Original Article

PREVALENCE OF DEPRESSION IN PATIENTS WITH MIGRAINE A STUDY FROM CENTRAL LAHORE

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Objective: To determine the prevalence of depression in migraine patients and its association with characteristics of migraine and pharmacotherapy.

Methods: This cross-sectional-observational study was conducted at outpatient clinic, Neurology Department, Services Hospital, Lahore from January 2019 to June, 2019. Three hundred patients of migraine were included in the study. Information collected was comprising of age, address, gender, contact number, HAM-D score. Depression was defined as patients scoring 8 or more on Hamilton Depression rating scale (HAM-D). Severity of migraine was assessed on a Visual Analogue Scale from 0 (no pain) to 10 (most severe pain).

Results: Prevalence of depression was much higher than general population (6-30%) up to 52.7%. Severity of depression was evenly distributed among mild 36(12%), moderate 74(24.7%) and severe 48(16%) depression. An association of the attributes pharmacotherapy & severity of pain in migraine with different levels of depression was observed with p-value <0.001.

Conclusions: It is concluded that depression is strongly correlated with migraine and severity of migraine headache, average duration of migraine episode, no pharmacotherapy are independent risk factors correlated with migraine.

Keywords: migraine, depression, hamilton depression rating scale.

Introduction

Migraine is chronic condition with several neuropsychiatric aspects encompassing a multitude of factors each playing a different role. These include environmental, genetic, dietary, psychological and sleep aspects.[1] Among neuropsychiatric manifestations, migraine has been found associated with depression significantly. Several studies estimated prevalence of migraine ranging from 0.9 to 5.1% using different criteria for diagnosis of migraine most commonly SilbersteinLipton criteria (or equivalent).[2] Migraine is considered to be a neuropsychiatric illness.[3] At the core of migraine syndrome lies the element of depression. Many epidemiological surveys have been done and reported the association between depression and migraine.[4,5,6] Depression is a complex illness of chaotic feelings which may include hopelessness, suicidal thoughts, worthlessness, despair, decreased energy and libido, interest loss in one's life. It may also include somatic symptoms like insomnia anorexia or hyperphagia, headache and vague or sometimes regional pain syndromes.[7] Depression in itself is a very common illness worldwide with more than 300 million people affected,[8] causing significant disability among the victims.[9] Mood Disorders like anxiety and depression along with headache

syndromes are viewed as major brain disorders each having a place among top causes of disability in the world.[10] Comorbidities increase the risk of chronic migraine, impairment of quality of life, cause additional disability, worsen likely outcome, increase the healthcare-costs of migraine and has the possibility of mutually causal relationships which needs to be established in future studies.[11-15]

Migraineurs had been found to have a 33.9% depression in one study in US resulting in major contribution towards health-care expenditure in migraineurs with depression amounting to mean-annual-total health-expenses per person (10,012 dollars versus 4,740 dollars).[16]

Most data on this subject come from the western world. As there is scarcity of data in our part of the world, therefore, current study was conducted to explore the extent to which migraine and depression are associated.

Method

This cross-sectional-observational study was conducted at outpatient clinic, Neurology Department, Services Hospital, Lahore from January 2019 to June, 2019. Three hundred (300) patients of Migraine (diagnosed using criteria given below) were included in the study using non-probability consecutive sampling technique. Male and female

patients with age between 18 and 50 years suffering from migraine were included in the study while Pregnant females, lactating mothers, substance abuse/dependence, patients with other chronic medical comorbidities like diabetes, hypertension, decompensated chronic liver disease, renal insufficiency (creatinine >3.0mg/dl), stroke, dementia and bed bound patients were excluded. Depression was defined as patients scoring 8 or more on Hamilton Depression rating scale (HAM-D) Annexure II.[17] HAM-D score is a 17-item scale, administered by a health professional, with minimum value 0 and maximum value of 52. The severity of depression was divided into four mutually exclusive groups based on HAM-D scores as: Normal (0-7), mild (8-16), moderate (17-23), and severe (≥24). Severity of migraine was assessed on a Visual Analogue Scale from 0 (no pain) to 10 (most severe pain). Migraine Without Aura was defined as patients having at least five attacks lasting 472 hours (unless successfully treated) in addition to at least two of the following pain characteristics: pulsating quality, unilateral location, moderate-severe intensity, aggravated by or causes disruption of physical activity. One of the following should be present during headache: vomiting or nausea, phonophobia or photophobia.[18]

Migraine With Aura was defined as headache having same features as migraine without aura plus any of the following: Visual phenomenon including positive features like flickering spots, lights or lines or negative phenomenon like blind spots or loss of vision, or both, sensory phenomenon including positive features like pins, needles sensations or negative phenomenon like numbness or both, speech disturbance like dysphasia, symptoms of aura that develop over at least 5 minutes and last less than 1 hour; headache, if present, that follows within the hour.[18] The overall data and the gender-based data were analyzed using the statistical software SPSS version 20. The descriptive statistics like mean and standard deviation for the variables of quantitative nature, and frequencies with percentage of occurrences for categorical variables were considered. To study the linear relationship between HAM-D score and each of the observed variables, significance of Pearson correlation coefficient was tested using t-test. However, for multi-category variables like pharmacotherapy, Mann-Whitney test was used to test the significance of correlation. The association between severity of depression, based on HAM-D scores, with each observed attributed was also tested using chi-squared test statistic.

