Association of Headache and Depression after Mild Whiplash Injury: An Observational Study

*Domenico Chirchiglia, ¹Pasquale Chirchiglia, ²Rosa Marotta

¹ MD, Department of Neurosurgery, University of Catanzaro, Campus Germaneto, Vle Europa, 88100, Catanzaro, Italy
² Department of Neurosurgery, University of Catanzaro, Campus Germaneto, Vle Europa, 88100, Catanzaro, Italy
³ MD, Department of Health Sciences, University of Catanzaro, Campus Germaneto, Vle Europa, 88100, Catanzaro, Italy

Abstract

Aim
The aim of this study is to establish the link between mild whiplash headache and a depressive syndrome. Whiplash headache is a very frequent disorder, mainly due to road accidents. International Headache Society has codified it and incorporated it into its classification. This type of headache often is associated with psychic disorders such as anxiety, sleep disorders and behavior, mood, all signs of a depressive state.

Method
In this study we describe a series of 30 subjects suffering from mild whiplash headache, in a group of which (10 out of 30), pain was associated with psychic disorders, lasted one year. In this group three patients already suffered from tension-type headache. Tests for depression, Zung and Hamilton rating scales, were administered as well as antidepressants combined with benzodiazepines were used.

Results
The administration of tests for depression discovered that these subjects are affected by moderate depression, in particular three of them who already suffered from tension-type headache had also a worsening of their headache. Antidepressants combined with benzodiazepines caused a reduction in the frequency of attacks of headache and improvement of depression symptoms, especially about insomnia and lack of concentration.

Conclusion
The mechanism causing whiplash headache seems due to the distorting trauma of the cervical spine that creates alterations of the ligament and nerve structures involving the region of the head. We make the point about possible some mechanisms causing depression in post whiplash headache subjects. We can hypothesize that in whiplash headache psychic symptoms could be latent, or not clinically evident, ready to go out after the traumatic event. Another hypothesis could be the individual disposition of a traumatized subject to develop psychic disorders.

Keywords
Whiplash Headache; Tension-Type Headache; Depression

Introduction
The whiplash injury is a frequent eventuality, due to the high frequency of road accidents. The impact front/rear between two cars causes sudden flexion-extension of the neck that provokes a kickback injury, involving the various structures of the neck and the head, such as nerves, muscles, bones, joints. Whiplash injury can be mild and severe. The mild whiplash injury presents with cranio-cervical pain and limitation of head motility as physical
symptoms and agitation, inattention, lack of concentration, sleep disorders, anxiety as psychiatric symptoms [1]. These symptoms have a variable duration, often about many months. International Headache Society (IHS) inserted whiplash injury headache between “headaches attributed to trauma or injury to the head and/or neck”[2]. Post whiplash headache (PWH) may appear in close relation to the trauma, in acute form or may occur in the case of a pre-existing headache that worsens after the trauma [3-5]. After three months headache is defined as persistent [6]. PWH can resemble a tension-type headache, migrainous or cervicogenic headache. PWH habitually is a pain radiating from the head to the neck, with moderate intensity, but prolonged course. The pathogenesis of PWH is still not well-known but might share some common headache pathways with primary headaches [7].

**Methods**

We analyzed retrospectively 30 patients with headache secondary to mild PWH. Thesample consisted of 15 males and 15 females, aged between 20 and 61 years, with average 33.6. Among these patients, three suffered from an episodic tension-type headache, with about an episode per month. All the patients, after the accident, underwent radiological examinations of the cervical spine and brain CT, having been at an emergency service. Radiological and neuroimaging examinations were normal as well as neurological examination. They all reported a widespread headache, described as a weight on the head, or constrictive type, sometimes radiated to the neck region, without nausea or vomiting. None of the patients reported any disease. Ten patients (33%) with an average age of 42 years, among whom the three who already suffered from episodic tension-type headache, complained of sleep disturbances, anxiety and decreased concentration, the others reported only headache. Moreover, the subjects with tension-type headache reported a worsening of the headache, with an increase in the frequency of the attacks that were about 2-3 per month. Everyone was checked for a year. The results were as follows: 17 patients after three months no longer reported headache, they were the ones who only complained of headache. After a year they report the disappearance of the headache. Of the remaining 13 patients, headache lasted over a year, and even the ten patients with psychiatric symptoms, reported the same duration. All patients reported a frequency of pain around one to two attacks per month, treated with nonsteroidal anti-inflammatory drugs (NSAIDs). The ten patients with headache and sleep and attention disorders, underwent tests for depression as Zung self-rating depression scale (SDS) and Hamilton depression rating scale (HDRS). SDS test consists in administering 20 questions that according to the responses show low (score 20-31), moderate (score 44-55), elevated depression levels (score 56-67). HDRS scoring is based on the 17-item scale and scores of 0-7 are considered as being normal, 8-16 suggest mild depression, 17-23 moderate depression and scores over 24 are indicative of severe depression. All the patients gave informed consent

