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Association between lifetime headache and history of suicide attempts in the elderly

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ABSTRACT

Background: Pain-related conditions have been reported to play a key role among risk factors for suicide. Headache in particular has been repeatedly associated with suicidal thoughts and behaviors. The aims of this study were: 1) to assess the association between lifetime headache (both non-migrainous headache and migraine) and lifetime suicide attempts (SA); 2) to differentiate, within subjects with lifetime SA, patients with and without lifetime headache in terms of socio-demographic and clinical features.
Methods: We studied 1965 subjects from a cohort of community-dwelling persons aged 65 years and over without dementia (the ESPRIT study), divided in two groups: those with (n = 75), and those without a lifetime SA (n = 1890). Logistic regression analyses were used to compare these groups according to lifetime headache status.
Results: After adjusting for gender, living alone, tobacco and alcohol consumption, and depressive, manic/hypomanic and anxiety disorders, lifetime headache frequency was significantly higher in subjects with a lifetime SA compared with controls (OR = 1.92 [1.17–3.15]). Additionally, different factors were identified as being associated with lifetime SA in participants with lifetime headache (female gender, a lower level of high-density lipoprotein cholesterol, insomnia, lifetime major depression) versus participants without headache (glycemia and lifetime major depression).
Conclusions: Lifetime headache was associated with lifetime SA. Subjects who are women and report the co-occurrence of headache and insomnia as well as lifetime major depression require higher attention and a careful screening for suicidal thoughts and behaviors.

1. Introduction

Since suicidal behavior is a major international public health challenge [1], it is mandatory to identify both psychiatric and non-psychiatric risk factors for suicidal thoughts and behaviors to allow an early detection of at risk patients. Among risk factors, mood disorders [2], anxiety disorders [3], insomnia [4], diabetes [5], hypertension [6], high-density lipoprotein (HDL) cholesterol level [7], body mass index [8], smoking [9], and substance use [10] have been found to be predominantly associated with suicidal thoughts and behaviors. Pain-related conditions have also been reported to play a considerable role [11–13]. Suicidal thoughts and behaviors have been linked to different kinds of pain, such as fibromyalgia [14], back and neck pain [15–17], and abdominal pain [18–20]. The underlying biological hypothesis is that suicidal thoughts and behaviors might be related to a modified pain perception that could be linked to the opioid system. Therefore, this could be related to the reported propensity of suicidal subjects to use opioids [21,22]. Interestingly, Yovell et al. recently reported in a randomized double-blind placebo-controlled trial that buprenorphine may be a relevant treatment for suicidal ideation [23].

Among pain-related conditions, headache in particular has been repeatedly associated with suicidal thoughts and behaviors [24]. Among other studies, a recent meta-analysis performed to investigate the prevalence of migraine among bipolar disorder patients found a high overall pooled prevalence (34.8%) [25]. Hence, considering the high headache prevalence among psychiatric patients, its investigation as a risk factor for suicidal behaviors per se or in combination with other clinical features is of interest.

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According to the International Classification of Headache Disorders, 3rd edition, beta version (ICHD-3 beta) [26], among primary headaches the most common are migraine and tension-type headache (TTH). Migraine has been defined as a recurrent headache disorder manifested by attacks lasting 4–72 hours. It is characterized by unilateral location, pulsating quality, and moderate or severe intensity. Moreover, it could be aggravated by routine physical activity, and it is frequently associated with nausea, photophobia and/or phonophobia. Consequently, subjects suffering from migraine experience high impairment in work and social activities and overall reduced quality of life [27,28]. Similarly, TTH has a high socio-economic impact. TTH was previously labeled as psychogenic headache, stress headache, or idiopathic headache yet a specific neurobiological basis has been reported [29]. It is characterized by bilateral location, non-pulsating quality, and mild or moderate intensity. Usually it is not aggravated by routine physical activity and it is not associated with nausea, photophobia or phonophobia.

A hypothesis explaining the association between headache and suicide could be linked to Joiner's Interpersonal Theory of Suicidal Behavior [30]. According to this theory, suicide is linked to:

- the desire to die by suicide;
- the capability to die by suicide.

The suicidal desire is related to the simultaneous presence of two psychological states that are perceived burdensomeness and a sense of low belongingness or social alienation. The capability for suicidal behavior emerges in response to repeated exposure to physically painful and/or fear inducing experiences. Individuals with headache may both desire death by suicide (e.g., comorbid depression, hopelessness, functional impairment) and have acquired the capability to die by suicide (i.e., via pain habituation) [31].

