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STUDY OF METABOLIC SYNDROME IN PATIENTS WITH CHRONIC SCHIZOPHRENIA WHO ARE RECEIVING TREATMENT AND NOT RECEIVING TREATMENT

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ABSTRACT

OBJECTIVE: To assess metabolic syndrome in chronic schizophrenia(duration >2 yrs) patients with and without treatment

MATERIALS AND METHODS: 100 OPD patients (aged 20 or above,both male or female), who were diagnosed with chronic schizophrenia(duration >2yrs) with and without treatment according to the International Classification of Diseases Classification of Mental and Behavioral Disorders Diagnostic criteria for research 10th revision. Those patients were evaluated for the metabolic syndrome as per NCEP ATP III criteria.

RESULTS: Metabolic syndrome was present in 42% patients(n=21) in without treatment schizophrenic patients and 52% (n=26) in with treatment schizophrenic patients.

CONCLUSION: Patients of schizophrenia have a high prevalence of metabolic syndrome. Hence, there is a need to screen the patient of schizophrenia for the cardiovascular risk and manage it as early as possible.

KEYWORDS : metabolic syndrome, mortality, schizophrenia

INTRODUCTION-

Metabolic syndrome can be described as a constellation of several risk factors, interrelated by insulin resistance, associated with risk for CVD and diabetes-related morbidity and mortality, or cardio metabolic risk. Using a widely accepted definition of the metabolic syndrome, from the third adult treatment panel (ATP III) of the National Cholesterol Education Program (NCEP), three or more of the following are required for diagnosis: Abdominal obesity (waist circumference greater than 102 cm in men or greater than 88 cm in women), elevated triglycerides (150 mg/dL or more), decreased HDL cholesterol (less than 40 mg/dL in men or less than 50 mg/dL in women), hypertension (blood pressure 130/85 mm Hg or more), or hyperglycemia (fasting plasma glucose [FPG] 100 mg/dL or more). 11 Weight gain and metabolic changes associated with SGAs have been extensively investigated in recent years. Differential effects of the seven most commonly prescribed SGAs have been described and are summarized[6,7]. Clozapine (Clozaril; Novartis, Basel, Switzerland) and olanzapine (Zyprexa; Eli Lilly and Company, Indianapolis, Indiana, USA) carry the highest risk of weight gain, diabetes, and dyslipidemia, whereas risperidone (Risperdal; Janssen, Beerse, Belgium) and quetiapine (Seroquel; AstraZeneca, London, UK) are associated with moderate risk. Ziprasidone (Geodon; Pfizer, New York City, New York, New York) and aripiprazole (Abilify; Otsuka, Tokyo, Japan) appear to be the most weight-neutral and carry minimal metabolic side effects. Patients with schizophrenia are at greater risk for obesity than other individuals due to factors including inactive lifestyle, poor dietary choices, and side effects of psychotropic medications.[5]

MATERIALS AND METHODS:

The study was approved by the Ethics Review Committee of the Institute .The patient was incompetent on account of the severity of illness to provide informed consent, then informed consent from the LAR of the patient was taken. The study was conducted by including patients above age 20years at the OPD of department of psychiatry MGM medical college Indore. The participants were screened for the following predefined inclusion and exclusion criteria. Patients were diagnosed for schizophrenia according to the International Classification of Diseases Classification of Mental and Behavioral Disorders - Clinical Descriptions and Diagnostic criteria for research 10th revision[4] were invited to participate in the study.

Sociodemo graphic and clinical details of all subjects were recorded in structured formats. The Study design was the cross sectional study in which study sample was the 100 patients. Who were divided into two groups- 1) 50 Chronic Schizophrenic patients whose illness is more than 2 years and who are taking the treatment for the illness. 2) 50 Chronic Schizophrenic patients whose illness is more than 2 years and who are not taking the treatment for the illness. The study was conductedat department of psychiatry MGMMC Indore for one year from date of ethics committee approval.

ASSESSMENT:

By using standard mercury manometer systolic and diastolic blood pressure was measured. Fasting venous blood sample was collected under aseptic condition to estimate cholesterol,triglycerides (TGA) and high-density lipoprotein (HDL).

