

ASSOCIATION OF DEPRESSION WITH HEADACHE

Gupta Ravi, Bhatia Manjeet, Narendra Pratap Singh, Rajeev Upreti

ABSTRACT

Objectives: The objectives of the study were to find any association between depression and headache and assess the impact of depression on headache in terms of occurrence of headache its clinical profile and its subtypes.

Design: Cross-sectional, clinic-based, observational study.

Place and duration of study: The study was conducted in the psychiatry out-patient department of Guru Teg Bahadur Hospital, Delhi, India during December 2006 to July 2007.

Subjects and Methods: Subjects suffering from depression and primary headaches were recruited from the psychiatry out-patient department. Depression was diagnosed using DSM-IV-TR criteria and depressed patients were assessed for the presence of headache. Headache in depressed patients and patients primarily with headaches was diagnosed using ICHD-2 criteria. Severity of depression was evaluated using Beck's Depression Inventory-II. Patients who presented with both the disorders were inquired about the order of appearance of each disorder in time.

Results: Amongst all patients with headache, 50% had depression and among all depressed patients, 42.4% complained of headache. The duration of headache was found to be shorter in depressed patients when compared to non-depressed patients ($p = 0.002$). Similarly frequency of headache was also found to be less in depressed subjects ($p < 0.001$) and same was the case with respect to duration of headache episode ($p = 0.004$).

Conclusions: Headache is seen in moderate to severe depression only, and presence of depression is associated with milder headache. Headache sufferers develop only mild depression in due course. Depression does not predispose to development of a particular subtype of headache, suggesting similar pathophysiology among primary headaches.

Key words: Depression, Headache, Beck's Depression Inventory-II.

INTRODUCTION

Epidemiological and clinical studies have shown an association between primary headaches and depression^{1,2}. Among all primary headaches, migraine was proposed to have close association with depression and at least one study proposed that both disorders are part of

same spectrum³. This association may be bi-directional, that means, presence of one increases the chances of development of another disorder and it was more frequently found in migraine^{2,4}. The relationship extends in the subtype of migraine and migraine with aura was found to be more strongly associated with risk of developing depression than other subtype of migraine^{2,5}.

However, contradictory studies are also available and they do not report any association between depression and headache subtypes^{6,7}. In addition, it was found that treatment of headache does not affect the improvement in co-morbid depression⁶.

Presence of one disorder may have an impact on the clinical profile of the other as those suffering from migraine with co-morbid depression were found to represent more severe form of migraine than migraine alone.⁸ Another longitudinal study showed that in presence of depression, migraine either worsened or remain unchanged and remission was seen in migraine patients without co-morbid depression⁹. Yet another study reported that both disorders tend to exacerbate each other¹⁰.

Gupta Ravi, MD, Department of Psychiatry, University College of Medical Sciences and GTB Hospital, Shahdara, Delhi, India

Bhatia Manjeet, MD, Department of Psychiatry, University College of Medical Sciences and GTB Hospital, Shahdara, Delhi, India. D-1, Naraina Vihar, Delhi, India, Ph-0091-98101-61790. E-mail: manbhatia1@rediffmail.com

Narendra Pratap Singh, MBBS, Department of Psychiatry, University College of Medical Sciences and GTB Hospital, Shahdara, Delhi, India

Rajeev Upreti, MBBS, Department of Psychiatry, University College of Medical Sciences and GTB Hospital, Shahdara, Delhi, India

Correspondence:

Dr. Manjeet Singh Bhatia

After studying the association, factors that may influence the development of depression in headache patients were studied and higher frequency of headache, higher age and female gender were reported to be associated with depression^{11,12}. Some studies speak against association between migraine and specific symptom profiles of depression¹³ or the presence of depression¹⁴.

However, most of these studies were done on headache patients, and to best of our knowledge, only three studies are available that assessed the headache in depressed patients^{7,15,16}. These studies reported only migraine in depression^{7,15,16} and also that migraine is more common in severe depression and with longer duration of depressive episode¹⁵.

Our aim of this study is to uncover any association between headaches and depression. We wanted to find out the effect of depression on the occurrence of headache, its course, and its subtypes.