The study of the relation between headaches and suicidal thoughts and behaviors is essential not only for the early detection of patients at risk but also for its clinical implications in terms of treatment choice and for the further conceptual development of the link between pain and suicide. In particular, previous studies have already been performed on the association between headache and suicide [11,24] but, to our knowledge, the differences between lifetime suicide attempt (SA) patients with and without lifetime headache have not been investigated.

The main aims of this study were:

- to assess the association between lifetime headache (both non-migrainous headache [NMH] and migraine) and lifetime SA in a cohort of elderly subjects;
- to differentiate, within subjects with lifetime SA, patients with and without lifetime headache according to their clinical status.

2. Materials and methods

2.1. Study design and sample

Data for this study were drawn from the French "Enquête de Santé Psychologique–Risques, Incidence et Traitement" (ESPRIT) cohort, a prospective study of lifetime psychiatric disorders in community-dwelling elderly subjects (over 65 years old). The project has been described in detail elsewhere [32]. Briefly, a sample of community-dwelling subjects was randomly selected from the 15 electoral rolls of the Montpellier district between March 1999 and February 2001. In the present study, we focused on a sample of 1965 subjects for whom baseline data on both lifetime SA and lifetime headache were available. Participants were screened at the Gui de Chauliac Neurology Hospital of Montpellier. They underwent a clinical examination and standardized assessment administered by trained staff. The study protocol was approved by the Ethical Committee of the University Hospital of Kremlin Bicêtre and Sud Mediterranée III (Nîmes). Each participant signed an informed consent form. This cohort has been already analyzed concerning headache [33].

2.2. Standardized psychiatric interview

The Mini-International Neuropsychiatry Interview (MINI) [34], a standardized psychiatric examination applying Diagnostic and Statistical Manual of Mental Disorders (DSM-IV) criteria [35], was administered by trained interviewers (nurses and psychologists). The MINI has previously been validated in the general population setting [36] and it can be used to identify suicidal ideation and SA as well as the main Axis I psychiatric disorders. Positives cases were reviewed by a clinical panel of three psychiatrists. We also assessed with the MINI lifetime major depressive disorder, lifetime manic/hypomanic episodes and lifetime anxiety disorders.

2.3. Headaches assessment

A face-to-face standardized neurological examination based on the International Classification of Diseases (ICD-10) criteria [37] was performed at baseline, comprising the assessment of headache (both NMH and migraine) using a specific questionnaire developed for this study. Headache cases were assessed by the neurologist based on the International Headache Society (IHS) guidelines available at the time [38]. Lifetime headache included all subjects with either current or past episodes of NMH or migraine (e.g., any type of headache at least once in the lifetime). A diagnosis of current NMH was made only after excluding a diagnosis of migraine. The few subjects with both lifetime NMH and migraine were classified as having migraine only. Factors that could trigger headache attacks were also described among specific headache features of the sample.

2.4. Other variables

A standardized interview included questions on demographic characteristics, educational level (classified into three groups corresponding to primary, secondary and tertiary levels), weight and height. In this prospective cohort studying lifetime psychiatric disorders, information on main risk factors was also obtained. We focused in particular on data collected on the best-known risk factors for SA, such as sleep quality, history of head trauma, self-reported social isolation, current alcohol consumption, and tobacco use. We focused on hypertension as well: blood pressure was measured twice during the interview using a digital electronic tensiometer (Omron M4); subjects were considered to be hypertensive if mean systolic blood pressure was 160 mmHg or higher or mean diastolic blood pressure was 95 mmHg or higher, or they were taking antihypertensive drugs [39,40]. Fasting blood samples were taken for measuring HDL cholesterol level and glucose concentrations; hypercholesterolemia was defined as cholesterol sulfotransferase > 6.2 mmol/l, and diabetes as treated diabetes or fasting blood glucose > 7.2 mmol/l.

Participants also completed a retrospective self-report questionnaire which examined traumatic experiences during childhood and adolescence based on existing instruments including the Childhood Trauma Questionnaire [41]. The occurrence of negative or stressful events occurring in the past year was ascertained using the 12-item Gospel Oak questionnaire [42]. Finally, global cognitive function was assessed using the Mini Mental State Examination (MMSE) test [43].