Prevalence and socio-demographic and clinical correlation of migraine in depressive disorder – A cross sectional study

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Abstract

Introduction: Studies have shown an association between migraine and psychiatric disorders like depression where a bidirectional etiology exists.

Aim: To study the prevalence of migraine among depressed patients and to correlate the severity of migraine and depression.

Methodology: The included 152 outpatients who were diagnosed with depressive disorder and recurrent depressive disorder using the ICD 10 diagnostic criteria. They were then given the Hamilton Depression Rating Scale (HAM-D). Migraine was diagnosed using the International Headache Society (IHS) diagnostic criteria of migraine and rated using the Migraine Disability Assessment Score (MIDAS). Data were analyzed using chi-square test, independent sample t test and Pearson's correlation.

Results: The study included 152 patients with depression. There is a 35.5% prevalence of migraine was seen in depressed patients. In 75.9% of cases, migraine was previously un-diagnosed. There was a significant association between presence of migraine and female sex (χ^2= 5.32, p=0.02), student status (χ^2 =; 1.5 p<0.001), low socio-economic status (χ^2=25.8p<0.001), current status of depression (χ^2=5.45; p=0.015), severity of depression (χ^2=38.3; p=0.023), non-psychotic depression (χ^2=23.6; p<0.001), death wishes (χ^2=21.8; p<0.001), fewer episodes of depression (t=2.34; p=0.02) and medical co-morbidity (χ^2=19.3; p<0.001).

Conclusion: The study clearly shows a high prevalence and non-detection of migraine in depressives and shows that non-psychotic depression, death wishes and medical co-morbidity significantly predicts migraine.

Keywords: Migraine, Depression, Headache, MIDAS, HDRS.

Introduction

Depressive disorder and migraine are highly prevalent disorders which lead to social and occupational impairment.[1] The co-morbidity between migraine and depression is relevant because patients with both conditions use health care resources in an extended way. These patients are often undiagnosed and untreated; and this entails a poor prognosis for the patient.[2] In community samples migraine has an average life time prevalence of 18.5 percent.[3] Indian studies have shown much higher prevalence of 22.8% percent.[4] Prevalence of migraine in patients with depression is understudied and a prevalence range from 10- 46 % was reported by a recent review.[5] The studies so far have not explored the association between the different socio-demographic and clinical variables of depression and migraine. No study to date has focused on correlation between severity of depression and severity of migraine. The current study estimated the prevalence of migraine among depressed patients and to correlate the severity of migraine and depression. Further the study explored the association of the different socio-demographic and clinical variables with comorbid depression and migraine.

Methodology

The study was conducted at the outpatient clinic of the department of psychiatry of a tertiary care rural medical college hospital. The study commenced after getting approval from the institutional ethics committee. The study included patients 18-64 year old who were diagnosed to have depressive disorder or recurrent depressive disorder using International Classification of Diseases version 10 Diagnostic Criteria for Research (ICD-10 DCR).[6] The study included patients with active symptoms and those in remission. Patients with history of cognitive decline, cerebro-vascular accident, and intellectual disability were excluded. All patients were inducted after getting written informed consent. A semi-structured questionnaire was used to collect relevant socio-demographic and clinical information. The severity of depression was assessed using the Hamilton Depression Rating Scale (HAM-D).[7] They were subsequently screened for the presence of migraine by using the Migraine Screen Questionnaire (MSQ),[8] and diagnosed using the International Headache Society (IHS) diagnostic criteria of Migraine.[9] The severity of migraine was assessed using the Migraine Disability Assessment Score (MIDAS).[10] Data were analyzed using chi-square test, Pearson's correlation, and independent sample t test. The statistical package for social services version 16 was used to analyze the data.

Results

The study included 152 patients with depressive disorder and recurrent depressive disorder. The socio-demographic and clinical data of the sample is summarized. (Table 1)

The study showed a 35.5% (54/152) prevalence of migraine in depressed patients. In 75.9% of cases, migraine was un-diagnosed prior to current assessment. Most of the migraine patients had migraine without aura (88.46 %). Most of the patients had mild migraine (51.9%) while others had moderate (24.1%) or severe migraine (24.9%). The mean MIDAS score was 13.89 (SD= 8.9). The average number of episodes of migraine in the last year was 4 per month (SD= 4.2).

The mean age of onset of migraine was found to be 24.91 years (SD=7.1). Therefore, the age of onset of migraine predated that of depression by 12.5 years. Family history of migraine is present in 38.8% of migraine patients.

