Original Research Article

Evaluation of metabolic syndrome in young depressive psychiatric outpatients

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Abstract

Objectives: Metabolic syndrome is a highly prevalent disorder among the general population. Studies show an even higher prevalence among psychiatric patients. Cardiovascular disease is one of the most prevalent factors responsible for excess mortality in depression. Metabolic syndrome is associated with the development of coronary heart disease and diabetes mellitus. The objective of this study was to evaluate the prevalence of metabolic syndrome in young depression psychiatric outpatients.

Methods: 30 depressive outpatients of both sex in the age group of 20-40yrs and 28 healthy, age and sex matched controls were selected and evaluated according to the National Cholesterol Education Program criteria for metabolic syndrome, with a modification of the criteria for blood pressure and fasting glucose.

Results: Except fasting blood sugar ($p = 0.415$) and systolic blood pressure ($p = 0.132$), all other parameters like, total cholesterol ($p = 0.009$), HDL ($p = 0.0001$), LDL ($p = 0.001$) VLDL ($p = 0.002$) cholesterols, triacylglycerol ($p = 0.002$), waist circumference ($p = 0.003$) and diastolic blood pressure ($p = 0.002$) measured in depressive patients were found to be increased and statistically highly significant than controls.

Conclusions: This study shows an increased prevalence of metabolic syndrome in depression psychiatric outpatients than controls associated with the development of coronary heart disease and diabetes mellitus. The aim of this study was to evaluate the prevalence of metabolic syndrome in depression psychiatric outpatients.

Keywords: Metabolic syndrome, Depression, Coronary artery disease, Insulin resistance, Abdominal obesity.

1.Introduction

Metabolic syndrome (MS) is a complex disorder composed by a set of cardiovascular risk factors that are usually related to central depositing of fat and to insulin resistance. [1] Its principal components are: abdominal obesity, alterations in glucose homeostasis, such as hyperglycemia or diabetes mellitus (DM) type 2, elevation of blood pressure and dyslipidemia. A proinflammatory and prothrombotic state may also be present. [2] The use of psychotropic medication stands out as one of the main causes of the higher prevalence of MS in psychiatric patients. Weight gain is a frequent side effect of many antipsychotics, mood stabilizers and antidepressants.[3,4] Furthermore, many antipsychotics also have adverse effects on the glycemic and lipid metabolisms.[3-6]

Metabolic syndrome, a highly prevalent disorder among the general population. Studies show an even higher prevalence among psychiatric

patients. Metabolic syndrome is associated with the development of coronary heart disease and diabetes mellitus. The objective of this study was to assess the prevalence of metabolic syndrome in young (20-40 yrs.) depression psychiatric outpatients.

2. Material and Methods

The present study was carried out at the ASRAM super specialty, teaching hospital in Eluru, India. After written informed consent was taken from the patients (or attendants, when the patients were not competent to give consent), 30 depressive outpatients of both sex in the age group of 20-40yrs, attending psychiatric department and 28 heathy, age and sex matched controls were included in the study. The psychiatric diagnosis considered for each patient was the primary diagnosis, confirmed by their assisting physician, according to The International Classification of Diseases, 10th Revision (ICD 10)

Classification of Mental and Behavioral Disorders. [7] The participants were evaluated by a standardized interview. The patients were on antidepressants and antipsychotics drugs since from one to two years.

2.1 Exclusion criteria

Patients with dementia, mental retardation, personality disorders, and mental disorders due to psychoactive substance use other than alcohol were excluded from the study.

The National Cholesterol Education Program (NCEP) Expert Panel criteria for MS diagnosis was used, [8] and three or more of the following conditions were necessary: 1) waist circumference > 102 cm for males and > 88 cm for females; 2) triglycerides > 150 mg/dl; 3) HDL levels < 40 mg/dl for males and < 50 mg/dl for females; 4) blood pressure > 130/85 mmHg; 5) fasting glucose > 110 mg/dl. These situations were not considered in the criteria proposed by the NCEP, but the conduct described is recommended byInternational Diabetes Federation (IDF). [9]

Waist circumference was measured in centimeter (cm) using a measuring tape in the horizontal plane midway between the inferior margin of the ribs and the superior border of the iliac crest; measurement being recorded at the end of normal expiration. A systolic and diastolic blood pressure in mm of Hg was recorded.