**Results**

Results from SDS test was between 45 and 50 (range 44-55) showing a moderate depression, while HDRS showed a score between 18 and 21, suggesting a moderate depression.

Antidepressants (paroxetine 10 mg per day orally) combined with benzodiazepines (alprazolam, 0.50 mg per day orally) were administered, followed by a reduction in the frequency of attacks of headache and improvement of depressive symptoms, especially about insomnia and lack of concentration.

**Discussion**

Post Whiplash Headache (PWH) is a very frequent post-traumatic pathology, being linked to road accidents. It is the cause of a headache, codified by the IHS, as "a headache attributed to traumatic disorders of the head and/or neck ". It is a headache that occurs in close temporal relation to acute trauma, and persistent, when it is related to trauma, but tends to last over a limit of approximately three months [2]. The pain is widespread and radiated to the neck. The mechanism causing this type of headache seems to be due to neuroinflammatory processes, triggered by the cranial-vertebral trauma exerting a disturbing effect on the nerve structures of the neck and on the adjacent ones of the head [5, 6]. The literature offers a considerable variability of the percentages regarding the mild PWH, as demonstrated by some studies. Faux [8] examined a sample of 100 subjects with psychic symptoms by PWH finding 15.34% of these symptoms, while Obermann [9] found that from 30% to 90% of patients developed psychic symptoms, after PWH [9]. In this study we examined a series of 30 patients reporting a mild whiplash injury by road accident who developed headache pain. The sample, from a numerical point of view, has its importance, but although it is not wide, it is interesting to analyze it
regarding the quality of the study carried out. A thorough study, even if conducted on a few patients, can give excellent results. Analyzing the cases, we found interesting results. About 50% of patients who showed only headache after trauma, three months later they had no more attacks. Patients who in addition to headache reported disorders of sleep, mood, attention, continued one year from the trauma to manifest such disorders. In these patients were included the three patients affected by tension-type headache. There was a prevalence of females in the group of patients with persistent headache and psychiatric symptoms. The scales for depression showed a moderate depression in these patients. The consideration we can make is as follows: this study showed in the group of patients with headache and psychiatric symptoms the presence of depression. What could be the explanation? Were these disorders latent, or not clinically evident, appearing after the trauma? Is there a reactive depression to trauma? Is there a susceptibility of the traumatized subject to depression? [7, 9]. It is known that whiplash injury is often used for medico-legal purposes, where the so-called compensation syndrome is configured. However depression is a very frequent symptom, ascertained by the appropriate scales of evaluation. Headache and depression represent a binomial, object of study, in the case of whiplash, not at all negligible. The three subjects affected by tension-type headache were also affected by depression and manifested a worsening of the symptoms following the trauma, a fact that creates many suggestions about the coexistence (or comorbidity) of depression and this type of headache [7, 9]. Psychiatric symptoms are frequent after major and less severe road accident injury. The reactive depression is directly connected to the triggering event, the degree of intensity is extremely variable. The severity of the clinical symptomatology may also be mild or severe, up to a chronic of the pathology. Depression usually improved over the 12 months, though one tenth of patients had mood disorders at one year. In addition, specific post-traumatic symptoms were common.

This study has shown that a certain percentage of subjects suffering from PWH present psychiatric symptoms and these are responsible of worsening headache, if pre-existing, as in the subjects affected by tension-type headache.

Disclosure

The author/s declare do not have competing interests and accept terms of conditions concerning ethical conduct.

Author’s contributions

PC provided data collection, RM provided data elaboration, DC provided manuscript organization

References