

ORIGINAL PAPER

A CASE-CONTROL STUDY TO ASSESS THE COMORBIDITY OF
DEPRESSION AND MIGRAINE*Rajdeep K*, Harish A*****Psychiatry Department, Civil Hospital, Gurdaspur, Punjab****Psychiatry Department, G.G.S. Medical College Hospital, Faridkot*

Abstract

Background: Migraine is a common neurological disorder affecting around 18% of females and 6% of males. The present study was undertaken to identify and assess the impact of coexisting depression in diagnosed cases of migraine. **Material and Methods:** A hospital based case control study was conducted on 450 patients suffering from migraine of all ages and both sexes attending psychiatry out patient department at civil hospital, Gurdaspur city in Punjab. International headache society criteria for the diagnosis of migraine and 21- item Hamilton rating scale for depression was used. Migraine with depression (MWD) cases were compared with migraine without depression as controls (MC). Duration and frequency of migraine, comorbidity with depression were measured. **Results:** Out of 450 patients, 200 were MWD and 200 were MC patients. Among MWD and MC, females were common: 73% (146) and 75% (150) respectively. Of the females having MWD, 50% (73) belonged to age group 31-40 years as compared to females with MC where 58% (87) were from age group 21-30 years. Among the males, maximum number of patients belonged to age group 20-30 years for MWD and MC i.e 48% (26) and 57% (29) respectively. 50% of MWD reported having migraine attacks for five years or more years, whereas only 16% of MC had the similar duration (P <0.01). 80% of (n=160) of MWD reported maximum disability during the headache as compared to 64% (n=128) of MC. 70% (140) of MWD had an average frequency of 4 or more attacks per month compared to 45% (90) of MC having one episode per month or less. **Conclusion:** Patients suffering from migraine with long history and high frequency might benefit from psychiatric evaluation and addition of antidepressants for their treatment.

Keywords: Migraine, depression, comorbidity.

Introduction

Migraine is a common neurological disorder affecting about 18% of females and 6% of males.¹ It imposes a high socio-economic

burden on society and compromises the quality of life in migraine patients. Major depression and migraine usually begin in early life. Depression is four times more common in migraine than in general

population or in patients with other chronic medical conditions.^{2,3} The lifetime prevalence of dysthymia in migraine patients is approximately 3.2%.³ The lifetime prevalence of posttraumatic stress disorder is approximately 8% and it is twice more common in women than men. Furthermore, posttraumatic stress has been shown to worsen chronicity and disability of chronic migraine patients.⁴

A previous similar study conducted found that more than 10% of the study patients had depressive personality, which was highest of all the other personality types noted.⁵ A psychiatric disorder coexisting with a physical illness is likely to cause more distress by the symptoms of the illnesses, a poor response to treatment, frequently unnecessary investigations. Evidence based guidelines advocate the use of amitriptyline and sodium valproate in the prophylaxis of migraine, although other antidepressants, anticonvulsants and antipsychotic agents also play some role in the treatment of migraine.⁶

The knowledge of the co-morbidity of migraine and depression and treatment of both conditions improves the burden of migraine socially and economically. The goal of the present study was to identify the coexisting depression in diagnosed cases of migraine and to see its impact on the functioning of daily routine life.

Material and Methods

For the diagnosis of migraine a questionnaire was developed based on the International Headache Society (IHS) criteria for the diagnosis of migraine.⁷ For the diagnosis of depression, 21-item Hamilton Rating Scale for depression (HRDS) was used.⁸ This was a hospital-based case-controlled study carried out in

the Department of psychiatry at Civil Hospital, Gurdaspur city in Punjab. Out of all the patients attending the psychiatry OPD of this hospital, 450 patients were found to have migraine according to Headache International Society criteria for the diagnosis of migraine.