Results

The overall sample of n = 300 patients comprised of nM = 84 males (28%) and nF =216 (72%) females (Table 1). Furthermore, the p-values for testing the significance of correlation coefficient between each variable with HAM-D score are also presented in these tables. The number of females (nF = 216) in the study was more than double the number of males (nM = 84). The mean age of males (36.76 + 9.01) was observed to be higher than females (32.02 + 9.44) but with smaller variation in it. In contrast to females, some males (nM = 4) were observed with HAM-D scores equal to zero. The migraine was more frequent in females (3.84 ± 2.06 episodes per month) than in males (3.77 ± 1.52 episodes per month), but with approximately same average duration in both genders. The literacy rate in the females (nF = 153 (70.8%) was observed to be double than males (nM = 30 (35.7%). The males were taking more antidepressant (nM = 22 (26.2) as compared to female (nF = 43 (19.9). The percentage of females facing photophobia (males =72.6% vs females = 76.4), nausea (males = 58.3% vs females = 68.5%), vomiting (males = 61.9% vs females = 72.2%), pulsatility (males = 61.9% vs females = 72.2%) and functional disability (males = 61.9% vs females = 72.2%) was higher than males. In contrast, the problem of phonophobia (males = 83.3% vs females = 80.6%) and aura (males = 32.1% vs females = 17.1%) was more common in males. The results of significance of pair wise correlation between HAM-D score and each other variable were similar for both genders. The correlation coefficients for age, visual analogue pain score, duration of migraine, education, pharmacotherapy were significantly different from zero at 5% level of significance. The p-values for testing significance of correlation coefficients for different variables are given in Table 1. The frequencies of patients falling under different severity levels of depression (normal, mild, moderate and severe) are presented in the form of a pie chart in figure 1. Furthermore, association between each attribute and severity of pain (with four categories) is examined using chi-square statistic. The corresponding cross tabulation with p-values associated with each test of independence is given in table 2. The results exhibited an association of attributes pharmacotherapy and severity of pain in migraine with different levels of depression. The other attributes were found independent with severity of depression at 5% level of significance.

(Normal, mild, moderate, and severe) are presented in the form of a pie chart in Figure 1. Furthermore, association between each attribute and severity of pain (with four categories) is examined using chi-squared statistic. The corresponding cross-tabulation with p-values associated with each test of independence is given in **(Table-2).** The results exhibited an association of attributes pharmacotherapy and severity of pain in migraine with different levels of depression. The other attributes were found independent with severity of depression at 5% level of significance.
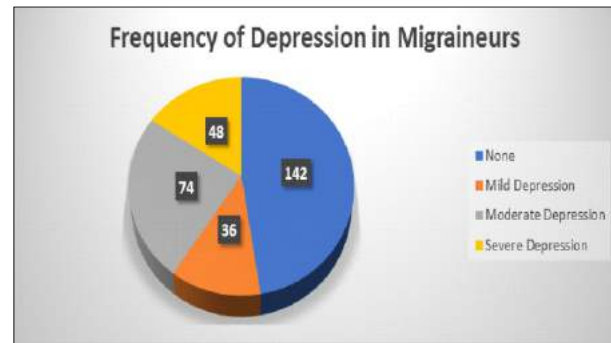

Fig-1: Frequency of depression in migraineurs

Table-1: Descriptive statistics of migraineurs for all patients, for male and female groups.

Variable		Total 300	Male 84(28)	Female 216 (72)
Continuous Variables	Age	33.34±9.55(17-57)	36.76±9.01(21-55)	32.02±9.44(17-57)
	HAM-D	16.23±9.83(0-35)	15.65±9.45(0-34)	16.46±9.98 (2-35)
	Frequency of migraine per month	3.82±1.92(1-18)	3.77 ± 1.52 (2-13)	3.84 ± 2.06 (1-18)
	Visual analogue pain score	6.17 ± 1.31 (4-9)	6.08 ± 1.39 (4-9)	6.21 ± 1.28 (5-9)
	Average duration of migraine in hours	2.21 ± 1.96 (1-7)	2.20 ± 2.06 (1-7)	2.21 ± 1.93 (1-7)
Education	Literate	183(61)	30(35.7)	153(70.8)
	Illterate	117(39)	54(64.3)	63(29.2)
Employment	Employed	208(69.3)	69(82.1)	139(64.4)
	Unemployed	92(30.7)	15(17.9)	77(35.6)
Pharmacotherapy	Antide Pressant	65(21.7)	22(26.2)	43(19.9)
	No therapy	201(67)	55(65.5)	146(67.6)
	No Antipressant	208(69.3)	7(8.3)	27(12.5)
Photophobia	No	74(24.7)	23(27.4)	51(23.6)
	Yes	226(75.3)	61(72.6)	165(76.4)
Phonophobia	No	56(18.7)	14(16.7)	42(19.4)
	Yes	244(81.3)	70(83.3)	174(80.6)
Nausea	No	103(34.3)	35(41.7)	68(31.5)
	Yes	197(64.7)	49(58.3)	148(68.5)
Vomiting	No	92(30.7)	32(38.1)	60(27.8)
	Yes	208(69.3)	52(61.9)	156(72.2)
Pulsatility	No	92(30.7)	32(38.1)	60(27.8)
	Yes	208(69.3)	52(61.9)	156(72.2)
Side Involved	No	92(30.7)	32(38.1)	60(27.8)
	Yes	208(69.3)	52(61.9)	156(72.2)

