, according to the World Health Organization, in 2019 migraine was considered one of the most disabling diseases in the world, causing limitations in social life, work and interpersonal relationships (2).

Migraine is characterized as a primary headache, "it is a neurovascular disease characterized by repeated headache attacks, which can occur with widely varying frequency" (3). The diagnostic criterion for the disease, according to the criteria of the International Classification of Headache Disorders, 3rd Edition (ICHD-3) (4) The clinical aspect of migraine involves its duration and other characteristics, such as the presence of phonophobia, photophobia and vomiting preceded by nausea. Clinically, migraine patients tend to have unilateral, pulsatile and intense crises, which may or may not be preceded by auras and premonitory symptoms. Today, the pathophysiology of the disease is still uncertain, but studies indicate that it is the result of brain dysfunction, in which there are vascular abnormalities secondary to a neuronal event (5). The treatment used to control crises is basically the administration of simple analgesics, non-steroidal anti-inflammatory drugs and triptans (6). On the other hand, headache due to excessive use of analgesics is defined according to the International Classification of Headache Disorders, 3rd Edition (ICHD-3), as a symptomatology lasting more than 15 days per month as a result of regular overuse of acute or symptomatic medication for headache (on 10 or more, or 15 or more days per month, depending on the medication) for more than 3 months, with, in most cases, improvement of the headache after stopping the use of the medication.

Migraine is a disease that causes significant discomfort and, in order to relieve these symptoms, sufferers make excessive use of painkillers. This, coupled with the practice of self-medication without proper professional supervision, results in chronic migraine, which is the most common risk factor. Around half of patients with this diagnosis revert to episodic migraine when the medication is stopped (4). It is worth noting that analgesic self-medication in Brazil is a reality, and a large number of patients with chronic pain use this practice (6), leading to a feedback loop of chronic migraine due to excessive use of analgesics.

Excessive use of medication is a growing problem that needs to be controlled and managed, as it can cause rebound headaches, mask the headache phenotype, and cause liver and cardiovascular problems and other important dysfunctions(5). In addition to systemic alterations, it is important to assess the possibility of the development of psychological disorders such as impulsivity and compulsion in these patients.

By impulsivity, we mean actions where the individual does not make an adequate analysis of the repercussions of their actions and makes a quick decision without planning, analyzing the situation immediately and not in the long term (7). These actions bring relief or gratification and can sometimes be accompanied by remorse after the behavior. Impulsive behavior poses a risk to the individual and the people around them.

Compulsion is defined as repetitive behavior, with the aim of alleviating anxieties or mitigating a likely uncomfortable situation that may occur (8). Obsessive Compulsive Disorder (OCD) is the classic picture of a type of compulsion. This disorder has several consequences for the patient, including relationship difficulties, difficulty enjoying leisure time, and it negatively affects professional and personal life, impacting on the patient's quality of life (9). It is estimated that between 1% and 2.5% of the world's adult population has OCD (10).

In view of the data presented and the scarcity of scientific evidence on the subject, it is essential to carry out research into impulsive and compulsive behavior and the impact of headaches in migrant patients, comparing them with the prevalence observed in the general population. This study aims to assess the presence of compulsive behavior in migraineurs, observing its relationship with the excessive use or not of analgesics, and different areas of this prevalence.

Methods

This is a cross-sectional, descriptive study based on a series of cases obtained from data collected by the authors. It was approved by the Ethics Committee under the following protocol number: 38534620.4.0000.8307. Patients with migraine aged 18 or over who were being monitored at the Dr. Agostinho Paolucci Multiprofessional Academic Center of the Barbacena Faculty of Medicine - CAM FAME, between October 2020 and September 2011, were included in the study. Those with cognitive impairment, a previous psychiatric diagnosis and individuals who did not agree to take part in the study were excluded. The diagnosis of migraine and migraine due to excessive analgesic use were made by a neurologist according to the criteria of the International Classification of Headache Disorders (3rd Edition). (ICHD-3)(4).

All the participants were allocated to a single group made up of 118 (one hundred and eighteen) patients (migraineurs with excessive use of analgesics, migraineurs without excessive use of analgesics), and 1 patient was excluded because he didn't fit the age criteria (Figure 1).

In an initial approach at the weekly headache clinic, patients who complained of migraine, regardless of

Figure 1: Sample collected and patients excluded from the study.

gender, were invited to take part in the study and signed an informed consent form (Appendix 1). The sample had a higher prevalence of women (108) compared to men (9), which occurred randomly.