SUBJECTS AND METHODS

The study was conducted in psychiatric out-patient department over a period of eight months. All the subjects coming with complaints of major depressive disorder or primary headache were included in the study. Exclusion criteria were: (i) Presence of secondary headache (ii) history of any medical disorder that may be associated with headache or depression (iii) patients having significant relief in depression after taking antidepressant medications at the time of study (iv) suspected medication overuse headache (v) subjects with substance intoxication, withdrawal and dependence (vi) presence of co-morbid psychiatric disorder other than mentioned in inclusion criteria (vii) subjects with recent stressors (viii) subjects with any physical trauma (ix) subjects not able to provide a reliable history (x) illiterate subjects (xi) subjects with less than three headaches with similar characteristics in past one year.

In the included subjects, besides demographic data, history of headache was taken and characteristics of headaches were recorded in a semi-structured proforma. This included age of onset of headache, its course, features of pain and associated symptoms. We included headaches which caused significant disturbance in level of functioning of sufferers during the episode. Where subjects had more than one type of headache, the headache that was more disabling, was recorded. Diagnosis of headache was made according to ICHD-2 criteria.¹⁷ These patients were then, screened for presence of major depressive disorder according to DSM-IV-TR criteria¹⁸ and severity was measured on the Beck's depression inventory-II¹⁹.

Those patients who came with complaints suggestive of depression were also included. In these patients, depression was diagnosed according to DSM-IV-TR criteria¹⁸. They were asked for the number of epi-

sodes, duration and course of illness, family history of depression and response to treatment. Its severity was assessed using Beck's Depressive Inventory-II¹⁹. These subjects were asked for the presence of primary recurrent headaches as defined above.

In those subjects, where headache and depression was co-morbid, history was taken to find out which developed first – depression or headache? Also, the influence of one on the other was also elucidated. It resulted in four groups in the sample – subjects having only headache (H); only depression (D); depression followed by headache (DH); and lastly, headache followed by depression (HD).

Statistical analysis was done with the help of SPSS v 11.0. Chi square and independent sample t test was applied to categorical and numerical variables respectively.

RESULTS

In this study, 165 subjects were included. Among them 58.2% were females, depression was present in 70.3% ($n=116$) subjects, while headache was seen in 59.4% ($n=98$) subjects. Number of subjects in each of the four categories was as follows: headache 29.7% ($n=49$), depression 40.6% ($n=67$), depression followed by headache 17% ($n=28$) and headache followed by depression in 12.7% ($n=21$) subjects. Hence, headache and depression was co-morbid in 29.7% subjects. Age was not different among patients with depression and non-depression (32.69 vs 34.36 years; $p = 0.4$).

Among all subjects with headache 50% had depression and among depressed patients, headache was seen in 42.4% subjects. Table 1 shows that headache patients developed mild depression in due course while headache developed in moderate to severe depression. Moreover, most of the subjects with mild to moderate depression developed migraine. Among patients with depression 58.3% females and 25% males had headache ($p < 0.001$). Depressed patients had shorter duration of illness of headache (1.28 years vs. 2.6 years; $p = 0.002$), less frequent headache (6.35 vs. 16.59 episodes per month; $p < 0.001$) and short lasting headache (5.47 hrs vs. 16.45 hrs; $p = 0.004$). Interestingly, among all headache sufferers, absence of depression was associated with progression of headache (Fig 1) but it did not affect the types of primary headaches (Fig 2).

DISCUSSION

Important findings of this study are as follows: (1) Depression was more common in headache patients than the headache in depression; (2) Depression in women predisposed them to have headache; (3) Contrary to results of previous studies, depressed patients had less frequent and shorter lasting headache epi-

Table 1
Effect of severity of depression on headache variables

Variable	Depression				Sig
	Absent/ Minimal	Mild	Moderate	Severe	
Headache Present (N=165)	98.1%	40.7%	60%	32.1%	<0.001
Absent	1.9%	59.3%	40%	67.9%	
Chronology (N=49)					
HD	—	72.7%	50%	22.2%	0.029
DH	100%	27.3%	50%	77.8%	
Course of headache (N=165)					
Declining	9.6%	3.7%	10%	5.4%	
Progressive	53.8%	14.8%	30%	14.3%	<0.001
Stable	34.6%	22.2%	20%	12.5%	
Diagnosis of headache (N=98)					
Migraine	58.8%	63.6%	50%	33.3%	
TTH	29.4%	27.3%	27.8%	33.3%	0.39
Unspecified	11.8%	9.1%	22.2%	33.3%	

