Journal of Advanced Medical and Dental Sciences Research

@Society of Scientific Research and Studies ***NLM ID:*** *101716117*

Journal home page: www.jamdsr.comdoi: 10.21276/jamdsr Index Copernicus value = 85.10

(e) ISSN Online: 2321-9599; (p) ISSN Print: 2348-6805

Original Research

A Study of drug emerging metabolic syndrome in patients of schizophrenia receiving typical and atypical antipsychotics – A comparative study

Ramchandra Lamba[1], Neha Chodhary[2], Devendra Vijayvergia[3], Vinod[4]

[1]Junior Specialist, Department of Psychiatry, Shri Kalyan Govt Medical College, Sikar, Rajasthan, India;
[2]Junior Resident, Department of Psychiatry, Govt Medical College Kota, Rajasthan, India;
[3]Senior Professor, Department of Psychiatry, Govt Medical College Kota, Rajasthan, India;
[4]Associate Professor, Department of Psychiatry, Govt Medical College Kota, Rajasthan, India

ABSTRACT:
Background: The metabolic syndrome comprises of central obesity, elevated cholesterol and triglycerides, impaired glucose tolerance and increased blood pressure. The present study was conducted to estimate the % of metabolic syndrome in patients of schizophrenia taking antipsychotic medication (typical and atypical) at the initiation of therapy and 3 months after initiation. **Materials & Methods:** The sample was divided into two groups, each comprising of 50 patients (group A- patients on typical antipsychotic drugs and group B– patients on atypical antipsychotic drugs). A semi–structured, self–designed proforma which included socio demographic details and clinical profile of patients was recorded. Metabolic parameters were recorded before the onset of treatment and 3 months after the initiation of treatment. **Results:** Age of subjects was found between 18-60 years, with majority (40%) of them were from the age group of 31-40 years, whereas 35% were from age group of 18- 30 years, 25% from 41-60 years. Majority (70%) of the participants had past history of psychiatric illness, 30% participants had no history of any psychiatric illness. The prevalence of metabolic syndrome was 18 % in group A and 42% in group B, overall prevalence was 30%. Prevalence of metabolic syndrome was 18 % in group A and 42% in group B. In majority (73.33%) of patients waist circumference was increased, followed by decrease HDL cholesterol in 66.67%, increase TG in 63.33%, increase blood sugar in 50% and increase blood pressure was in 43.33%. **Conclusion:** Overall occurrence of metabolic syndrome was 30%. Occurrence of metabolic syndrome in male patients was 25% and in female patients was 35.42%.
Key words: Metabolic syndrome, Psychiatric, Schrizophrenia.

Received: 15, January 2021 Accepted: 17 February, 2021

Corresponding Author: Dr. Ramchandra Lamba, Junior Specialist, Department of Psychiatry, Shri Kalyan Govt Medical College, Sikar, Rajasthan, India

This article may be cited as: Lamba R, Chodhary N, Vijayvergia D, Vinod. A Study of drug emerging metabolic syndrome in patients of schizophrenia receiving typical and atypical antipsychotics – A comparative study. J Adv Med Dent Scie Res 2021;9(3):106-110.

INTRODUCTION

Metabolic syndrome (also known as syndrome X) is the term used to define a group of risk factors, which when clustered in an individual, increases the risk for subsequent development of coronary artery disease, type 2 diabetes mellitus and stroke. The metabolic syndrome comprises of central obesity, elevated cholesterol and triglycerides, impaired glucose tolerance and increased blood pressure.[1] The overall risk for morbidity and mortality increases with the presence of metabolic syndrome in an individual. People with chronic and severe mental illnesses like schizophrenia are prone to develop the metabolic syndrome.[2]

Schizophrenia is a chronic and severe mental disorder affecting 20 million people worldwide. Schizophrenia is characterized by distortions in thinking, perception, emotions, language, sense of self and behavior. Schizophrenia is treatable. Treatment with medicines and psychosocial support is effective.[3] However, most people with chronic schizophrenia lack access to treatment. There is clear evidence that old-style mental hospitals are not effective in providing the treatment that people with mental disorders need and violate basic human rights of persons with mental disorders. Efforts to transfer care from mental health institutions to the community need to be expanded and accelerated. The engagement of family members

and the wider community in providing support is very important.[4]

The atypical antipsychotics integrate with the serotonin (5-HT), norepinephrine (α, β), and dopamine (D) receptors in order to effectively treat schizophrenia. he newer second generation anti-psychotics, like clozapine and olanzapine, generally tend to cause more problems relating to metabolic syndrome, such as obesity and type II diabetes mellitus.[5] The present study was conducted to estimate the % of metabolic syndrome in patients of schizophrenia taking antipsychotic medication (typical and atypical) at the initiation of therapy and 3 months after initiation.