Total cholesterol (CHOD-PAP-Method) [10-13], high density lipoprotein (HDL) (HDL Precipitating method) [13-16], low density lipoprotein (LDL) (Fried Wald formula) and triacylglycerol (TAG) (GPO-PAP Method) [10-13] and fasting glucose (GOD-POD Method)[17,18] were measured using fasting venous blood samples on Merck Micro Lab 300 semiautoanlyser in all the subjects respectively.

2.2 Statistical Methods

The data were analyzed using Minitab 15 English statistical software. For the continuous variables, descriptive statistics was used and comparisons were done with the Independent samples t-test from which mean and standard deviation (SD) with 95 per cent confidence intervals were computed.

3. Results

In the table-1, the results of statistical analysis of data are shown and values are expressed in terms of mean ± standard deviation. P-value less than 0.05 are considered as statistically highly significant.

Table1: Metabolic syndrome and its relationship with clinical variables

Variables	Controls(n = 28) (Mean ± SD)	Depression outpatients(n = 30) (Mean ± SD)	p-value
Waist circumference(cm)	79.96 ± 5.46	87.0 ± 10.9	0.003
Systolic blood pressure (mm Hg)	115.00 ± 7.45	118.33 ± 9.13	0.132
Diastolic blood pressure (mm Hg)	75.71 ± 5.04	81.33 ± 7.76	0.002
Fasting blood sugar(mg/dL)	85.82 ± 8.04	87.9 ± 11.1	0.415
Total cholesterol(mg/dL)	152.7 ± 21.3	175.9 ± 41.2	0.009
LDL cholesterol(mg/dL)	82.0 ± 19.9	110.3 ± 37.4	0.001
VLDL cholesterol(mg/dL)	21.79 ± 7.01	32.1 ± 15.8	0.002
HDL cholesterol(mg/dL)	48.89 ± 6.79	34.40 ± 9.25	0.0001
Triacylglyceride(mg/dL)	108.9 ± 35.4	160.4 ± 79.1	0.002

4. Discussion

The study aimed to establish an association between depression and the metabolic syndrome (as defined by the Third Report of the NCEP Expert Panel on Detection, Evaluation, and Treatment of High Cholesterol in Adults).

The study revealed that, except fasting blood sugar (p = 0.415) and systolic blood pressure (p = 0.132), all other parameters like, total cholesterol (p = 0.009), HDL (p = 0.0001), LDL (p = 0.001) VLDL (p = 0.002) cholesterols, triacylglycerol (p = 0.002), waist circumference (p = 0.003) and diastolic blood pressure (p = 0.002) measured in depressive outpatients were found to be increased and statistically highly significant when compared to the controls. In this study, of the five components studied, diastolic blood pressure, central obesity, high triglyceride and LDL cholesterol levels, and low HDL cholesterol levels predicts depressive symptoms.

In this study, in spite of many patients showed mild increase in the FBS, but the statistical results confirmed insignificant value. Similarly, except for few patients, the values for SBP and probably for DBP were well in the normal limits and were statistically insignificant. This may be because, the study was conducted in young (20-40yrs) depressive outpatients who were on antidepressant and antipsychotic drugs only since from one to two years. This suggests that the patient were not too long standing (> 5yrs) chronic cases.

Despite of this, the study showed a statistically highly significant central obesity and dyslipidemia in young depressive outpatientswhich in turn associated with the development of coronary heart disease and diabetes mellitus. This study showed a close association between depression and dyslipidemia including low HDL cholesterol and high triacylglycerol level.

Depression had been associated with autonomic nervous system changes, including increased heart rate and reduced heart rate variability [19-21] and autonomic changes may in turn lead to the development of the MS. Furthermore depression has been associated dysregulation of the Hypothalamic-Pituitary-Adrenal axis which has also been implicated in the development of the MS and CVD. [22,23]

The study concludes that there is an association between depression and metabolic syndrome. This study showed an increased prevalence of MS in young depressive psychiatric out patients. This study showed a close association between depression and dyslipidemia including low HDL cholesterol and high total cholesterol, LDL cholesterol and triacylglycerol level due to stress.

The results of this study suggests that screening and effective treatment of depression are important in the primary and secondary prevention of cardiovascular events asmetabolic syndrome is a marker of coronary heart disease (CHD), cardiovascular disease (CVD) risk. [24] Since this is a pilot study, same has to be verified on a big sample size.

Acknowledgements

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