For those who agreed to take part in the study, after signing the ICF, the questions proposed by the Barratt Impulsivity Scale (BIS-11), the Obsessions and Compulsions Inventory (OCI-R) and the MIDAS (Migraine Disability Assessment) were presented (Annexes 2, 3 and 4).

The BIS-11 was developed in 1959 to serve as a screening instrument for personality and behavioral constructs related to impulsivity. It was revised in 2009 and indicated to be a reliable screening instrument. The BIS-11 has already been validated in Portuguese and its application is both easy and quick, and it has been well accepted by patients (11).

The Barratt Impulsivity Scale questionnaire contains thirty questions, which cover the aspects of six first-order factors (attention, motor impulsivity, self-control, perseverance, cognitive instability, cognitive complexity) followed by three second-order factors (attentional impulsivity, motor impulsivity and non-planning). All the questions must be answered in order for a score to be given. The scores are calculated by assigning a frequency ranging from: rarely or never (1); occasionally (2); frequently (3); almost always/always (4). The score ranges from 30 to 120 points and high scores indicate the presence of impulsive behavior (11).

The scale classifies individuals with a score of less than 52 as very controlled, from 52 to 71 points as normal limits of impulsivity and numbers greater than or equal to 72 as highly impulsive. In addition to a global score, the BIS 11 allows partial scores to be calculated for three subdomains of impulsivity, namely motor impulsivity (items 2, 3, 4, 16, 17, 19, 21, 22, 23, 25 and 30*), attentional impulsivity (items 6, 5, 9*, 11, 20*, 24, 26, 28) and non-planning impulsivity (items 1*, 7*, 8*, 10*, 12*, 13*, 14, 15*, 18, 27, 29*); with items marked with a (*) receiving an inverse score for calculating the partial and total scores (4, 3, 2, 1) (11).

The results obtained were analyzed to see if impulsive behavior is really present in migraineurs.

The OCI-R (12) is a self-administered measurement instrument developed by the universities of Pennsylvania, Delaware and London that assesses the symptoms of obsessive-compulsive disorder. This inventory basically details the recurring characteristics of OCD, making it possible to assess prevalent themes in patients. It originally contained 42 items but was later presented in an 18-item version divided into six subscales corresponding to the categories commonly found in obsessive-compulsive disorder: Cleaning, Obsession, Accumulation, Organization, Checking and Neutralization. The items are answered in terms of how much the person has experienced the symptoms described, given on a Likert-type scale of 0 to 4 points, with zero corresponding to "Not at all" and four to "Extremely". The higher the total score on the scale, the greater the prevalence of symptoms, and the factor with the highest score indicates the theme of symptoms that stands out in the patient. The cut-off point suggested by Foa of 21 points will be used here (13).

MIDAS was developed as a useful tool for identifying Migraineurs with varying degrees of headache-related disability. In addition, this questionnaire is brief, simple to use, consistent, highly reliable and corresponds to the clinical judgment of physicians. The higher the MIDAS score, the greater the impact of migraine on the patient's daily activities (14).

As for the statistical analysis, the continuous variables were checked for normality using the Shapiro-Wilk method and the median (interquartile range - IQR) are used as measure of central tendency and dispersion. In all cases, a critical p-value of 0.05 was assumed to reject the null hypothesis. The differences between the

distributions of age, family income and scores on the BIS-11, OCI-R and MIDAS scales according to excessive use of analgesia were checked and assessed using the Mann-Whitney method. All the analyses were carried out using SPSS Statistics 22.0 software.

Results

Of the 117 patients included in the study, 108 (92.3%) were female. As for schooling, 62.2% had completed at least high school, while the remaining 37.8% had less than 11 years of schooling. The median age was 38 (IQR 21), comprising individuals aged between 18 and 68. The median family income was 1 minimum wage (IQR 1), comprising families with less than 1 minimum wage and up to 23 minimum wages per capita. Data summarized in Table 1.