There was a significant association between severity of depression and migraine with no patient with mild depression having migraine. Migraine was present in 26.8% of moderate, 66.7% of severe depression and only 14.3 % of very severe depression having migraine (χ^2=38.3; p=0.023). But the severity of migraine measured by MIDAS score did not show a significant correlation with the severity of depression as measured by HAM- D score. (ρ=0.05; p= 0.74).

There was a significant association between sex and migraine in depression with more female depressives developing migraine than males. (F: M= 42.85%: 24.6%; χ^2= 5.32, p=0.02) there was an 85.71%

prevalence of migraine in students with depression, which was significantly more than the employed (31.8%) and unemployed group (37.5%) (χ^2 =; 1.5 p<0.001). Migraine was significantly more in low socio- economic group than middle socio-economic group (LSES: MSES=55.3%: 15.8%; χ^2=25.8p<0.001) Migraine was significantly more in patients who were currently depressed than in depressives in remission (depressed: remission=43.9%: 25.7%; χ^2=5.45; p=0.015). Migraine was significantly more in patients without psychotic (50.5%) symptoms than those with psychotic (11.9%) symptoms (χ^2=23.6; p<0.001).

Patients with depressed mood (48.31%) most of the day on HAM- D had significantly more migraine than without depressed mood (17.45%). (χ^2=15.3; p<0.001) Migraine was also significantly more in patients with fewer episodes of depression. (t=2.34; p=0.02) Patients with death wishes (58.6%) on HDRS had significantly more migraine than without death wishes (21.3%). (χ^2=21.8; p<0.001). There was also a significant association noted between medical co-morbidity (chronic illness) and migraine with those with a medical illness having migraine (71.4%) than those without (27.4%) another medical illness (χ^2=19.3; p<0.001). (Table 2)

There was no association between migraine and age, marital status, education, age of onset of depression, duration of depressive episode, family history of depression and family history of migraine. (Table 2)

Table 1: Socio-demographic and clinical features

Variable	Frequency
Sex	Male= 91 (59.9%)
	Female= 61 (40.1%)
Marital status	Married= 135 (88.8%)
	Single/divorced= 17 (11.2%)
Occupation	Employed= 129 (84.9%)
	Unemployed= 23 (14.1%)
Socio-economic Status	Low=76 (50%)
	Middle=76 (50%)
Status of Depression	Active Episode= 82 (53.9%)
	Remission= 70 (46.1%)
Psychotic Symptoms	Present= 59 (38.8%)
	Absent=93 (61.2%)
Type of Depression	Single Episode= 64 (42.1%)
	Recurrent Depression= 88 (57.9%)
Family History of Depression	Present= 77 (50.7%)
	Absent= 75 (49.3%)
Family History of Migraine	Present= 47 (30.9%)
	Absent= 105 (69.1%)
Age	44.43 yrs (S.D.= 11.5)
Years of Education	10.22 yrs (SD=4.4)
Age of onset of depression	37.41 yrs (SD=10.52)
Number of episodes of depression	3.2 (SD=3.01).
Duration of episode of depression	4.09 months (SD= 1.9)

Table 2: Socio-demographic and clinical factors in depressives with migraine

Variable	Distribution (Migraine Vs. No Migraine)	Test Value	Significance
Sex	Female= 42.85% Vs. 57.12% Male=24.6% Vs. 75.4%	X^2=5.32 d.f.= 1	P=0.02
Marital Status	Married= 34.81% Vs. 65.19% Single/Divorced= 41.7% Vs. 58.3%	X^2=0.27 d.f.=1	P= 0.39
Occupation	Student= 100% Vs. 0% Employed=31.7% Vs. 68.3% Unemployed= 37.5% Vs. 62.5%	X^2=13.52 d.f.=2	P=0.001
Socio-economic status	Low= 55.26% Middle=15.7%	X^2=25.85 d.f.=1	P<0.001
Currently Depressed	Yes=43.9% Vs. 56.1% No=25.71% Vs. 74.29%	X^2=5.45 d.f.=1	P=0.027
Severity of Depression	Mild=0% Vs. 100% Moderate=26.82% Vs. 73.18% Severe=66.67% Vs. 33.33% Very Severe=14.28% Vs. 85.72%	X^2=38.25 d.f.=3	P<0.001
Psychotic Symptoms	Yes=50.53% Vs. 49.47% No=11.86% Vs. 88.14%	X^2=23.57 d.f.=1	P<0.001
Depressed Mood on HDRS	Yes=48.31% Vs. 51.69% No=17.46% Vs. 82.54%	X^2=15.33 d.f.=1	P<0.001
Death Wish	Yes=58.62% Vs. 41.38% No=21.27% Vs. 78.73%	X^2=5.32 d.f.= 1	P<0.001
Family History of Depression	Yes=28% Vs. 72% No=42.85% Vs. 57.15	X^2=3.66 d.f.=1	P=0.064
Family History of Migraine	Yes=44.6% Vs. 55.4% No=31.4% Vs. 68.6%	X^2=2.49 d.f.=1	P=0.143
Medical Co-morbidity	Yes=71.48% Vs. 28.52% No=27.41% Vs. 72.59%	X^2=19.32 d.f.=1	P<0.001
Age	Yes=42.69 yrs No=45.39 yrs	T= 1.384 d. f.= 150	P=0.17
Years of Education	Yes= 9.3 yrs No=10.7 yrs	T= 0.225 d. f.= 150	P=0.053
Age of Onset of Depression	Yes=37.15 yrs No= 37.55 yrs	T= 13.84 d. f.= 150	P=0.82
Number of Episodes	Yes= 2.43 No=3.02	T= 2.342 d. f.= 150	P=0.02

