ORIGINAL RESEARCH

Drug-emergent metabolic syndrome in psychiatric patients

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ABSTRACT

Background: Compared to the general population, those who suffer from severe mental illness, particularly schizophrenia, have greater rates of morbidity and mortality. The present study was conducted to assess drug-emergent metabolic syndrome in psychiatric patients. **Materials & Methods:** 120 patients suffering of schizophrenia of both genders were divided into three subgroups, i.e. subgroup I, subgroup II, and subgroup II, who were prescribed risperidone, olanzapine, and clozapine respectively. Group IV was a control group who were prescribed haloperidol. After one month and four months, respectively, measurements were made of the waist circumference, fasting HDL levels, fasting triglycerides, fasting blood pressure, and fasting blood glucose. **Results:** Out of 120 patients, 78 were males and 44 were females. Metabolic syndrome was seen in 12 in group I, 10 in group II, and 8 in group III. The difference was significant (P< 0.05). The mean fasting HDL was 52.4, 46.2, 45.6, and 46.5 in group I, II, III and IV respectively. The mean WC was 75.6, 76.2, 77.4, and 76.0 in group I, II, III and IV respectively. The mean HC was 84.5, 82.2, 83.1, and 82.2 in group I, II, III and IV respectively. The mean FBG (mg/dl) in group I, II, III and IV was 79.2, 80.5, 77.2 and 76.4 respectively. The mean fasting TG was 80.3, 88.4, 81.2, and 75.4 in group I, II, III and IV respectively. The difference was significant (P< 0.05). **Conclusion:** Second-generation antipsychotics significantly change metabolic parameters, increasing the risk of metabolic syndrome and associated diseases such type II diabetes and cerebrovascular accidents. Olanzapine is the antipsychotic drug that has the greatest potential to cause metabolic syndrome.

Keywords: metabolic syndrome, risperidone

INTRODUCTION

Compared to the general population, those who suffer from severe mental illness, particularly schizophrenia, have greater rates of morbidity and mortality.[1] Additionally, their life expectancy is 20% lower. Some people believe that schizophrenia is a "life-shortening disease," and there is growing evidence to support this claim. People with schizophrenia should expect to live 9–12 years shorter lives than people in the general population, excluding suicide, which accounts for fewer than one-third of all preventable deaths.2 Higher rates of morbidity and mortality from cardiovascular disease and type 2 diabetes mellitus are associated with a combination of risk factors known as the metabolic syndrome. In the general adult population, the metabolic syndrome is a transitional state that causes type II diabetes and cardiovascular disease.[3]

Due to their higher and potentially broader efficacy compared to traditional neuroleptics, as well as their decreased incidence of extrapyramidal side effects and tardive dyskinesia, second-generation antipsychotics are given widely for both psychotic and nonpsychotic disorders.[4] However, reports of significant weight gain, dyslipidemia, and hyperglycemia have sparked grave worries.[5] A number of adverse effects associated with second-generation antipsychotics are also part of the metabolic syndrome.[6] The present study was conducted to assess drug-emergent metabolic syndrome in psychiatric patients.

MATERIALS & METHODS

The present study consisted of 120 patients suffering of schizophrenia of both genders. All gave their written consent to participate in the study. All cases were diagnosed using the ICD-10 criteria.

Data such as name, age, gender, etc. was recorded. Patients were divided into three subgroups, i.e. subgroup I, subgroup II, and subgroup II, who were prescribed risperidone, olanzapine, and clozapine respectively. Group IV was a control group who were prescribed haloperidol. After one month and four months, respectively, measurements were made of the

waist circumference, fasting HDL levels, fasting triglycerides, fasting blood pressure, and fasting blood glucose. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

RESULTS

Table I Distribution of patients

Total- 120		
Gender	**Male**	**Female**
Number	78	44

Table I shows that out of 120 patients, 78 were males and 44 were females.

Table II Occurrence of metabolic syndrome

Groups	Metabolic syndrome	No metabolic syndrome	P value
Group I	12	28	0.04
Group II	10	30	0.05
Group III	8	32	0.02
Group IV	0	40	0.01

Table II, graph I shows that Metabolic syndrome was seen in 12 in group I, 10 in group II, and 8 in group III. The difference was significant (P< 0.05).