MATERIALS & METHODS

100 consecutively antipsychotic naive patients attending Department of Psychiatry, Government Medical College and associate group of Hospitals, Kota (Raj.), were selected and screened. Those who fulfilled the inclusion and exclusion criteria were selected for the study.

The sample was divided into two groups, each comprising of 50 patients (group A- patients on typical antipsychotic drugs and group B– patients on atypical antipsychotic drugs).

A semi–structured, self–designed proforma which included socio demographic details and clinical profile of patients was recorded. The tenth revision of International Classification of Disease and Related Health Problems (ICD–10) of mental and behavioural disorders and diagnostic guidelines for metabolic syndrome included in National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III) was used.

Metabolic parameters were recorded before the onset of treatment and 3 months after the initiation of treatment. Data thus collected was classified, tabulated and analyzed by using appropriate statistical methods. P value less than 0.05 was considered significant.

RESULTS

Table I Distribution of Subject according to Age

Age Group	Group A (50)	Group B (50)	Total(100)	Percentage
18-30	15	20	35	35%
31-40	22	18	40	40%
41-60	13	12	25	25%
Mean	32.52	34.72	33.62	
Chi-square	1.154			
P-value	0.56			

Table I shows that age of subjects was found between 18-60 years, with majority (40%) ofthem were from the age group of 31-40 years, whereas 35% were from age group of 18- 30 years, 25% from 41-60 years.

Table II Distribution of subject according to Occupation

Occupation	Group A (50)	Group B (50)	Total (100)
Unemployed	5	5	10
Student	4	5	9
Govt. Job	9	7	16
House Wife	6	9	15
Farmer	9	6	15
Skilled	8	5	13
Semiskilled Worker/Labour	9	13	22

Table II shows that majority of participants (22%) were semi-skilled workers/ labourer, followed by 16% were from Govt. job, 15% house wife, 15% farmers, 13% skilled-workers, 10% unemployed, and 9% were student.

Table III Distribution of subject according to past history of PsychiatricIllness

Psychiatric Illness	Group A (50)	Group B (50)	Total (100)
Present	33	37	70
Absent	17	13	30

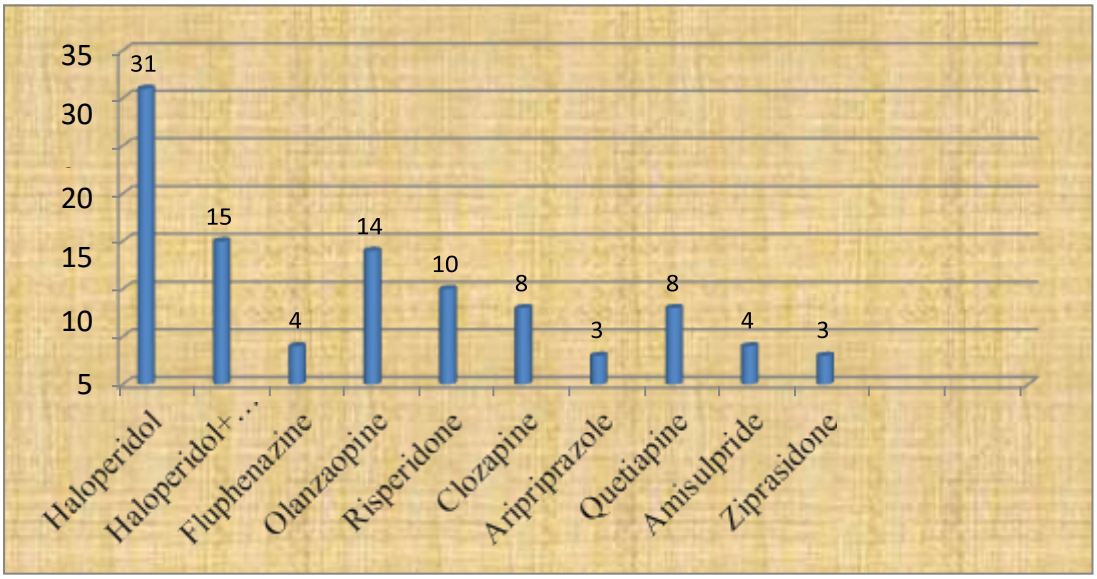
Table III shows that majority (70%) of the participants had past history of psychiatric illness, 30% participants had no history of any psychiatric illness.