Discussion

The prevalence of migraine in our sample of depressed subjects was 35.5% which is consistent with previous studies.[5] 75.9 % of subjects with migraine were undiagnosed. There were no studies examining the under-diagnosis of migraine in depressed population. However, data in general population shows that migraine is under-diagnosed by 44.2% to 44.9%.[11,12] The data therefore points to a increased rate of under-diagnosis of migraine in depressives than among general population. Majority of migraine patients in our study (88.46%) had migraine without aura, which goes against the literature which says that migraine with aura is more common in depression.[13] In our study 75% of the subjects with migraine were female while 25% were males which in accordance with the findings that the prevalence of migraine in females is nearly 3-fold greater than males.[13]

The mean age of onset of migraine predated that of depression by 12.5 years. The average age of onset of single episode and recurrent depression is 30-45. The average age in our study is 37.4 years which is within

the age of average onset.[14] The mean age of onset of migraine was found to be 24.91 years which was also along the existing data.[13] The fact that depression sets in 12.5 years after the onset of migraine makes it is imperative to screen for depression in migraine patients during follow up visits.

Migraine was significantly more in low socio-economic group than middle socio-economic group; however, no previous study in the area has looked at the role of socio-economic status in the migraine depression co-morbidity. There was an 85.71% prevalence of migraine in students with depression, than any other group. This is not in keeping with earlier data which shows no significant association between co-morbid migraine and depression and employment.[13] Migraine was significantly more in patients who were currently depressed than in depressives in remission and was associated significantly with depressed mood. This is in agreement with an earlier study which found that patients with migraine had a significantly greater severity of depression.[15] Migraine was significantly more in patients without psychotic symptoms than

those with psychotic symptoms. Though finding has not been found in earlier studies. However, the fact that depressed mood is a significant association of migraine, and the fact that psychotic symptoms may mask the depressed mood might be a possible reason for this association. Our study also found that migraine was significantly more in patients with fewer episodes of depression. There were no previous studies that examined this association, it therefore needs further exploration before a conclusion can be drawn.

Patients with death wishes had significantly more migraine. This finding is in concordance with an earlier study which showed that patients with affective disorder and migraine patients had suicidal ideation as compared with none in the control group.[16] The combination of pain and depression may instill a greater sense of hopelessness and push patients towards self-harm. There was also a significant association noted between chronic medical disease co-morbidity and migraine, as was seen in an earlier study which found that major depression and headaches were more common in subjects with other chronic medical conditions.[17] The severity of migraine measured by MIDAS score did not show a significant correlation with the severity of depression as measured by HAM-D score. This association has also not been studied earlier and needs further research. Further the study clearly demonstrates that nearly fifty percent of the variance in migraine is predicted by non-psychotic depression with death wishes and medical co-morbidity. There are no studies with examining this association but the finding emphasizes the need for actively searching for migraine in the presence of these variables.

Our study had certain limitations of having a cross sectional study design, assessment in a tertiary care setting, and the non-assessment of treatment especially drug treatment variables. The study however clearly identifies the prevalence and associations of the depression migraine co-morbidity. Especially current non-psychotic depression with death wish and medical co-morbidity is a predictor of migraine. It also identifies the need for proper enquiry to identify migraine in depressed patients as it is far too often un-diagnosed. The need for constant screening of migraine patients for depression is also bought forth by this study. Further large sample size studies with prospective design in community and primary care setting using severity and quality of life measurements are to be carried to understand the burden and dysfunction due to co-morbid migraine and depression.

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