Association between symptoms of unipolar depression and metabolic syndrome in a tertiary care hospital

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Abstract

Introduction: Depression is associated with increased physical co-morbid conditions. The results of previous studies on the relationship between symptoms of depression and metabolic syndrome are weak.

Objectives: Hence this study was designed to assess the frequency of metabolic syndrome in unipolar depressive patients and its association with the symptoms of unipolar depression.

Materials and Methods: A total of 64 patients with unipolar depression, diagnosed according to ICD 10 guidelines were included consecutively. Spearman's correlation was performed to find the association.

Results: 23.4% of unipolar depression patients had metabolic syndrome. Our study did not reveal any significant association between the symptoms of unipolar depression and metabolic syndrome.

Conclusion: Prevalence of metabolic syndrome in depression is low and symptoms of depression are not associated with metabolic syndrome.

Keywords: Metabolic syndrome, Unipolar depression, ICD-10.

Introduction

The relationship between impaired glucose tolerance that is a part of metabolic syndrome and serious mental illness has been recognized for over a century, and the eminent Victorian psychiatrist Henry Maudsley found occasion to comment, 'Diabetes is a disease which often shows itself in families in which insanity prevails.[1] The reported prevalence of depression in patients with metabolic syndrome and diabetes mellitus varies from 8 to 27%, with the severity of the mood state correlating with the level of hyperglycemia and the presence of complications.[2] The metabolic syndrome consists of a constellation of abnormalities that confer increased risk of cardiovascular disease (CVD) and diabetes mellitus (DM). Depression also is a newly recognized risk factor for ischemic heart disease (IHD). Depression is a modifiable target in the prevention of such co-morbid conditions, but recent evidence suggests a weak association between depression and metabolic syndrome.[3]

Aim

This study was designed to assess the frequency of metabolic syndrome in unipolar depressive patients and its association with the symptoms of unipolar depression.

Material and Methods

It is a cross-sectional observational study carried out in the department of psychiatry, a regional institute of medical science Imphal, for the duration of 2yrs. The study was conducted after approval from the ethics committee of the institute. A total number of 64 patients with major depressive disorder were included according to the local prevalence of the depression in Manipur.

Inclusion Criteria

Patients of both genders aged 18 yrs and above who fulfilled the criteria for depression according to ICD-10,[4] attending psychiatry out-patient department and admitted towards were consecutively selected.

Exclusion Criteria

Pregnant females, patients of documented thyroid dysfunction, cases who are not willing or unable to give consent, any patients with co-morbid psychiatric disorder other than unipolar depression, and patients with a physical deformity were excluded.

Tools

International classification of diseases and related health problems (ICD-10), Beck's Depression Inventory (BDI) using severity, patient's height in cm, weight in Kg, abdominal circumference in cm, blood pressure in mmHg, Body mass index (BMI) were used as an assessment tool.

Metabolic syndrome was diagnosed according to the 2010 International Diabetes Federation (IFD)[5] criteria consisting of central obesity (for population of Asian origin ≥90cm in men and ≥80cm in women) plus any two of the four components: serum triglyceride >150mg/dl; HDL cholesterol <40mg/dl in men and <50mg/dl in women; systolic blood pressure ≥130mmHg or diastolic of ≥85mmHg or on treatment for hypertension; and fasting plasma glucose ≥100mg/dl or previously diagnosed type 2 diabetes.

Statistical Analysis

Collected data were represented as mean, standard deviation and, frequency distribution. To measure the difference between the means, t-test was used and Spearman's correlation was performed to find the association. The p-

value of <.05 was taken as statistically significant. Statistics were done using SPSS version 23.

Results

We included a total of 64 patients with severe depression from psychiatry OPD and assessed for the parameters to characterize them into metabolic syndrome. The demographic details of participants with and without metabolic syndrome are shown in table1. In the current study, metabolic syndrome was absent in 76.6% of depressive patients and was detected in 23.4% of the study population. The mean age of the study population in MS was found to be

42 ± 16 & no MS was 37 ± 14. Total of 39 females was included of which 12 were with metabolic syndrome, and in male 3 out of 25 had metabolic syndrome.

Symptoms of depression in patients were seen which are presented in table 2. All the study subjects did not have the family history of depressive disorder, 4 out of 64 were already on treatment for the depression at the time of recruitment for the study. The suicidal tendency was present >90% in patients with severe depression. None of the symptoms of depression were significantly associated with metabolic syndrome.