Graph I Occurrence of metabolic syndrome

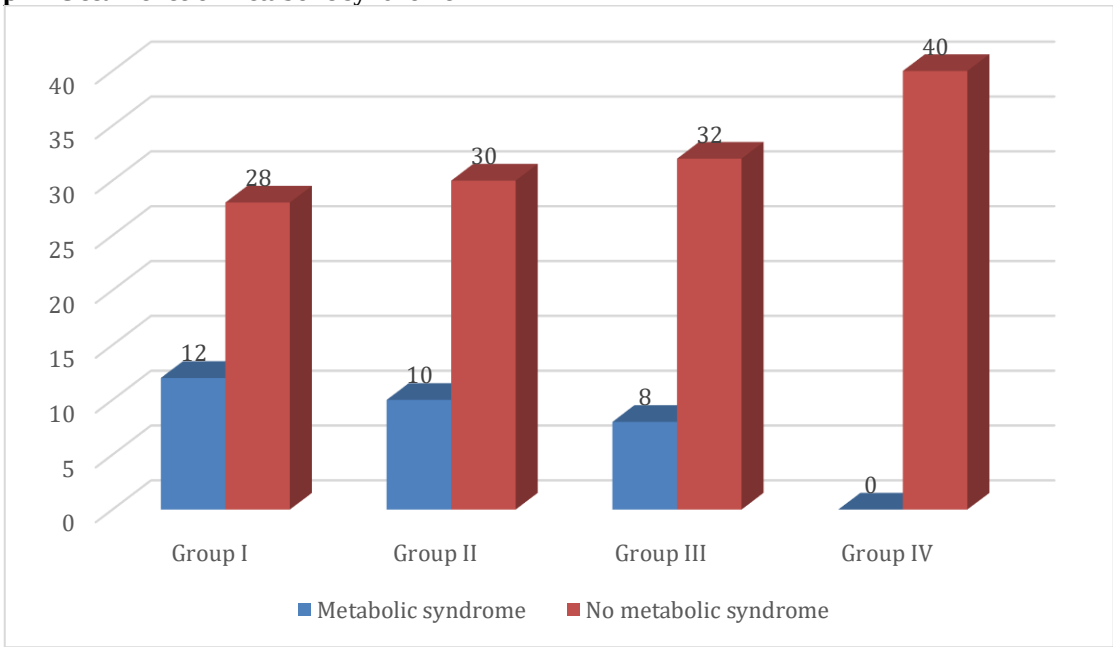
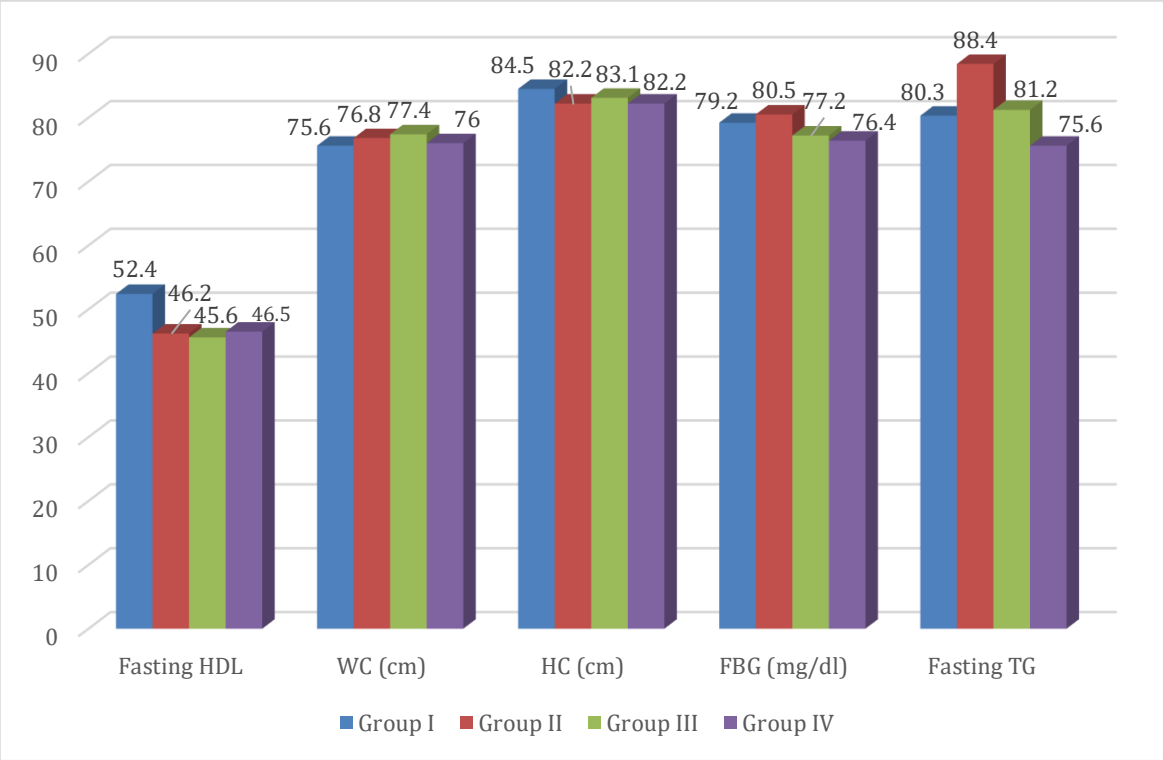


