ASSESSMENT OF ANXIETY, DEPRESSIVE DISORDERS AND PAIN INTENSITY IN MIGRAINE AND TENSION HEADACHE PATIENTS

FRANCESCO CORALLO1, MARIA CRISTINA DE COLA1, VIVIANA LO BUONO1, ROSARIO GRUGNO1, GIUSY PINTABONA1, RICCARDO LO PRESTI1, PLACIDO BRAMANTI1, SILVIA MARINO1,2
1IRCCS Centro Neurolesi “BoninoPulejo”, Messina - 2Department of Biomedical Sciences and Morphological and Functional Imaging, University of Messina, Messina - 3Faculty of Medicine and Surgery, University of Messina, Messina, Italy

ABSTRACT

Introduction: Headache is one of the most common chronic disease affecting around 152 millions of people in Europe, with a man: woman ratio of 1:3. Recent studies show that headache causes significant limitations in daily life with effects on emotional-behavioural and relational aspects. In particular the migraine headache, whose onset is often at a young age, that is the phase of maximum working, social and familiar activity. The aims of this study were to investigate the relationship between migraine-related disability and the presence of anxiety and depression in order to assess how the disability affects the patient activities.

Materials and methods: We enrolled 123 migraine patients. All information related to headache was collected by means of interviews, examination of medical records, psychometric tests for measuring anxiety, depression and disability scale. Demographic and clinical characteristics, such as gender, age, education, pain intensity, and frequency of headache were also collected.

Results: There was a significant difference in Hamilton Rating Scale for Anxiety and Hamilton Rating Scale for Depression scores between patients who declared to suffer from headache until 10 days per trimester, and patients who declared more than 10 days (p < 0.05 in both cases). Logistic regression analysis identified gender, age and migraine frequency as feasible risk factors; the migraine intensity was not significant (p = 0.96), as well as the diagnostic category (p = 0.3). Especially moderate headache frequency and female gender were the highest risk factors for a co-morbidity of anxiety and depressive disorders and pain intensity.

Conclusion: Migraine condition may involve the onset of a severe disability. Indeed, independently from the diagnostic category, an high degree of disability is often related to the presence of anxious and depressive symptoms.

Key words: anxiety, depression, disability, migraine, co-morbidity.

Received June 18, 2014; Accepted April 02, 2015

Introduction

Headache is a very common and debilitating disease that causes significant limitations in daily life with effects on emotional-behavioural and relational aspects. Such disease affects around 152 millions of people in Europe, of whom 15 millions are Italian(1). The International Classification of Headache Disorders (ICHD) includes among the primary headache the tension-type headache and migraine. The tension-type headache slowly rises and causes an oppressive pain: it can be episodic or chronic. Migraine, instead, is a chronic disease with episodic manifestations that can increase in frequency over the years. Among the different headache forms, migraine has a high prevalence and social impact. It is characterized by throbbing pain generally in one side of the head, often associated to nausea, phono-and photophobia, such as to significantly compromise the patient’s efficiency. Indeed, the onset of the migraine is often at a young age, that is the phase of maximum working, social and familiar activity. Usually, migraine is divided in migraine with and without aura(2,3).
The chronic headache worsens daily living activities, precludes the possibility of leisure and a normal social life, compromises even the psychological well-being. Headache seems to be a gender’s disease, with a man: woman ratio of 1:3. In Italy, the percentage of adult population affected by any form of headache is 46%. In particular, 11% for migraine, 42% for tension-type headache, and 3% for chronic daily headache. In western countries, the prevalence of migraine in the general population is equal to 10-12% (6-12% amongst males and 15-18% amongst females). 25% of migraine sufferers have their first attack in the preschool age (4). Biochemical markers, neurophysiological or other predictive indicator of chronicity are not well-known. However, Radat et al. identified psychiatric co-morbidity as an important factor for the development of chronic headache(5). Many studies have revealed a relationship between migraine or headache and psychopathology(6,7). Murat et al., by using a Structured Clinic Interview (SCID-I), found anxiety-depressive disorders in migraineurs as well as in tension-type headache patients(8,9,10). Nevertheless, migraine appeared primarily associated with anxiety disorders and panic attacks, whereas studies on tension type headache revealed the presence of both depression and anxiety(11). A significant increase of depression prevalence in both chronic headache and migraine has been detected, especially in females(12,13). Although the evidence to show the association between headache and mood disorder, has not been proved the correlation of specific headache characteristics with depression and anxiety(11).