Table 1: Socio-Demographic details of subjects with unipolar depression

	No Metabolic syndrome	Metabolic syndrome
	N (Row %)	N (Row %)
Total depressed patients included in the study	49 (76.6)	15 (23.4)
Age (Yrs)	37 ± 14	42 ± 16
Female	27 (55.1)	12 (80.0)
Male	22 (44.9)	3 (20)
Education		
● Illiterate	4 (8.2)	4 (26.7)
● Literate	17 (34.7)	4 (26.7)
● Middle school	5 (10.2)	4 (26.7)
● High school	2 (4.1)	0 (0.0)
● Graduate	9 (18.3)	1 (6.7)
● Postgraduate	12 (24.5)	2 (13.3)
Employment status		
● Housewife	23 (46.9)	11 (73.3)
● Employed	15 (30.6)	2 (13.3)
● Student	5 (10.2)	1 (6.7)
● Unemployed	6 (12.2)	1 (6.7)
Marital status		
● Married	40 (81.6)	12 (80.0)
● Unmarried	9 (18.4)	2 (13.3)
● Widow	-	1 (6.7)
Religion		
● Hindu	42 (85.7)	15 (100)
● Christian	4 (8.2)	0 (0.0)
● Muslim	3 (6.1)	0 (0.0)
Family type		
● Joint family	7 (14.3)	5 (33.3)
● Nuclear family	42 (85.7)	10 (67.7)

Table 2: Incidence of symptoms of Depression in metabolic syndrome

		No Metabolic syndrome	Metabolic syndrome	r	P
		N (Column %)	N (Column %)		
History of mental illness in the family	Absent	49 (100)	15 (100)	NA	NA
	Present	0	0		
Antidepressant used	Absent	47 (95.9)	12 (80.0)	0.162	0.2
	Present	2 (4.1)	2 (13.3)		
Depressed mood	Absent	-	-	NA	NA
					Continued…

	Present	49 (100)	15 (100)		
Loss of interest	Absent	-	-	NA	NA
	Present	49 (100)	15 (100)		
Increased fatigability	Absent	4 (8.1)	2 (13.3)	-0.112	0.38
	Present	45 (91.8)	13 (86.7)		
Concentration & attention	Absent	8 (16.3)	1 (6.7)	0.118	0.354
	Present	41 (83.7)	14 (93.3)		
Self esteem & confidence	Absent	14 (28.6)	2 (13.3)	0.149	0.24
	Present	35 (71.4)	13 (86.7)		
Guilt and unworthiness	Absent	14 (28.6)	1 (6.7)	0.219	0.08
	Present	35 (71.4)	14 (93.3)		
Bleak & pessimistic future	Absent	7 (14.3)	-	0.194	0.125
	Present	42 (85.7)	15 (100)		
Self-harm/ suicide	Absent	4 (8.2	1 (6.7)	0.024	0.853
	Present	45 (91.8)	14 (93.3)		
Disturbed sleep	Absent	-	-	NA	NA
	Present	49 (100)	15 (100)		
Diminished appetite	Absent	-	-	NA	NA
	Present	49 (100)	15 (100)		

Female depressive patients showed a statistically significant difference in mean of the BMI, Serum HDL and waist circumference. Significantly high BMI and waist circumference and low HDL were observed in depressed females with MS compared with no-MS, but the male patients did not show similar findings. (Table 3)

Table 3: Gender distributions of metabolic syndrome features in depressive patients

Variable		No Metabolic syndrome	Metabolic syndrome
		Mean ± SD	Mean ± SD
Age	F	33 ± 11	43 ± 17
	M	42 ± 16	41 ± 15
BMI	F	22.38 ± 3.43	25.13 ± 3.07*
	M	23.82 ± 2.11	23.60 ± 2.22
Waist circumference	F	77.00 ± 8.8	84.58 ± 6.67*
	M	82.71 ± 6.81	85.33 ± 3.25
Serum HDL Cholesterol	F	53.63 ± 8.3	50.42 ± 5.88*
	M	52.64 ± 6.49	42.00 ± 5.80
Serum TSH	F	3.36 ± 1.34	2.81 ± 1.33
	M	2.92 ± 0.84	3.2 ± 1.59
* - p<0.05 is significant. F-Female;M-Male.			

