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A COMPARATIVE STUDY ON METABOLIC SYNDROME WITH TYPICAL & ATYPICAL ANTIPSYCHOTICS

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ABSTRACT **Background-** Prevalence of MS is estimated to be two to four times higher inpatients on these medications, compared with that in the general population. Metabolic syndrome is associated with high risk of cardiovascular diseases. Considering the high burden of problem, it becomes important to assess the metabolic side effects of antipsychotics in detail. **Aims & Objectives-** To estimate the prevalence of metabolic syndrome in patients taking antipsychotic medication (typical and atypical) at the initiation of therapy and 3 months after initiation and to compare socio-demographic characteristics and occurrence of metabolic syndrome in patients taking typical and atypical antipsychotics. **Material and methods-** Quasi Experimental Non Randomized Prospective Follow up Study comprised of total 50 psychotic patients, diagnosed according to ICD-10, and antipsychotic naive. The sample was divided into two groups, each comprising of 25 patients (group A- patients on typical antipsychotic drugs and group B– patients on atypical antipsychotic drugs). Non Randomized Purposive sampling was done. Tools for study were a semi–structured, self–designed proforma which included socio demographic details and clinical profile of patients, 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). **Result-** The prevalence of Metabolic Syndrome overall was 30%, 40% with Atypical and 20% with Typical antipsychotics. The prevalence was higher in females (34.78%) than males (25.93%). Among the diagnostic subgroups, the prevalence was highest among patients with schizophrenia (16%), while it was lesser in the patients with bipolar disorders (12%) and other psychotic disorders (2%). In majority (73.33%) of patients, waist circumference was increased, followed by 66.67% decrease HDL cholesterol, increase Tg in 60%, increase blood sugar in 53.33%, and increase blood pressure in 46.67 %. 16% of patients of schizophrenia were found to have metabolic syndrome. Likewise 12% patients of BPAD and 2% patients of other psychosis had metabolic syndrome **Conclusion-** Metabolic syndrome present in both group of patients, taking Typical & Atypical anti-psychotics. In this study found that prevalence is more with Atypical anti-psychotics (40%), in Female patients (34.78%) and in Schizophrenia patients (16%).

KEYWORDS : Antipsychotics, metabolic syndrome, schizophrenia, BPAD

INTRODUCTION:

Metabolic syndrome 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)

Adult Treatment Panel (ATP) III criteria of Metabolic syndrome is Abdominal obesity, given as waist circumference- Men >102 cm (>40 in),Women >88 cm (>35 in), Triglycerides ≥150 mg/dL, HDL cholesterol Men <40 mg/dl, Women <50 mg/dL, Blood pressure ≥130/≥85 mm Hg and Fasting glucose ≥110 mg/dL.

Metabolic Syndrome and Antipsychotic medications- Effects on weight are believed to mostly derive from their actions on the H1 and 5-HT2C receptors, while their effects on insulin sensitivity are believed to be the result of a combination of their effects on body weight (as increased body mass is known to be a risk factor for insulin resistance) and their antagonistic effects on the M3 receptor. Effect on the dopamine reward system as an antagonist can facilitate appetite and hence increase weight.(2,3) Some of the newer agents, however, such as risperidone and its metabolite paliperidone, ziprasidone, lurasidone, aripiprazole, asenapine and iloperidone have clinically-insignificant effects on the M3 receptor and appear to carry a lower risk of insulin resistance. Whereas clozapine, olanzapine and quetiapine (indirectly via its active metabolite, norquetiapine) all antagonize the M3 receptor at therapeutic-relevant concentrations.

Prevalence of MS is estimated to be two to four times higher inpatients on these medications, compared with that in the general population. In (CATIE) trial, one third of the patients met the NCEP criteria for metabolic syndrome at baseline. Of them 88% had dyslipidemia, 62% had hypertension and 38% had diabetes mellitus while not on treatment(5). The prevalence rates vary from 18.3% to as high as 33.5%.(6,7) There are however differences in the diagnostic guidelines employed by these studies. Studies shows prevalence of metabolic syndrome low in Bipolar patients as compare to schizophrenia patients because of healthy behavior in Bipolar patients.

Pathophysiology- The current understanding is that of complex interactions between genetic and environmental factors i.e Insulin resistance & Glucose intolerance, Central Obesity, Hypertension, Dyslipidaemia, Pro-inflammatory state, Prothrombotic state and Genetics Regular physical activity is effective in prevention and treatment of hypertension, obesity, impaired glucose tolerance and diabetes and dyslipidaemia. The pharmacological strategies are Appetite suppressants like Sibutramin and phentermine derivatives reduce appetite in the afternoon and evening if administered early in the morning and Inhibitors of nutritional absorption like Orlistat is recommended for use as a single agent at a time.(8)

AIMS & OBJECTIVES:

1. To estimate the prevalence of metabolic syndrome in patients taking antipsychotic medication (typical and atypical) at the initiation of therapy and 3 months after initiation.

2. To compare socio-demographic characteristics and occurrence of

metabolic syndrome in patients taking typical and atypical antipsychotics.