The patients attending our OPD generally belong to middle class socio-economic class. Investigations would have been an additional burden to their financial setback. Therefore, only those patients were selected for the study that had not found any change in the character or location of the headache. However, in doubtful cases organic lesion was excluded with CT Scan/MRI. The patients who fitted the IHS criteria for migraine were interviewed with 21-item Hamilton Rating Scale for Depression. The migraine patients having score of <7 were selected as controls (MC), and those having >10 were taken as cases of migraine with definite depression (MWD). Patients having borderline scores i.e., from 8-10 were not included in the study. All the consecutive patients suffering from migraine coming to attend outdoor patient department of psychiatry department of hospital were included in the study. Further inclusion criteria were patients of either sex of age more than 10 years or old and up to 40 years of age, non pregnant females, informed written consent was taken from patient. Exclusion criteria were refusal to give informed written consent, pregnant females, patients suffer from epilepsy, mental retardation or any other organic brain disease.

In this way 200 cases of MWD were selected, who were then compared with 200 age and sex matched MC. Both MWD and MC were divided into three age groups: 11-20 years; 21-30 years and 31-40 years. Duration of headache was also divided into

three groups: those having headache for 5 years or less, those having it for 6 to 9 years, and those having it for 10 years or more.

A maximal disability during the migraine attack was taken as severe disturbance in social and occupational functioning of daily routine life of patient. A moderate disability was taken as inability to carry out routine physical activities. Regarding frequency of headaches, patients were divided into three groups: 4 or more attacks per month, 2-3

attacks per month, and one attack per month or less.

Results

Out of 450 patients of migraine, 200 were MWD on the basis of 21-item HRDS. These were then compared with 200 age and sex matched Migraine Controls (MC). The sex distribution and age-group of each case and control are shown in Table I and Table 2.

Table 1. The sex distribution of each group

Type of patients	Males % (N)	Females % (N)
Migraine with depression	27%(54)	73%(146)
Migraine control	25%(50)	75%(150)

Table 2 The age-group distribution of each group according to sex

Age group (Years)	Migraine with Depression		Migraine Controls	
	Males %(N)	Females %(N)	Males %(N)	Females %(N)
11-20	16% (9)	17% (25)	33% (17)	26%(39)
21-30	48%(26)	33%(48)	57% (29)	58%(87)
31-40	36%(19)	50%(73)	10%(5)	16%(24)

Regarding duration of headache, 50% of MWD had these attacks for 10 or more years compared to 16%(32) in MC. 80%(n=160) of MWD reported maximal disability during the headache as compared to the 64%(128) of MC. Only 20%(4) of MWD said that they had moderate disability during the attack whereas 36%(72) of MC had this much disability ($P < 0.05$).

Majority of MWD, 70%(140), had an average frequency of 4 or more attacks per month, followed by 20%(40) had 2-3 attacks, and only 10%(20) had one attack per month or less. Among MC, 18%(36) had one attack per month or less, 37%(74) had

2-3 attacks and only 45%(90) had 4 or more attacks per month ($P = 0.001$).

Out of initially selected 450 patients, 217 fitted the criteria for migraine without aura, 184 had migraine with aura, and 49 patients had mixed patterns of migraine variants. Two patients had migraine without aura with ophthalmoplegic migraine (sixth cranial nerve palsy). 75% of patients had unilateral headache, which changed location. Nearly 75% percent of patients could identify a trigger for their attacks and 90% of them cited stress as a cause. Approximately 38% of the patients had a positive family history, usually for recurrent headaches. Among

MWD, score on the depression subscale of HRDS was slightly higher for females than males. The average HADS score for females and males was 16.2 and 15.5 respectively, giving an average of 15.85 for MWD cases. For MC, the average depression score was 6, with negligible variation for females and males. The age group, which showed maximum depression according to these scores, was 30-40 years group having an average score of 15, both for males and females. Age group of 20-30 years had a score of 12 for females and 12.5 for males. Age group of 10-20 years showed an average of 13 for females and 14 for males. This indicates a more severe degree of depression among adolescent male migraine patients of the study.