Aura	No	236(78.7)	57(67.9)	179(82.9)
	Yes	64(21.3)	27(32.1)	37(17.1)
Diability	No	92(30.7)	32(38.1)	60(27.8)
	Yes	208(69.3)	52(61.9)	156(72.2)

Table-2: Stratification of severity of depression with respect to gender, education, employment status, pharmacotherapy, photophobia, phonophobia, nausea, vomiting, aura and functional disability

		Severity of Depression					
		Non	Mild	Moderate	Severe	Total	P-value
Gender	Male	41	9	21	13	84	63(29.2)
	Female	101	27	53	35	216	
Education	Literate	93	18	42	30	183	77(35.6)
	Illterate	49	18	32	18	117	
Employment	Employed	98	22	49	39	208	153(70.8)
	Unemployed	44	14	25	9	92	
Pharmacotherapy	Antide Pressant	24	3	24	21	72	
	No therapy	105	28	42	22	197	0.303
	No Antipressant	13	5	8	5	31	
Photophobia	No	33	5	26	10	74	0.196
	Yes	109	31	48	38	226	
Phonophobia	No	26	7	16	7	56	10.806
	Yes	116	29	58	41	244	
Nausea	No	50	9	31		103	0.218
	Yes	92	27	43	35	197	
Vomiting	No	39	9	31		92	0.116
	Yes	103	27	43	35	208	
Aura	No	68	54	72	48	236	0.279
	Yes	15	19	13	11	64	
Functional Diability	No	113	25	59	39	236	0.117
	Yes	29	11	15	9	64	
Severity of pain in Migraine	Mild	0	0	5	0	5	
	Moderate	70	68	59	30	227	<0.001*
	Severe	13	5	21	29	68	

Discussion

Many studies over the years have shown that migraine patients are more predisposed to have depression. This is a part of the disease or a separate entity just happened to be associated with migraine still remains elusive. However, the evidence is arising with each passing day supporting strong association between these two illnesses. Scarcity of data on the subject makes it imperative to look further into this matter and establish firm grounds on which solid recommendations can be given for evaluation and management of depression in migraineurs. This was a small study including only 300 patients. A large number of these migraineurs were female (72%) which might be due to sampling bias as patients were enrolled from a tertiary care outdoor patient clinic and

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A large number of female migraineurs attend clinic as compared to males. It can also represent the increased prevalence of migraine in females. It has been found in previous studies that migraine has been prevalent in females 3 times more as compared to males.[19] and this supports the finding in our study.

In our study, prevalence of depression was much higher than general population up to 52.3%. In a multicultural study evaluating depression in general population, it was found that lifetime depression prevalence ranges from 6.6 to 23% across different cultures.[20] In Pakistan, overall prevalence of depression has been reported up to 6-30%[21,22] In a study of migraineurs, prevalence of depression was found to be 20%.[23] In another study, prevalence of depression has been reported to be around 18.8% in migraineurs.[24] it can be seen from the results of our study that depression is much more prevalent in migraineurs in our country as compared to the developed countries. Many factors can contribute towards this including increased prevalence of depression in our population, lack of pharmacotherapy and deteriorating socioeconomic conditions. Other factors can be inadequate pharmacotherapy and poor socioeconomic status of masses. In our study, Severity of depression was mild 36 (12%), moderate 74 (24.7%) and severe 48 (16%) depression. In our study, it was found that depression was found strongly associated with lack of Pharmacotherapy (more common among migraineurs taking no therapy) and severity of pain in migraine (more common in migraineurs experiencing severe pain during migraine episode). Mitsikostas et al.,[25] determined that migraine intensity has got nothing to do with depression however duration and frequency are related to increased depression prevalence among migraineurs. These results are in disagreement with this study which needs to be further explored. Photophobia has been found increasingly associated with depression in some studies and it has been hypothesized that depression contributes towards photophobia between migraine episodes.[26,27] However, this is not the case with our study population which needs further evaluation on a larger scale study. Several limitations can be pointed out for this study including a small sample population, convenient sampling, study setting. It can be recommended that a larger scale study with a control group preferably in a general population survey setting can answer a few questions in more appropriate manner.

Conclusion

It is concluded that depression is strongly correlated with migraine and severity of migraine headache, average duration of migraine episode, no pharmacotherapy.

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