MATERIAL AND METHODS:

The present study was conducted at Department of Psychiatry, Government Medical College and Hospital, Kota. Prior permission from Institutional Ethical Committee was taken.

Study design- Quasi Experimental Non Randomized Prospective Follow up Study

Sample- The sample was comprised of total 50 psychotic patients, diagnosed according to ICD-10, and antipsychotic naive. The sample was divided into two groups, each comprising of 25 patients (group A- patients on typical antipsychotic drugs and group B– patients on atypical antipsychotic drugs).

Sampling Method- Non Randomized Purposive sampling

Tools for study:

1. A semi–structured, self–designed proforma which included socio demographic details and clinical profile of patients.

2. The tenth revision of International Classification of Disease and Related Health Problems (ICD–10) of mental and behavioural disorders.

3. Diagnostic guidelines for metabolic syndrome included in National Cholesterol Education Program Adult Treatment Panel III (NCEP ATP III).

Inclusion criteria:

1. Patients between 18 and 60 years of age who were diagnosed as per the ICD–10 criteria.
2. Any patient who was psychotrophic naive.
3. Their willing to participated in study with informed consent.

Exclusion criteria:

1. Pre–existing metabolic syndrome.

2. Patients who had received psychotropic medication in last 6 months, who had history of current substance abuse and co– morbid chronic medical illness and Patients who developed serious side effects during study.

Methodology:

1. 50 consecutively antipsychotic naive patients attending Department of Psychiatry from 1st August 2020- 30th November 2020, Government Medical College and Hospitals, Kota (Raj.), were selected and screened. Those who fulfilled the inclusion criteria were selected for the study.

2. Socio demographic profile of patients was recorded.

3. Before the onset of drug therapy and after 3 months of treatment, metabolic parameters of incorporated patients were monitored and the changes were compared using appropriate and applicable statistical tools.

RESULTS AND DISCUSSION:

Table 1. Socio demographic variables of First generation & Second generation Antipsychotic medication group:

Socio demographic variables	Group A (25)	Group B (25)
Mean Age (years)	31.48 +_5.28	33.52+_6.36
Gender		
Male	13	14
Female	12	11
Marital Status		
Married	20	19
Others	5	6
Education		
Illiterate	3	2
School	18	17
Graduation	3	4
Post graduation	1	2

Table 2. History of Psychiatric illness in both groups

H/o Psychiatric illness	Group A (25)	Group B (25)
Present	17	18
Absent	8	7
Duration of illness (years)	3.25+_1.36	4.30+_2.56
Duration of treatment (years)	2.15+_1.19	3.26+_2.25

15, 8,7,7,4,3,3,2 and 1 participants were on haloperidol, olanzapine, chlorpromazine, risperidone, quetiapine, clozapine, inj. Fluphenazine, amisulpride and aripiprazole respectively.

Table 3. Prevalence of Metabolic Syndrome with Typical and Atypical Antipsychotics

Metabolic Syndrome	Group A (25)	Group B (25)	Total (50)
Present	5 (20%)	10 (40%)	15 (30%)
Absent	20 (80%)	15 (60%)	35 (70%)
Chi square	4.5		
p-value	0.03		

Table 4: Prevalence of Metabolic Syndrome in males

Metabolic Syndrome in males	Group A(25)	Group B(25)	Total (50)
Present	2	5	7
Absent	11	9	20
Chi square	1.45		
p-value	0.22		
Metabolic Syndrome in females	Group A(25)	Group B(25)	Total (50)
Present	3	5	8
Absent	9	6	15
Chi square	1.05		
p-value	0.3		

The prevalence of Metabolic Syndrome overall was 30%, 40% with Atypical and 20% with Typical antipsychotics. The prevalence was higher in females (34.78%) than males (25.93%). Among the diagnostic subgroups, the prevalence was highest among patients with schizophrenia (16%), while it was lesser in the patients with bipolar disorders (12%) and other psychotic disorders (2%). Majority of patients are male (54%), married (78%), educated up to school (70%), Hindu religion (84%), urban locality (62%), doing semi-skilled work (42%), and belongs to lower socio economic status (58%). In majority (73.33%) of patients, waist circumference was increased, followed by 66.67% decrease HDL cholesterol, increase Tg in 60%, increase blood sugar in 53.33%, and increase blood pressure in 46.67 %. 16% of patients of schizophrenia were found to have metabolic syndrome. Likewise 12% patients of BPAD and 2% patients of other psychosis had metabolic syndrome

CONCLUSION:

Metabolic syndrome present in both group of patients, taking Typical & Atypical anti-psychotics. In this study found that prevalence is more with Atypical anti-psychotics (40%), in Female patients (34.78%) and in Schizophrenia patients (16%).

Limitation

Sample size is very small, therefore study results may not be generalized to other population.

Future directions

Future studies should be planned with large community samples that include both rural & urban areas. Further research needs to focus on the factors contributing to this increased occurrence of metabolic syndrome. Psychiatrists should have regular monitoring, early detection and treatment of metabolic syndrome.

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