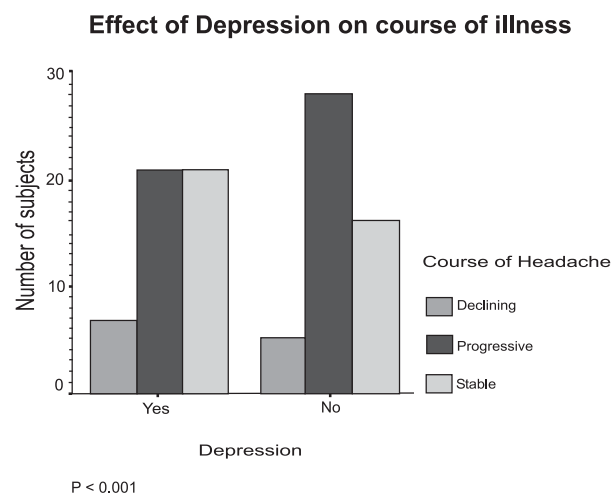


Figure 1 (N=98)

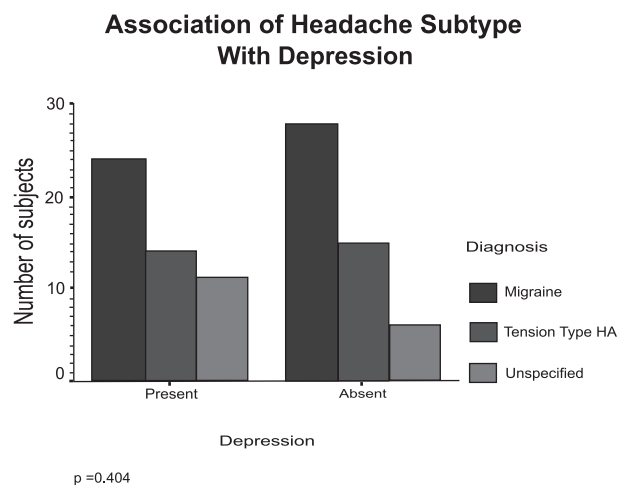


Figure 2 (N=98)

sodes; (4) Headache patients develop milder depression in future, while headache develops in severely depressed patients; (5) headache progressed more commonly in subjects without depression, while among depressed patients, progression was seen in moderate to severely depressed subjects; (6) subtypes of headache were neither related to presence of depression nor to the severity of depression.

Previous workers reported the prevalence of headache in depression ranging from 52%⁷ to 70%¹⁵. However depression in migraine ranged from 20%¹⁴ to 32%⁶ and 34% among TTH sufferers⁶. This contradicts our findings and differences could be ascribed to method-

ological differences: (i) we included all patients coming with depression and primary headache subjects. Most of the other studies have included subjects with depression or with headache only. (ii) We made the clinical diagnosis of MDD while other studies that analyzed depression in headache patients applied Hospital Anxiety and Depression scale¹⁴ and with HRSD⁶. These scales do not diagnose depression; rather diagnose the caseness²⁰ and the severity of depression only, respectively.

In this study, depressed female patients had higher chances to develop headache, a finding previously reported.¹⁵ There are other studies that show that female

subjects with headache are prone to depression^{11,12}. This proneness may be explained by the differences in sexual hormones as estrogen is supposed to be related with depression as well as migraine^{21,22}.

It was interesting to note that depressed patients in this study had less frequent headache episode and headache episode lasted for a shorter duration. Moreover, headache tended to progress in subjects without depression. It is in contradiction to previous studies which suggested that presence of depression worsened the headache and made it treatment refractory^{8,9}. However, to our knowledge none of the study had analyzed the frequency and duration of headache. Moreover, it is possible that depressed subjects sought the treatment early in course of their disease and this had improved the prognosis of headache also. These issues are grounds for future studies.

Headache subjects developed mild depression in due course while the headache was seen in moderate to severe depression only, and in them it was more likely to progress. These results shows that headache per se do not induce depression, while depression when reaches a critical level develops headache. To our knowledge, data is not available in this regard and further studies are required.

Another important finding was the absence of association of any particular subtype of headache with depression. In this study, we found patients with migraine, tension type headache and unspecified headache. These disorders may have overlapping pathophysiology according to modular theory²³ and convergent hypothesis of headache²⁴. Hence, it is possible that depression induces a qualitative pathophysiology and resulting headache may take any of the forms depending upon other, yet unknown, factors.

In conclusion, depression dose not tend to worsen headache and worsening of headache should make one vigilant to search reasons other than associated depression. Depression is equally associated with different subtypes of headaches which underscore the fact that these subtypes may have common or overlapping pathophysiology.

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