Analysis Of Metabolic Syndrome With NCEP ATP III Criteria

In 2001, the National Cholesterol Education Program (NCEP) Adult Treatment Panel (ATP) III provided a definition for metabolic syndrome (**2**). The NCEP criteria are practical for physicians to use, since the variables defining metabolic syndrome are commonly available in clinical practice. Ford et al. (**3**) have previously shown that metabolic syndrome is common in people ≥50 years of age. Since glucose intolerance is an important part of metabolic syndrome and increases with age, this report will focus on the interactions among metabolic syndrome, hyperglycemia, and prevalence of CHD.

NCEP ATP III Criteria For Metabolic Syndrome

	WHO 1999[4]	EGIR 1999[5]	NCEP-ATP III 2005[6-8]	IDF 2005[9]
Criteria	T2DM or IGT or Insulin resistance PLUS ≥ 2 of the following:	Hyperinsulinaemia, PLUS ≥ 2 of the following:	Any ≥ 3 of the following:	Central obesity PLUS ≥ 2 of the following:
Central obesity	BMI > 30 kg/m^2 or WHR > 0.9 (M) or > 0.85 (F)	WC ≥ 94 cm (M),WC ≥ 80 cm (F)	WC ≥ 102 cm (M), WC ≥ 88 cm (F)	WC -ethnic specific or BMI > 30kg/m^2
Dyslipidaemia	TG≥150 mg/dL or HDL-C <35 mg/dL(M), <39 mg/dL(F)	TG≥177 mg/dL or HDL-C <39 mg/dL	TG ≥ 150 mg/dL or medication	TG ≥ 150 mg/dL or medication
Dyslipidaemia			HDL-C: < 40 mg/dL (M), < 50 mg/dL (F), or medication	HDL-C: <40 mg/dL (M), < 50 mg/dL (F), or medication
Blood pressure	≥140/90 mmHg	≥140/90 mmHg or medication	Systolic blood pressure ≥ 130 mmHg or diastolic blood pressure ≥ 85 mmHg, or medication	Systolic blood pressure ≥130 mmHg or diastolic blood pressure ≥85 mmHg, or medication
Other	Microalbuminuria: albumin excretion ≥ 20 µg/min		Fasting plasma glucose: ≥ 100 mg/dL or medication	Fasting plasma glucose: ≥ 100 mg/dLor previously diagnosed type 2 diabetes

WHO, World Health Organization; EGIR, European Group for the Study of Insulin Resistance; NCEP-ATP III, National Cholesterol Education Program Adult Treatment Panel; IDF, International Diabetes Federation; T2DM, type 2 diabetes mellitus; IGT, impaired glucose tolerance; BMI, body mass index; WC, waist circumference; WHR, waist-hip ratio; TG, triglycerides; HDL-C, high density lipoprotein cholesterol; M, male; F, female

RESULTS:

During the study period of 1 year (2018 to 2019), 100 patients were assessed on the OPD basis. 50 of them were without treatment and 50 of them were with treatment chronic schizophrenia patients. All of them/their caregivers provided informed consent to participate in the study

SOCIODEMOGRAPHIC AND CLINICAL PROFILE OF THE SAMPLE

Average age of without treatment schizophrenic patients was 32.16 yrs and with treatment schizophrenic patients was 39.17 yrs.Mean age of onset was 26.53 yrs in without treatment schizophrenic patients and 25.70yrs in with treatment schizophrenic patients. Mean duration of illness was 6.21 yrs in without treatment schizophrenic patients and 13.74 yrs with treatment schizophrenic patients.male patients were 33 and female patients were 17 in both with and without treatment. majority of the patienuts were hindu. Most of the patients were from low socioeconomic status (74% in without treatment and 76% in with treatment patients).most of the patients wer unemployed (84% in without treatment and 78% in with treatment patients. Most of the patients were urban (67.5% in with treatment and 56% in without treatment patients) Metabolic syndrome was present in 42% patients(n=21) in without treatment schizophrenic patients and 52% (n=26) in with treatment schizophrenic patients. Compared to males, females were more affected from metabolic syndrome (0.36± 0.48vs. 0.52± 0.51, likelihood ratio= 1.259, P value =0.261in without treatment patients and 0.40±0.49vs. 0.71 ±0.45,likelihood ratio= 163.20, P value < 0.05 in with treatment patients).