Our aim is to assess the relationship between related headache disability, intensity of perceived pain and emotional disorders, focusing on the effects that these variables have on daily living activities(14,15). In particular, we evaluated the differences in the presence-absence of anxiety and depressive symptoms in patients with and without aura migraine and chronic and tension-type headache.

Materials and methods

One hundred and twenty-three subjects with tension-type headache and migraine episodes were consecutively recruited. Eight patients were excluded because of missing administration of the Migraine Disability Assessment (MIDAS) questionnaire(16). Thus, the study sample consisted of 115 subjects with mean age of 43.5 ± 16.5 years, and mean education of 11.5 ± 4.4 years.

According to ICHD-II we divided the patients in a) migraine with aura; b) migraine without aura; c) chronic migraine; d) tension-type headache. The patients had a clinic diagnosis for at least six months.

The study protocol was approved by the Local Ethics Committee according to the 1964 Declaration of Helsinki and its later amendments. All patients gave written consent to the study and minor subject consents were signed by legal guardians. All information related to headache was collected by means of interviews, examination of medical records, psychometric tests for measuring anxiety, depression and disability scale. Demographic and clinical characteristics, such as gender, age, education, pain intensity, and frequency of headache were also collected.

Headache pain intensity was assessed by an 11-point pain scale (0 indicating no headache and 10 severe headache). The MIDAS questionnaire was used to assess disability related to headache during daily activities (work, home and family commitments, leisure or social activities). The migraine disability was graded in four classes according to MIDAS scores: 0-5 as minimal, 8-10 as mild, 11-20 as moderate, and 21 or more as severe disability.

Hamilton Rating Scale for depression (HAM-D) and Hamilton Rating Scale for anxiety (HAM-A) were used to assess anxiety and depressive disorders(17). Patients did not undergo specific treatment (neither pharmacological nor psychological) for anxiety or depression.

Statistical analysis

We considered both raw scores and the following dichotomous variables: (i) presence of anxiety or depression symptoms, when the person had a score greater than 8 in at least one between HAM-A and HAM-D; (ii) occurrence of only anxiety symptoms when the person had HAM-A ≥ 8 and HAM-D < 8; (iii) occurrence of only depressive symptoms when the person had HAM-A < 8 and HAM-D ≥ 8; (iv) occurrence of co morbid symptoms when the person had HAM-A ≥ 8 and HAM-D ≥ 8. Non-parametric analysis was performed because the Anderson-Darling test results and the graphical exploration of the data by means of box-plots indicated that the target variables were non-normal distributed. Continuous variables were
expressed in mean ± standard deviation or in median ± first-third quartile, as appropriate, whereas categorical variables in frequencies and percentages. Correlations between variables were computed by Spearman’s coefficient, or by point-biserial correlation coefficient when one variable was dichotomous. The X2 test, the Mann-Whitney U test and the Kruskal-Wallis test were used for comparison when appropriate.

Two logistic regression models were performed in order to investigate the influence of demographic and clinical variables (gender, diagnostic category, migraine disability, migraine frequency, migraine intensity) on the presence of depressive and/or anxiety symptoms, and on the coexistence of both disorders. We applied a backward elimination stepwise procedure for the choice of the best predictive variables according to the Akaike information criterion (AIC).

The effect of categorical independent variables on the target variable were evaluated by means of the Wald test. Statistical analysis was performed by using the 2.15.3 version of the open-source software R(18). A p-value < 0.05 was considered as statistically significant.

Results

Clinical and demographical sample description

The study population consisted of 84 women and 31 men with mean age of 44.2 ± 16.4 and 41.6 ± 16.9 years, respectively. Neither demographic (age, education) nor clinical significant differences between men and women were found. We observed a weak correlations between gender and pain intensity (r = 0.18), an association between gender and the occurrence of a psychological disorder (X2 = 8.04, df = 1, p < 0.01) and between gender and the coexistence of anxiety and depressive disorders (X2 = 5.61, df = 1, p < 0.05). Indeed, women had mean scores of HAM-D and HAM-A significant greater than men (p < 0.01 in both cases), as well as the mean pain intensity (p < 0.05). Moreover, within the group of patients affected by anxiety disorder, the women showed a mean MIDAS score significant greater than men (p < 0.05).

A clinical description of the sample is given in Table 1. The mean headache frequency in the last three months was 23.05 ± 25.52 days, with a peak value around 10 days in both genders, as showed in Table 1. The mean pain intensity measured by a 11-point pain scale (0-10) was 7.1 ± 1.97.

Table 1: Clinical migraine characteristics of the sample.

