

Suicidal ideation in migraine

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Abstract

Background and Objectives: Clinical and epidemiologic evidence suggests that migraine coexists with psychopathology. Patients with migraine and coexisting affective disorder are at increased risk of suicide. There is limited published data on suicidal ideation in migraine. This paper studied the association between migraine and suicidal ideation. **Methods:** This was a case control study involving 70 patients with migraine who fulfilled the International Classification of Headache Disorders 2004 and 70 age-, gender- and race-matched controls. The subjects were requested to answer the Minnesota Multiphasic Personality Inventory-2 (MMPI-2) questionnaire. **Results:** Ninety percent of the patients had migraine with aura. A positive family history of migraine was seen in 27 (38.6%) patients. Thirteen (18.6%) migraine patients had suicidal ideation as compared with none in the control group ($p < 0.0005$). The patients with migraine with aura were as likely as those without aura to have suicidal ideation traits.

Conclusion: Both groups of migraine patients with and without aura were likely to have suicidal ideation traits. Health personnel should be aware of the increased risk of suicidal ideation in migraine and to institute appropriate medical and psychological therapy.

INTRODUCTION

Suicide and suicide attempts are a major problem in the developed and developing countries. The reported rates of suicide vary from less than 1 to more than 40 in 100 000 per persons per year worldwide.¹ The rate of suicide attempt is higher in females especially in the 20-30 year-old age group. The risk of suicide is increased in people with psychiatric disorders^{2,3}, cancers and disorders of the central nervous system such as epilepsy, AIDS, head injuries and cerebrovascular accidents. Genetic and psychosocial aspects have also been implicated in suicide.⁴

Migraine is a chronic disorder characterized by episodic headaches, nausea, vomiting, photophobia and phonophobia. Migraine imposes a substantial burden on the individual as well as the society at large. The World Health Organization has classified migraine as the 19th leading cause of disability worldwide. Most people experience mood or behaviour changes as accompanying features during a migraine attack. Several studies have reported a significant association between migraine, affective disorders and anxiety disorders.⁵⁻⁷ Patients with migraine and coexisting affective disorder are at increased risk of suicide.^{6,8} There is an increased frequency of suicide attempts

among persons with migraine with aura.⁸ There has limited data on suicidal ideation in migraine. We examined the association between migraine and suicidal ideation in a group of clinic based migraineurs.

METHODS

Our study was a case control study involving 70 patients with migraine and 70 age-, gender-, and race-matched controls. The patients who fulfilled the International Classification of Headache Disorders 2004 criteria⁹ were recruited from the neurology clinic, National University of Malaysia while those who had coexisting tension-type headache, focal neurological deficit, epilepsy, psychiatric disorders, head injuries and diseases of the ear, nose, throat and dental were excluded. Controls were selected from the community and had no evidence of migraine. The patients were requested to answer the Minnesota Multiphasic Personality Inventory-2 (MMPI-2)¹⁰ questionnaire which consists of 567 questions with true or false options. The MMPI-2 is a written psychological assessment used to diagnose personality and psychosocial disorders. The questions asked on the MMPI are designed to evaluate the thoughts, emotion, attitudes and behavioural traits that

comprise personality. The personality scales scored in the MMPI-2 will determine a specific personality trait. The MMPI-2 was assessed by a psychologist to determine the presence of suicidal ideation and depressive personality traits. A T-score above 70 would identify a depressed individual and scores between 65–70 indicate a depressive personality trait.

Statistical analysis was done by using the SPSS package version 11.0 software and a p value of less than 0.05 was deemed statistically significant. Distribution and frequencies of the independent variables were examined. All continuous variables were expressed as median and interquartile range. Chi square test were used to determine the association between individual categories and Yates correction was applied where appropriate.

RESULTS

The median age was 30 years (Interquartile range 24–40) in the migraine group and 31 years (Interquartile range 23–39) in the control group. The distribution according to gender, ethnic group and education levels is shown in Table 1.

Out of the 70 patients, 63 (90%) had migraine with aura. There were 27 (38.6%) patients who

had a family history of migraine. Thirty-eight (54.3%) patients had migraine for more than 10 years. The duration of migraine was obtained from the patient's history. The duration of migraine did not differ significantly between the two genders. Migraine with aura was more common in females (57) than the males (6), ($p < 0.001$).