Variables	Without treatment schizophrenia patients	With treatment schizophrenia patients
Age	32.16	39.47
M:F	1.9 : 1 (M= 33,F=17)	1.9 : 1 (M= 33,F=17)
Marital status in %:		
Married	38% (n=19)	35.3%(n=18)
Unmarried	48%(n=24)	28.7%(n=14)
Divorced	4%(n=2)	17.5%(n=9)
Widowed	0%(n=0)	4.7%(n=2)
separated	10%(n=5)	13.9%(n=7)
Religion in %:		
Hindu	90%(n=45)	91.4%(n=46)
Muslim	10% (n=5)	8.6% (n=4)
Education in %:		
Illiterate	14%(n=7)	17.6%(n=9)
Primary(5th)	20%(n=10)	10.9%(n=5)
Middle(8th)	26%(n=13)	23.5%(n=12)
High School	10%(n=5)	25.8%(n=13)
Inter/Diploma	18%(n=9)	12.5%(n=6)
Graduate	8% (n=4)	7.7% (n=4)
Post graduate Professional	4%(n=2)	2%(n=1)
Socioeconomic –		
Low	74%(n=37)	76%(n=38)
Middle	24%(n=12)	22%(n=11)
High	2% (n=1)	2% (n=1)
Occupation-		
Employed	16%(n=8)	22%(n=11)
unemployed	84% (n=42)	78% (n=49)
Family type		
Nuclear	58%(n=29)	41.9%(n=21)
Extended/ Joint.	42% (n=21)	58.1% (n=29)
Locality		
Urban	56%(n=28)	67.5%(n=34)
Rural	44% (n=22)	32.5% (n=16)
Age of onset in years.(mean)	26.53	25.70
Total duration of illness in years.(mean)	6.21	13.74
Metabolic syndrome	42%(n=21)	50.96% (n=25)

Tests For Proportion For "with Treatment Schizophrenic Patient"

Correlations		N	Mean ± SD in males	Mean ± SD in females	Pearson value	P value	Likelihood ratio	Exact sig
sex	**Metabolic syndrome**	**50**	0.40±0.49	0.71 ±0.45	159.02	0.000	163.20	0.000

Tests For Proportion For "without Treatment Schizophrenic Patient"

Correlations		N	Mean ± SD in males	Mean ±SD in females	Pearson value	P value	Likelihood ratio	Exact sig
sex	**Metabolic syndrome**	**50**	0.36± 0.48	0.52± 0.51	1.266	0.261	1.259	0.205

DISCUSSION:

In the present study, 42% of patients had metabolic syndrome in without treatment schizophrenia patients and 50.91% had metabolic syndrome in with treatment schizophrenia patients , which is in the above reported range. However, the prevalence of metabolic syndrome in the patients with schizophrenia in the present study is higher in comparison to findings reported in drug naive schizophrenia patients from India[13-16] this possibly suggests that treatment with antipsychotic contribute little to the development of metabolic syndrome in patients with schizophrenia. When we compare the rate of metabolic syndrome as reported in most of the studies from the west, which have assessed coronary heart disease risk and CMR risk in patients of schizophrenia,[8-12] the rate of metabolic syndrome in our study are much higher. This indicates a disparity between the prevalence of metabolic syndrome and coronary heart disease rates compared to findings from the west. one possible reason for this discordance could be due to use of ethnic specific cut-offs for estimation of metabolic syndrome, compared to the methods used for assessment of coronary heart disease risk and CMR risk, which are based on the Western population. Therefore, the coronary heart disease risk and CMR risk estimated in this study serve as crude composite indices of the various factors affecting cardio vascular risk factors rather than as accurate estimates of absolute risk, similar to an earlier study in the diabetic population of the capital of India.[1] The disparity in the metabolic syndrome and coronary heart disease risk also suggests that metabolic syndrome is independent of age, whereas Framingham and score are age dependent, which may be a limitation of these indices.

In our study metabolic syndrome was higher in females compared to males as per Waleed M swelah et al (Prevalence of metabolic syndrome among patients with Schizophrenia in Palestine).[17]The overall metabolic syndrome prevalence was 43.6%, with 39% in male and 55.9% in female patients. On the basis of average, the study patients had 2.3±1.3 metabolic abnormalities.

univariate analysis showed that metabolic syndrome was significantly higher with older age, female gender, longer duration of the illness, smoking, abdominal obesity, high systolic and diastolic blood pressure, high triglycerides, low HDL-C, and high fasting plasma glucose. In a between gender comparison, a higher proportion of central obesity and low HDL-C in female patients suffering from schizophrenia in this study was consistent with observations in the literature.

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