<table>
<thead>
<tr>
<th>Number (%) of subjects per category</th>
<th>Migraine without aura</th>
<th>Migraine with aura</th>
<th>Chronic migraine</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>14.5 (4.7 - 21.0)</td>
<td>10.0 (6.0 - 40.0)</td>
<td>7.5 (6.0 - 8.0)</td>
</tr>
<tr>
<td>Male</td>
<td>10.0 (4.0 - 21.0)</td>
<td>10.0 (7.0 - 20.0)</td>
<td>7.0 (6.0 - 8.0)</td>
</tr>
<tr>
<td>All</td>
<td>10.0 (4.0 - 21.0)</td>
<td>10.0 (6.0 - 30.0)</td>
<td>7.0 (6.0 - 8.0)</td>
</tr>
</tbody>
</table>

Migraine disability and psychological disorders

The mean MIDAS score was 12 ± 8.2. The mean HAM-D score was of 8.65 ± 5.87. In particular, we observed a minimal depression in 46 subjects (40%), a mild depression in 64 subjects (55.65%), a moderate depression in 3 subjects (2.61%), and a severe depression in 2 subjects (1.74%). The mean HAM-A score was 10.56 ± 7.56, and we observed a minimal anxiety in 44 subjects (38.26%), a mild anxiety in 48 subjects (41.74%), a moderate anxiety in 20 subjects (17.39%), and a severe anxiety in only 3 patients (2.61%).

An association between the occurrence of a psychological disorder and the level of disability is emerged (X2 = 14.58, df = 3, p < 0.01). Indeed, there existed a moderate correlation between MIDAS scores and the occurrence of psychological disorders (r = 0.32, p < 0.05), and a weak correlation between MIDAS and HAM-A scores (r = 0.23, p < 0.05) as well as between MIDAS and HAM-D scores (r = 0.23, p < 0.05). A significant correlation between MIDAS score and pain intensity was also found (r = 0.35, p < 0.001). A detailed description of the patient’s psychological condition by migraine disability level is reported in Table 2.

Comparing the psychological test scores by subgroup, we found a significant difference between minimally and moderately disabled patients (p < 0.01) and between mildly and moderately disabled patients (p < 0.05). Finally, we found a significant difference in HAM-A and HAM-D scores between the patients who declared to suffer from headache until 10 days per trimester, and the patients who declared more than 10 days (p < 0.05 in both cases).
The physiological conditions of the patients subdivided for diagnostic category are reported in Table 3.

Risk factors for occurrence of anxiety or depression symptoms in headache patients

The logistic regression analysis identified as feasible risk factors only the variables gender and headache-related disability; the migraine intensity was not significant (p = 0.57), as well as the diagnostic category (p = 0.83), and the migraine frequency (p = 0.2). In particular, mild disability was the highest risk factor for a psychological disorder occurrence (Table 4).

Table 2: Anxiety and depressive characteristics for migraine disability level.

<table>
<thead>
<tr>
<th>Patient's condition</th>
<th>Migraine with aura</th>
<th>Migraine without aura</th>
<th>Chronic migraine</th>
<th>Tension-type headache</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N %</td>
<td>N %</td>
<td>N %</td>
<td>N %</td>
</tr>
<tr>
<td>Purely anxious (ANX)</td>
<td>1 8.33</td>
<td>4 13.79</td>
<td>5 12.82</td>
<td>3 8.57</td>
</tr>
<tr>
<td>Purely depressed (DEP)</td>
<td>0 -</td>
<td>6 20.69</td>
<td>4 10.26</td>
<td>1 2.86</td>
</tr>
<tr>
<td>Anxious and depressed (COM)</td>
<td>6 50</td>
<td>11 37.93</td>
<td>22 56.41</td>
<td>19 54.28</td>
</tr>
<tr>
<td>Presence of a psychological disorder (ANX-DEP-COM)</td>
<td>7 58.33</td>
<td>21 72.41</td>
<td>31 79.49</td>
<td>23 65.71</td>
</tr>
<tr>
<td>Absence of a psychological disorder</td>
<td>5 41.67</td>
<td>8 27.59</td>
<td>8 20.51</td>
<td>12 34.29</td>
</tr>
</tbody>
</table>

Table 3: Anxiety and depressive characteristics for type of migraine.

Risk factors for occurrence of anxiety or depression symptoms in headache patients

The logistic regression analysis identified as feasible risk factors only the variables gender and headache-related disability; the migraine intensity was not significant (p = 0.57), as well as the diagnostic category (p = 0.83), and the migraine frequency (p = 0.2). In particular, mild disability was the highest risk factor for a psychological disorder occurrence (Table 4).

Table 4: Backward logistic regression results: risk factors for anxiety and depressive occurrence.