Table III Occurrence of metabolic parameters

Parameters	Group I	Group II	Group III	Group IV	P value
Fasting HDL	52.4	46.2	45.6	46.5	0.04
WC (cm)	75.6	76.8	77.4	76.0	0.71
HC (cm)	84.5	82.2	83.1	82.2	0.92
FBG (mg/dl)	79.2	80.5	77.2	76.4	0.05
Fasting TG	80.3	88.4	81.2	75.6	0.03

Table III show that the mean fasting HDL was 52.4, 46.2, 45.6, and 46.5 in group I, II, III and IV respectively. The mean WC was 75.6, 76.2, 77.4, and 76.0 in group I, II, III and IV respectively. The mean HC was 84.5, 82.2, 83.1, and 82.2 in group I, II, III and IV respectively. The mean FBG (mg/dl) in group I, II, III and IV was 79.2, 80.5, 77.2 and 76.4 respectively. The mean fasting TG was 80.3, 88.4, 81.2, and 75.4 in group I, II, III and IV respectively. The difference was significant (P< 0.05).

Graph I Assessment of metabolic parameters



DISCUSSION

The antipsychotic medication with the highest risk of causing metabolic syndrome is olanzapine. The least likely drug to induce metabolic syndrome is haloperidol.[7] Although they are less likely to do so than olanzapine, clozapine and risperidone can also result in metabolic syndrome. Of the four antipsychotics examined, olanzapine causes the most weight gain and haloperidol the least.[8,9] The present study was conducted to assess drug-emergent metabolic syndrome in psychiatric patients receiving second-generation antipsychotics.

We found that out of 120 patients, 78 were males and 44 were females. According to De Hert, Van Eyck, et al. (2011),[10] metabolic abnormalities were already evident in individuals experiencing their first episode and significantly worsened as the disease lasted longer. Patients with schizophrenia had significantly higher incidence of diabetes and metabolic syndrome than the general population. In contrast, the prevalence of diabetes in individuals with schizophrenia grew substantially and linearly from 1.6% in the 15–25 age group to 19.2% in the 55–65 age group versus the general population.

We observed that metabolic syndrome was seen in 12 in group I, 10 in group II, and 8 in group III. The mean fasting HDL was 52.4, 46.2, 45.6, and 46.5 in group I, II, III and IV respectively. The mean WC was 75.6, 76.2, 77.4, and 76.0 in group I, II, III and IV respectively. The mean HC was 84.5, 82.2, 83.1, and 82.2 in group I, II, III and IV respectively. The mean FBG (mg/dl) in group I, II, III and IV was 79.2, 80.5, 77.2 and 76.4 respectively. The mean fasting TG was 80.3, 88.4, 81.2, and 75.4 in group I, II, III and IV respectively. According to Suvisaari JM, Saarni SI et al.'s[11] study, the prevalence estimates of metabolic syndrome were 30.1% in persons without psychotic illnesses and 36.2%, 41.4%, and 25.0% in subjects with affective psychosis, other non-effective psychosis, and schizophrenia, respectively. Schizophrenia subjects exhibited a greater waist circumference, higher triglyceride and glucose levels, and considerably lower high-density lipoprotein cholesterol. Users of high-potency (52.1%, $p < .001$) but not low-potency (39.0%) or atypical (23.4%) antipsychotic medications had a substantially higher frequency of metabolic syndrome.

In contrast to traditional (typical) antipsychotics, Gautam et al.[12] assessed the development of metabolic syndrome brought on by second-generation antipsychotics. Ninety patients received second-generation antipsychotics, such as clozapine, olanzapine, and risperidone, while thirty patients received conventional antipsychotics. Before starting medication treatment and four months later, metabolic indicators were measured. After using antipsychotic medication for four months, metabolic syndrome occurred in 11.66% of the patients.

The limitation of the study is the small sample size.

CONCLUSION

Authors found that second-generation antipsychotics significantly change metabolic parameters, increasing the risk of metabolic syndrome and associated diseases such type II diabetes and cerebrovascular accidents. Olanzapine is the antipsychotic drug that

has the greatest potential to cause metabolic syndrome.

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