Discussion

Migraine with depression was observed in 44.44% of the study patients, selected on the basis of IHS criteria for migraine and 21-item HRDS for depression. Working with the same depression scale, Juang et al found the frequency of depression disorders to be about 57% in their headache patients.⁹ and Devlen in 20% of his migraine patients.¹⁰ In a population-based case control study, Lipton et al determined that 47% of migraine sufferers experienced depression, compared to 17% of people without migraine.¹¹

Sial found the evidence of depression to be about 52% in his study patients and cites psychological factors to be the main provokers of acute migraine attacks.¹² In our study, it was noted that MWD had a more prolonged history of the recurrent headaches. Fifty percent of MWD had these attacks for 10 or more years compared to 16% of MC. Moreover, the headaches in MWD were of more severe intensity, more

prolonged duration, and a greater frequency than in MC.

Majority of MWD, 70%(140), had an average frequency of 4 or more attacks per month in contrast to 45%(90) in MC. Only 25%(50) of MWD had one attack per month or less compared to 18%(36) among MC. 80%(160) MWD were severely disabled by their headache attacks compared to the 64%(128) of MC having this much disability. Approximately similar results were given by Sial who found that 80% of his study patients could not continue their routine during migraine attacks.¹²

Depression was found to be more frequent in the fourth decade of life, which is the period of maximum productivity in terms of economy. Agony of the recurrent headache disorder, made worse by the coexisting depression, not only adds to the general suffering of the patient of a chronic condition, but also results in an increase in their social and occupational interference. This observation was supported by Hu, who reported that patients of both sexes aged 30 to 49 years incurred higher indirect costs compared with younger or older employed patients.¹²

Migraine costs American employers about \$13 billion a year because of missed workdays and impaired work function. Annual direct medical costs for migraine care were about \$1 billion and about \$100 was spent per diagnosed patients.¹² Sial reported up to 50 or more lost work days per year; three of his study patients even lost their jobs.¹²

Thirty eight percent of our study patients had first-degree relative affected by recurrent headaches including migraine. Mortimer found that a history of maternal depression and migraine was significantly

more common and proportionately higher in children with abdominal migraine and recurrent abdominal pain.¹⁴ Nearly 75% percent of our patients could identify a trigger for their attacks and 90% of them cited stress as a cause, in combination with other factors or alone. This was quite high as compared to the percentages for stress or anxiety to be a trigger given by Robbins, 62%, this study was however not looking specifically for depression in their migraine patients, the presence of which might indicate an increase proneness to other psychological factors, including susceptibility to stress.¹⁵

MWD were found to be responding very slowly or poorly to anti-migraine treatment unless an anti-depressant was added to their therapeutic regimen. They become habitual of using analgesics, which in turn is another established cause of headache, the so-called analgesic rebound headaches,^{16,17} and also of hemicrania continua.¹⁸

Vasconcellos in his 98 pediatric and adolescent patients discovered rebound headaches in 47% with 30 of them using analgesic daily.¹⁹ Rapoport on the other hand reports analgesic rebound headaches most likely to occur in patients aged 31 to 40 years.¹⁷ Moreover, there is typically delayed improvement in analgesic rebound headache after the offending agents have been discontinued; at times, it might be necessary to omit medications for 6 months until the almost daily headaches cease.²⁰ This is quite a difficult job requiring patient understanding and education.

In addition resistant headaches give way to various misconceptions about headache in a poorly educated society, where sources of misinformation outnumber markedly the sources of information. People then resort to various non-medical and non-ethical and

even inhumanly treatments provided readily by quacks, false hakeems etc. These situations are not a psychological trauma for the patient alone but also for the family members who keep on hanging in the realm of uncertainty. It should not be forgotten that migraine could even lead to suicidal tendency and suicidal attempts.²¹

Conclusion

Depression, when it is comorbid with the migraine, not only increases the duration, frequency and severity of this primary headache disorder, but also makes it more resistant to treatment. It also produces a deeper impact in impairing the quality of life for the affected person and overall increases the burden of the disease. Migraineurs with long history and high frequency of headaches or patients suffering from migraine with drug- overuse might benefit from psychiatric evaluation and probably addition of antidepressant drugs to their therapeutic regimen.