Thirteen (18.6%) migraine patients had suicidal ideation traits as compared with none in the control group ($p < 0.001$) (Table 2). Eleven (84.6%) of those with suicidal ideation were female. The patients without tertiary education had a significantly higher rate of suicidal ideation compared to those who received tertiary education (8 vs 5, $p = 0.044$). The patients with migraine with aura were as likely as those without aura to have suicidal ideation traits. There was no difference between the 2 groups in the duration and treatment of migraine. Suicidal ideation was not significantly higher in patients with depressive personality traits when compared to those without depressive traits (9 vs 4, $p = 0.28$). None of the individuals in the migraine or control group had a T-score more than 70 when assessing for depressive traits.

Table 1: Baseline characteristics of migraine patients and their controls

	Migraine n=70	Control n=70	p value
Age (years)			
Median	30	31	NS
IQR	24–40	23–39	
Gender			
Females	59 (84.3)	59 (84.3)	NS
Males	11 (15.7)	11 (15.7)	
Ethnic group			
Malay	55 (78.6)	55 (78.6)	NS
Chinese	7 (10)	7 (10)	
Indian	8 (11.4)	8 (11.4)	
Education			
Primary	2 (2.9)	0 (22.9)	NS
Secondary	24 (34.3)	16 (22.9)	
Tertiary	44 (62.9)	54 (77.1)	

Values in parentheses are percentages.

NS: not significant, significant at <0.05

IQR: interquartile range

Table 2: Suicidal ideation in migraine and normal controls

	Migraine n=70	Control n =70	p value [#]
Suicidal Ideation			
Yes	13 (18.6)	0 (0.0)	<0.001
No	57 (81.4)	100 (0.0)	

Values in parentheses are percentages.

[#]Yates correction

DISCUSSION

Migraine sufferers frequently experience a variety of psychological alterations during the headache paroxysm as well as in the prodromal period. Alterations in sensory function, motor abilities, language, memory, mood and cognition have been reported. Certain personality traits have been linked to migraine.^{11,15} Migraneurs have often been described as ambitious, success orientated, conscientious, perfectionist and of above-average intelligence yet tense, frequently resentful and hostile. Merikangas *et al*¹² found significant differences between migraneurs and controls on general emotional lability, anxiety, phobia, depression and moodiness. In epidemiologic studies of migraine¹³, there is an elevated 1-year prevalence rate for a wide range of psychiatric disorders in people with migraine compared to non-migraneurs such as major depressive disorders, bipolar spectrum disorders, generalized anxiety disorders, panic disorders and phobia.

Breslau⁸ found that patients with migraine with aura alone and migraine with aura and coexisting major depression had significantly higher rates of suicide attempts and suicidal ideation compared with persons with neither migraine nor major depression. In this study we found that the migraine patients were more likely to have suicidal ideation compared to the control group. Both groups of migraine patients with and without aura were likely to have suicidal ideation. Although the male gender is a known risk factor for suicide, we found females were more likely to have suicidal ideation in this study. This may be attributed to the overrepresentation of females in migraine.

The pathogenesis of depression and migraine has been postulated to be due to dysregulation of serotonergic neurotransmission. Changes in the circulating levels of serotonin during migraine attacks, the ability of serotonin releasing agents to trigger migraine and the efficacy

of certain serotonin receptor ligands in the treatment of migraine provide indirect evidence for the involvement of this neurotransmitter in migraine pathophysiology.¹⁴ The abnormalities in the serotonergic system, genetics influence and serotonin transporter genes have been implicated in the pathogenesis of suicidal behaviour.⁴ Suicidal behaviours despite their strong association with major depression do not necessarily signify major depression. Risk factors for suicide attempts include other psychiatric disorders other than major depression, heavy use of alcohol and other psychoactive substances and family history of suicidal behaviours.

These findings may have several clinical implications. Clinicians treating migraine should be aware of the increased risk of suicidal ideation and institute appropriate therapeutic approach. Coordination of both medical and mental health services is important to ensure effective treatment for these patients.

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