Table IV Prevalence of Metabolic syndrome in patients (NCEP-ATP III criteria)

METABOLIC SYNDROME	Group A	%	Group B	%	Total
Present	9	18 %	21	42 %	30
Absent	41	82 %	29	58 %	70
Chi square	6.857				
P- value	0.0088				
Interpretation	Significant				

Table IV shows that the prevalence of metabolic syndrome was 18 % in group A and 42% in group B, overall prevalence was 30%.

Graph I Distribution of drugs



Graph I shows that among typical antipsychotics (Group A) 31% of patients were on

Graph I shows that Haloperidol, 15% on combination of Haloperidol+ Chlorpromazine and in 4% of patients, injectable Fluphenazine was given. Among atypical antipsychotics (Group B) 14% of patients were on Olanzapine, 10% on Risperidone , 8% on Quetiapine, 8% on Clozapine, 4% on Amisulpride, 3% on Ziprasidone and 3% of patients were on Aripiprazole.

Table V Parameters among the patients with Metabolic Syndrome

		Group A	%	Group B	%	Total
Waist Circumference	Normal	2	22.22	6	28.57	8
	Increased (males ≥ 90 cm, females ≥ 80 cm)	7	77.78	15	71.43	22
HDL Cholesterol	Normal	3	33.33	7	33.33	10
	Lowered (< 40 mg/dL males; < 50 mg/dL females)	6	66.67	14	66.67	20
Triglycerides	Normal	3	33.33	8	38.1	11
	Elevated (≥150 mg/dl)	6	66.67	13	61.9	19
Fasting Blood Sugar	Normal	6	66.67	9	42.86	15
	Elevated (≥100 mg/dl	3	33.33	12	57.14	15
Blood Pressure	Normal	5	55.56	12	57.14	17
	Elevated (>_130/>_85 mm hg	4	44.44	9	42.86	13

Table V shows that prevalence of metabolic syndrome was 18 % in group A and 42% in group B. In majority (73.33%) of patients waist circumference was increased, followed by decrease HDL cholesterol in 66.67%, increase TG in 63.33%, increase blood sugar in 50% and increaseblood pressure was in 43.33%.

DISCUSSION

Worldwide schizophrenia is associated with considerable disability and may affect educational and occupational performance. People with schizophrenia are 2-3 times more likely to die early than the general population. Approximately their life expectancy is reduced to 20%.[6] This is often due to preventable physical diseases, such as cardiovascular disease, metabolic disease and infections. Research has not identified one single factor. It is thought that an interaction between genes and a range of environmental factors may cause schizophrenia. Psychosocial factors may also contribute to schizophrenia.[7]

Atypical (second-generation) antipsychotics were marketed as offering greater efficacy in reducing psychotic symptoms while reducing side effects (extra-pyramidal symptoms in particular) than typical medications, the results showing these effects often lacked robustness, and the assumption was increasingly challenged even as atypical prescriptions were soaring.[8] Because of the lower rates of extra pyramidal side-effects and tardive dyskinesia as well as superior and potentially broader efficacy than conventional neuroleptics, second generation antipsychotics are widely prescribed for psychotic and nonpsychotic disorders. However, reports of significant weight gain dyslipidemia and hyperglycemia have caused considerable concern.[9] The present study was conducted to estimate the % of metabolic syndrome in patients of schizophrenia taking antipsychotic medication (typical and atypical) at the initiation of therapy and 3 months after initiation.

In present study, age of subjects was found between 18-60 years, with majority (40%) of them were from the age group of 31-40 years, whereas 35% were from age group of 18- 30 years, 25% from 41-60 years. Suvisaari et al[10] conducted a study on development of an atherogenic metabolic risk factor associated with use of atypical antipsychotics. Olanzapine treated patients had significantly higher plasma triglyceride concentrations, lower high-density lipoprotein (HDL)-cholesterol levels, higher apolipoprotein B levels, and higher fasting insulin concentrations than risperidone treated patients. Moreover, 33% of olanzapine-treated patients were carriers of 3 atherogenic features of the metabolic syndrome as opposed to a prevalence of only 11% of risperidone treated patients.

We found that majority of participants (22%) were semi-skilled workers/ labourer, followed by 16% were from Govt. job, 15% house wife, 15% farmers, 13% skilled-workers, 10% unemployed, and 9% were student. We observed that majority (70%) of the participants had past history of psychiatric illness, 30% participants had no history of any psychiatric illness.