Table 4: Measured parameter levels in the two group of depressive patients

	No Metabolic syndrome	Metabolic syndrome
	Mean ± SD (N=49)	Mean ± SD (N=15)
Weight (Kgs)	58.5 ± 9.9	61.9 ± 8.54
Height (cms)	159.3 ± 6.7	158.8 ± 7.5
Waist circumference	79.4 ± 13.2	80.9 ± 5.3*
BMI	22.9 ± 3.0	24.5 ± 2.9*
Blood Pressure systolic (mmHg)	116 ± 9	123 ± 9*
Blood Pressure Diastolic (mmHg)	75.4 ± 6.3	86.5 ± 5.6*
Serum Total Cholesterol (mg/dl)	190.9 ± 30.2	203.5 ± 35.5
Serum Triglyceride (mg/dl)	214.7 ± 48.8	224.4 ± 41.8
Serum HDL Cholesterol	57.43 ± 13.0	53.0 ± 11.2
Serum LDL Cholesterol	78.25 ± 24.3	87.8 ± 31.7
Fasting Blood Glucose	82.18 ± 8.4	92.3 ± 11.3*
Post Prandial Blood Glucose	127.8 ± 13.4	138.6 ± 2.8*
Serum TSH	3.16 ± 1.16	2.89 ± 1.34
Family income	16122 ± 8381	16333 ± 8364
* - p<0.05 is significant.		

Waist circumference, BMI, and glucose levels were significantly high in depressed patients with metabolic syndrome.

Discussion

In our study, we found a very weak association between the symptoms of unipolar depression and metabolic syndrome. (Table 2) The inconclusive findings revealed are similar to previous population-based studies in elderly patients.[6] According to the IDF criteria, central obesity is mandatory in metabolic syndrome. The patients with metabolic syndrome were having a significantly higher level of waist circumference, BMI and blood pressure when compared to depressive patients with no metabolic syndrome. Some studies also indicate central obesity measured as a waist-to-hip ratio being associated with depression.[7] The observed high frequency of metabolic syndrome in married individuals and housewives cannot be concluded due to the small sample size. Results of a past study that examined the association of depression with BMI, after taking into consideration the other factors demonstrated varied results in the prevalence of depression with BMI status and metabolic syndrome.[8] In the present study, we found no association of antidepressant treatment and the metabolic syndrome, in contrast to a study in which most severely depressed people and tricyclic antidepressant users more often had the metabolic syndrome, which is driven by abdominal adiposity and dyslipidemia.[9]

No significant difference in the serum cholesterol, HDL and LDL were observed between the groups. (Table 5) This lack of difference in risk factors for metabolic syndrome and IHD between two different groups of unipolar depression, one having metabolic syndrome and the other without it indicates that the parameters measured in patients with depression can progress to full-blown metabolic syndrome picture in near future. Finding the risk in depression patients progressing to metabolic syndrome can be considered in large population-based studies.

The TSH level was used to screen the cases of unipolar depression with hypothyroidism. In the present study, we found no significant difference in the serum TSH level in patients of depression grouped based on metabolic syndrome. (Table 5) we had only one patient who was hypothyroid. A similar study conducted did not draw any relationship between the hypothyroidism with metabolic syndrome in depressive disorders.[10]

Many studies have elucidated varied relationships between the depression and the metabolic syndrome. Many confound factors, particularly the potential effects of medications, have not been fully addressed.

In our study, we focused on the International diabetes federation criteria for metabolic syndrome as a requisite for qualifying as a case of major depression for metabolic syndrome. The individual risk factors associated with the metabolic syndrome are typically amenable to the behavioral modification, pharmacological treatment, and management of the co-morbid conditions. Patient education and adequate control of the psychiatric symptoms will also remain important aspects in achieving treatment success in the long-term.

Conclusion

Prevalence of metabolic syndrome in patients with depression is low. There is weak evidence of the association between symptoms of depression and metabolic syndrome but the result is not independent of the other risk factors and hence cannot be concluded. Therefore, baseline and periodic medical evaluation should be a standard component in the ongoing assessment in depressive disorders.

Limitations

The sample size of the study is small to draw a concrete conclusion of the prevalence of the metabolic syndrome in patients of depression. Hence a multi-centric study has to be considered including patients with other comorbidities to assess the influence of confounding factors.

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