References

1. Lipton RB, Stewart WF. Prevalence and impact of migraine. *Neurol Clin* 1997;15(1):1-13.
2. Breslau N, Davis GC: Migraine, major depression and panic disorder: a prospective epidemiologic study of young adults. *Cephalalgia* 1992;12(2):85-90.
3. Molgat CV, Patten SB. Comorbidity of Major Depression and Migraine-A Canadian Population-Based Study. *Can J Psychiatry* 2005;50:832-7.
4. Peterlin Lee B, Gretchen E et al. Posttraumatic stress disorders in migraine. *Medscape Today* 2009;59:412-418.

5. Aziz H, Frances P. Migraine Clinic Data, (Unpublished Work). Direct communication with Professor Hasan Aziz, Department of Neurology, JPMC, Karachi, Pakistan.
6. Ramadan N, Silberstein S et al. Evidence based guidelines for migraine headache in the primary care setting. Pharmacological management for the prevention of migraine. Saint Paul, MN: American academy of neurology 2000. Available at <http://www.aan.com/professionals>.
7. Headache Society. Classification and diagnostic criteria for headache disorders, cranial neuralgias and facial pain. *Cephalalgia* 1988;8(suppl.7):1-96.
8. Hamilton M. A rating scale for depression. *J Neurol Neurosurg Psychiatry* 1960;23-56.
9. Juang KD, Wang SJ, Lin CH, Fuh JL. Use of the hospital anxiety and depression scale as a screening tool for patients with headache. *Zhonghua Yi Xue Za Zhi (Taipei)* 1999;62(11):749-55.
10. Devlen J. Anxiety and depression in migraine. *J R Soc Med* 1994;87(6):338-41.
11. Lipton RB, Hamelsky SW, Kolodner KB, Steiner TJ, Stewart WF. Migraine, quality of life, and depression: a population-based case-control study. *Neurology* 2000;55(5):629-35.
12. Sial M, Hussain S, Nasrullah M. Study of migraine in local population: Its clinical features and impact on social personal life. 1998 (Thesis no. Neuro-10, CPSP Library, Pakistan).
13. Hu XH, Markson LE, Lipton RB, Stewart WF, Berger ML. Burden of migraine in the united states: Disability and economic costs. *Arch Internal Med* 1999;159:813-8.
14. Mortimer MJ, Kay J, Jaron A, Good PA. Does a history of maternal migraine or depression predispose children to headache and stomach-ache? *Headache* 1992;32(7):353-5.
15. Robbins L. Precipitating factors in migraine: a retrospective review of 494 patients. *Headache* 1994;34(4):214-6.
16. Khawaja I. Headache caused by headache pills. *JPIMS* 991;1&2:98-9.
17. Rapoport A, Stang P, Gutterman DL, Cady R, Markley H, Weeks R, et al. Analgesic rebound headache in clinical practice: data from a physician survey. *Headache* 1996 Jan;36(1):14-9.
18. Warner JS. Analgesic rebound as a cause of hemicrania continua. *Neurology* 1997;48(6):1540-1.
19. Vasconcellos E, Pina-Garza JE, Millan EJ, Warner JS. Analgesic rebound headache in children and adolescents. *J Child Neurol* 1998 Sep;13(9):443-7.

20. Warner JS. Time required for improvement of an analgesic rebound headache. *Headache* 1998;38(3):229-30.

21. Breslau N. Migraine, suicidal ideation, and suicide attempts. *Neurology* 1992;42(2):392-5. *Pak J Med Sci* 2007 Vol. 23 No. 1 www.pjms.com.pk 99. Migraine comorbidity with depression

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