<table>
<thead>
<tr>
<th>Gender</th>
<th>p-value</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Male</td>
<td>0.007</td>
<td>0.27</td>
<td>0.10, 0.69</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Migraine disability</th>
<th>p-value</th>
<th>OR</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Minimal</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mild</td>
<td>0.002</td>
<td>3.74</td>
<td>1.64, 9.11</td>
</tr>
<tr>
<td>Moderate</td>
<td>0.251</td>
<td>0.55</td>
<td>0.18, 1.46</td>
</tr>
<tr>
<td>Severe</td>
<td>0.018</td>
<td>0.24</td>
<td>0.06, 0.71</td>
</tr>
</tbody>
</table>

Table 5: Backward logistic regression results: risk factors for anxiety and depressive comorbidity.

*Migraine frequency = number of days per trimester with pain

Discussion

This study was designed to assess the relationship between disability (activity limitations) due to headache or migraine and the presence of psychological disorders such as anxiety and depression. To date, many studies reported an association between migraine and some mental impairment[19,20], underlining that more than 25% of migraineurs meet criteria for mood and anxiety disorders[21,22].
Differently from Mitsikostas et al.\textsuperscript{(15)}, where a moderate intensity headache was associated only to depression, we found that often depression and anxiety occurred together. Indeed, our results showed that 7/10 patients affected by headache or migraine attacks also suffered from anxiety or depressive disorders, and 1 out of 2 patients suffered from both disorders.

Anxiety and depression are often described as a consequence of headache\textsuperscript{(23)}, but our findings suggest that co-morbidity with mental disorder is not elective of specific diagnostic categories. Indeed, the comparison analysis results conducted on the HAM-D and HAM-A scores have confirmed that the psychological condition of the patients is not correlated with the diagnosis (migraine with aura, migraine without aura, chronic migraine, and tension-type headache), but rather with the attack frequency. Chronic stress seems to affect the frequency of migraine attacks. Yavuz et al.\textsuperscript{(24)} highlighted that the stress due to frequent headache attacks of severe intensity, associated to depressive symptoms, affects the well-being of patients.

Chronic stress is one among the most significant risk factors for both depression and chronic migraine\textsuperscript{(25,26)}. Previous studies have demonstrated that, when compared to migraine, headache is associated with greater disability and lower quality of life\textsuperscript{(27-28)}. Other researches support the view that psychiatric comorbidities can promote the transformation of episodic headaches into chronic daily headache\textsuperscript{(29, 30)}. This transformation may increase headache related disability, as well as the difficulty to treat this disorder\textsuperscript{(31)}. Other studies have shown that stress causes headaches and can be defined as anxiety performance. Anxiety and depression seem to aggravate the headache as well as negative emotions and mood disorders can create a fertile ground for the development of the disease\textsuperscript{(32)}. Similarly, our results have indicated a moderate headache frequency as the highest risk factor for a comorbidity of anxiety and depressive disorders. Indeed, a high frequency attack, as well as their intensity, restricts the social activities of the subject by risking to cause mood disorders. We also found a significant correlation between intensity of perceived pain and disability: the stronger was the pain intensity, the greater the patient’s disability was. Indeed, patients declared a reduction of the social and professional activities because of the pain.

According to previous studies\textsuperscript{(32, 33)}, our data confirmed a difference between gender in terms of psychological disorders, disability and pain intensity. In particular, women suffered from anxiety and depression more than men, besides having a more pronounced disability due to stronger pain attacks. In fact, we found that female gender is one of the major risk factors for the comorbidity of anxiety and depressive disorders in migraineurs. Considering the subsample composed by patients with elevate MIDAS score, we observed that women are considerably more anxious than men. These are not unexpected findings because several studies performed in clinical and community-based settings have reported an association between migraine and a number of specific psychiatric disorders in women\textsuperscript{(40)}.

It is important to consider the impact that the disease has on the quality of life. Migraine and headache cause significant limitations in all activities and in all roles of the individual, with obvious consequences on the emotional and behavioural and social aspects.

Given the complexity of the specific subject we propose to extend the investigation trying to increase the sample size and introducing the analysis of variables that would permit a better comprehensive assessment.

According to our findings, we believe that a migraine condition may involve the onset of a severe disability. Indeed, independently from the diagnostic category, an high degree of disability is often related to the presence of anxious and depressive symptoms. However, this study give only a broad picture of the relationship between psychiatric symptoms and migraine disease, since the rather small sample dimension. The knowledge of the anxiety and depressive disorders could help to improve the painful physical symptoms, the quality of life and the prognosis of migraine and tension type headache.

References

headaches in a community sample