Table 1. Population Profile

Variable		N	Value
Sex	Female	108	92.3%
	Male	9	7.7%
Age	Informed	115	
	Non-informed	2	38 (21*)
Education	Incomplete elementary education	23	19.7%
	Complete elementary education	9	7.7%
	Incomplete high school education	10	8.5%
	Complete high school education	47	40.2%
	Incomplete higher education	9	7.7%
	Complete higher education	13	11.1%
	Non-informed	6	5.1%
Family Income	Below minimum wage	9	7.7%
	1 to 1.9	48	41.0%
	2 to 2.9	14	12.0%
	3 to 3.9	6	5.1%
	4 to 4.9	2	1.7%
	5 to 10	4	3.0%
	More than 10	1	1.0%
	Non-informed	33	28.2%

* Median (Interquartile Range - IQR)

Clinical Profile

Excessive use of analgesia was observed in 33.3% of patients. Scores on the BIS-11 scale had a median of 67.0 (IQR 12), on the OCIR-R scale 30.0 (IQR 21) and MIDAS 27 (IQR 44).

Higher OCIR-R scores were observed in patients who had excessive use of analgesia, with the median for this group being 36.0 (IQR 23) points, in contrast to the 27.0 (IQR 18) points obtained by those patients who did not have a profile of excessive use of analgesia ($p = 0.045$). Similarly, individuals with a profile of excessive use of analgesia had higher scores on the MIDAS scale with a median of 44 (IQR 79) points compared to 15.5 (IQR 35) points for patients with no profile of excessive use of analgesia. There were no statistically significant differences in the distribution of age, family income, schooling and BIS-11 score according to the profile of excessive use of analgesics. These findings suggest that individuals with a profile of excessive use of analgesia are more likely to have compulsive symptoms, and that the severity (assessed by the functional impact of symptoms) of migraine symptoms is another factor that is highly associated with excessive use of analgesics. Elements of impulsivity do not seem to be decisively associated with the excessive use of analgesics.

Table 2. Clinical and population parameters according to excessive use of analgesics.

	Overuser	N	Value[1]	P*
Age	YES	37	39.0 (21)	0.767
	NO	78	36.0 (21)	
	Total	115		
Family Income	YES	28	1.0 (0.7)	0.117
	NO	56	1.1 (1.3)	
	Total	84		
BIS-11	YES	39	69.0 (14)	0.258
	NO	78	66.0 (11)	
	Total	117		
OCI-R	YES	39	36.0 (23)	0.045
	NO	78	27.0 (18)	
	Total	117		
MIDAS	YES	38	44.0 (79)	< 0.001
	NO	78	15.5 (35)	
	Total	116		

1. Expressed as: Median (IQR). *Mann-Whitney.

Patients were also grouped according to their schooling profile into those with at least complete primary education and those with less than 11 years of schooling (incomplete secondary education, complete primary education, and incomplete primary education). There was no significant association between schooling and the profile of excessive analgesic use (x^2 p = 0,213).

Discussion

Anxiety disorders are 2 to 5 times more prevalent in migraineurs than in the general population. These include obsessive compulsive disorder (OCD) (15). Much has been discussed about the relationship between migraineurs and compulsive behaviors, but the excessive use or not of medication by migraineurs with compulsive behaviors has been less addressed in the literature. However, one study looked at patients with multimorbidities, chronic migraineurs, using different drugs, such as triptans, barbiturates and opioids, establishing a possible relationship with the worsening of psychiatric disorders in these patients, which showed a worsening in the group using opioids (16).

In a cross-sectional study, Radat et al. (17) investigated the relationship between psychiatric anxiety disorders and migratory conditions. They found that migraineurs had a higher risk of developing anxiety disorders when compared to non-migraineurs, and there was a

noticeable association between obsessive compulsive disorder and migraine. However, they reported that this association was not subsequently investigated.

The aim of the present study was to revisit this question regarding the relationship between migraineurs who do or do not overuse analgesics and the manifestation of compulsivity. The data obtained showed a significant relationship (P = 0.045) which suggests an association between migraineurs who excessively use analgesics and the development of compulsive behavior when compared to those who do not.

A similar study carried out previously that aimed to discuss the relationship between impulsive behaviors in migraineurs who excessively used medication did not show any association between impulsivity and this excessive use of medication, the same was evaluated in the present study, the data collected in the BIS-11 that aimed to observe the impulsivity of migraineurs who abuse or do not abuse medication obtained a P without statistical significance for this relationship, corroborating the findings of the previous study(18).

The study had some limiting factors, as patients were not sub-categorized according to the type of migraine presentation.

Conclusion

The study showed that there is an association between migraineurs and the development of compulsive behavior when they make excessive use of analgesics, compared to the group without excessive use. The other variables evaluated showed no significant association.

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