In present study, prevalence of metabolic syndrome was 18 % in group A and 42% in group B, overall prevalence was 30%. Cohn T, Prud Homme D et al[11] compared with the reference population, Framingham 10-year risk of myocardial infarction was greater in the male patients ($t3091 = 4.35$, $P < 0.001$) but not in the female patients. Prevalence rates of the metabolic syndrome in the patients (42.6% of men and 48.5% of women) were approximately 2 times published rates in the US adult population. Further, the syndrome appears to occur at a younger age than in the general population.[12,13]

We found that typical antipsychotics (Group A) 31% of patients were on Haloperidol, 15% on combination of Haloperidol+ Chlorpromazine and in 4% of patients, injectable Fluphenazine was given. Among atypical antipsychotics (Group B) 14% of patients were on Olanzapine, 10% on Risperidone, 8% on Quetiapine, 8% on Clozapine, 4% on Amisulpride, 3% on Ziprasidone and 3% of patients were on Aripiprazole. We observed that prevalence of metabolic syndrome was 18 % in group A and 42% in group B. In majority (73.33%) of patients waist circumference was increased, followed by decrease HDL cholesterol in 66.67%, increase TG in 63.33%, increase blood sugar in 50% and increase blood pressure was in 43.33%. De Hert, Van Eyck et al[14] found that metabolic abnormalities were already present in first-episode patients, and considerably increased with increasing duration of illness. When compared to the general population much higher rates of the metabolic syndrome and diabetes were observed in patients with schizophrenia. In contrast, the difference in the prevalence of diabetes in patients with schizophrenia and the general population dramatically and linearly increased from 1.6% in the 15-25 age group, to 19.2% in the 55-65 age-band.

CONCLUSION

Authors found that overall occurrence of metabolic syndrome was 30%. Occurrence of metabolic syndrome in male patients was 25% and in female patients was 35.42%.

REFERENCES

1. Natalie Almeras, Jean– Pierre, FAHA, Julie, Jean – Pierre Mottard (2004) development of an atherogenic metabolic risk factor associated with use of atypical antipsychotics.
2. Pladevall M, et al. (2006) a study on single factor underlies the metabolic syndrome: a confirmatory factor analysis. Diabetes Care 2006 Jan; 29(1): 113-122.
3. Lann D, LeRoith D. (2007) study on Insulin resistance as the underlying cause for metabolic syndrome. 2007 Nov;91(6):1063-77.
4. Reaven GM. Banting Lecture 1988. Role of insulin resistance in human disease. 1988. Nutr Burbank Los Angel Cty Calif. 1997 Jan;13(1):65;
5. De Fronzo RA, Ferrannini E. Insulin resistance. A multifaceted syndrome responsible for NIDDM, obesity, hypertension, dyslipidemia, and atherosclerotic cardiovascular disease. Diabetes Care. 1991 Mar; 14 (3): 173–94.

6. Angela Owusu–Ansah, Anto Berko Panyin et al. 2018- Metabolic Syndrome among Schizophrenic Patients: A Comparative Cross-Sectional Study in the Middle Belt of Ghana 2018; 2018: 6542983.
7. Bobes J , Arangoc , Aranda P. et al. 2007 - A comparison of schizophrenia outpatients treated with antipsychotics with and without metabolic syndrome: findings from the CLAMORS study. 07 Jul 2008, 104(1-3):1-12.
8. Sahoo S, Ameen S, Akhtar S. Metabolic syndrome in drug-naïve first-episode psychosis treated with atypical antipsychotics. Aust N Z J Psychiatry. 2007 Jul;41(7):629.
9. Vinay HR, Sundar GSK, Behere RV, Arasappa R, Rao NP, Venkatasubramanian G, et al. Effect of risperidone on metabolic parameters in antipsychotic-naïve schizophrenia: A prospective one year follow-up study. Asian J Psychiatry. 2011 Mar;4(1):73–4.
10. Suvisaari JM, Saarni SI et al. 2007. Metabolic syndrome among persons with schizophrenia and other psychotic disorders in a general population survey 2007 Jul;68(7):1045-55.
11. Cohn T, Prud Homme D at el. 2004- Characterizing coronary heart disease risk in chronic schizophrenia: high prevalence of the metabolic syndrome 2004 Nov;49(11):753-60.
12. Gautam S, Meena PS. Drug-emergent metabolic syndrome in patients with schizophrenia receiving atypical (second-generation) antipsychotics. Indian J Psychiatry. 2011 Apr;53(2):128–33.
13. Saddichha S, Manjunatha N, Ameen S, Akhtar S. Metabolic syndrome in first episode schizophrenia - a randomized double-blind controlled, short-term prospective study. Schizophr Res. 2008 Apr;101(1-3):266–72.
14. De Hert, Van Eyck D et al. 2006 - Prevalence of the metabolic syndrome in patients with schizophrenia treated with antipsychotic medication Mar;83(1):87-93.