

# LIPID PROFILE IN SCHIZOPHRENIC PATIENTS ON ATYPICAL ANTIPSYCHOTICS

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## ABSTRACT

**Background:** Atypical antipsychotics are the drugs of first line treatment in schizophrenia because compared to typical antipsychotics, they have minimum extrapyramidal side effects and hence better tolerance by the patients resulting in better compliance. However there are adverse effects on lipid and glucose metabolism, weight gain and predisposition to metabolic syndrome. We conducted this study to see the effect of atypical antipsychotics on lipid profile. **Methods:** This descriptive study was conducted at Medical and Psychiatry Units, Khyber Teaching Hospital, Peshawar, from January 2009 to June 2009. Forty consecutive adult patients diagnosed as schizophrenia on the basis of ICD-10 diagnostic criteria, were selected and grouped age-wise as Group I (15-30 years) and Group II (31-45 years). Subjects were grouped as group P (20 schizophrenic patients on atypical antipsychotics) and Group C (20 age and sex matched normal controls). Serum total cholesterol, triglycerides and high density lipoprotein cholesterol were measured. Serum low density lipoprotein cholesterol was calculated with Fried Wald equation and results analysed by using Student's 't' test. **Results:** Age range of patients was 15-45 years. Significant decrease in serum total cholesterol and low density lipoprotein was found in age group 15-30 years while non-significant increase was observed in serum total cholesterol and triglycerides in age group 31-45 years. **Conclusion:** We conclude that atypical antipsychotics do not cause any significant derangement in lipid profile and their use should not be discouraged because of risk of metabolic syndrome.

**KEY WORDS:** Atypical antipsychotics, Lipid profile, Schizophrenia.

## INTRODUCTION

Schizophrenia is a chronic major mental illness affecting behavior, thinking to emotions. It is a heterogeneous disorder with sustained periods of psychosis and functional deterioration in major areas of life, such as interpersonal relations, education, employment and selfcare.<sup>1</sup>

Pharmacological treatment with antipsychotics is the cornerstone of treatment. It includes typical conventional antipsychotics, like Haloperidol, Fluphenazine, Chlorpromazine, etc., and the newer atypical antipsychotics including Clozapine, Olanzapine, Risperidone and Quetiapine, etc. Atypical antipsychotics are now considered to be the drugs of first choice for treatment of schizophrenia because of their better tolerability and in particular, the reduced risk of tardive dyskinesia, akathisia, and neuroleptic malignant syndrome (NMS).<sup>2</sup>

The atypical agents differ pharmacologically from the previous ones in that they have greater affinity for other neuro-receptors, including those of serotonin (5-hydroxytryptamine 1A, 2A, 2C, 3, 6 and 7) and norepinephrine (Alpha 1 and Alpha 2). So patients treated with atypical antipsychotics

receive significantly less dosage of anticholinergics.<sup>4</sup>

These novel agents, the atypical antipsychotics, are nevertheless, considered to have potentially serious, medium to long term side effects of their own, for which patients must be carefully monitored.<sup>5</sup> The different side-effects of atypical antipsychotics include increased risk of insulin resistance, hyperglycemia, dyslipidemia and type 2 diabetes mellitus.

Dyslipidemia is an increasing problem in the most industrialized societies and a risk factor for coronary heart disease. Imbalance in individual lipid components including total cholesterol, high density lipoprotein cholesterol, low density lipoprotein cholesterol and serum triglycerides, have been shown to contribute to this increased risk. Certain psychiatric patients, such as those suffering from schizophrenia, are of particular concern. These patients are naturally at an increased risk of dyslipidemia and obesity. But these conditions are thought to be worsened by atypical antipsychotics (also called as second generation antipsychotics).

The aim of our study is to determine the effect of atypical antipsychotics on lipid profile in patients of schizophrenia.

## MATERIAL AND METHODS

This descriptive study was conducted at Medical and Psychiatry Units, Khyber Teaching Hospital, Peshawar, from January 2009 to June 2009.

Forty consecutive adult patients diagnosed as schizophrenia on the basis of ICD-10 diagnostic criteria, were included in the study. Those suffering from organic brain disease, lipid disorders, diabetes mellitus, hypertension and thyrotoxicosis were excluded from the study.

Patients were grouped as group P (20 schizophrenic patients given atypical antipsychotics) and Group C (20 age and sex matched schizophrenic patients on conventional anti-psychotics as controls). They were sub-grouped as Group I & II, depending on their ages: Group I were 15-30 years old while Group II were 31-45 years of age.

Serum total cholesterol, triglycerides and high density lipoprotein cholesterol were measured. Serum low density lipoprotein cholesterol was calculated with Fried-Wald equation and results analysed by using Student's 't' test.

## RESULTS

Age range of patients was 15-45 years. The findings of serum lipids in schizophrenic patients on atypical medications, aged 15-30 years and 31-45 years of age, are shown in Table 1 and 2 respectively. The mean serum total cholesterol in schizophrenic patients taking atypical anti-

psychotics (Group P) was significantly decreased in age group 15-30 years when compared with control group (Group C), while non-significant difference was seen in patients of group (Group P) in age group 31-45 years when compared with controls.

Serum TG concentration in schizophrenics was compared with controls in age group 15-30 and 31-45 years. Non-significant increase was found in this age group.

Serum LDL-C concentration in schizophrenic patients (Group P) was found slightly higher than controls (Group C) but the difference was statistically non-significant in both age groups.

Serum LDL-C was significantly decreased in patients group (Group P) as compared to control group (Group C) in age group 15-30 years, while it was comparable with controls in age group 31-45 years.

## DISCUSSION

In our study patients aged 15-30 years taking atypical antipsychotics had shown significantly lower levels of serum total cholesterol and low density lipoprotein cholesterol. There was non-significant increase in high density lipoprotein levels. The results of our study are consistent with Boston et al who observed lower levels of serum cholesterol in patients with schizophrenia especially those of younger age group. Similar results were found by Boke et al who reported that prevalence of metabolism syndrome in schizophrenia is similar to that of general population.

**Table 1: Mean serum lipid levels in schizophrenic patients on atypical antipsychotics.**

Subject Group	Total cholesterol mg/dl	Total triglycerides mg/dl	HDL-C mg/dl	LDL- C mg/dl
Patients Group ( P )	144.8 ±28.45	104.5 ± 43.68	27.3 ± 13.11	94.6 ± 33.83
Controls ( C )	181.5 ± 32.4	110.5 ± 40.16	26 ± 5.83	133.33 ± 34.15
p-value	< 0.05	> 0.05	> 0.05	< 0.05

Results are expressed as mean ± SD.

**Table 2: Comparison of lipid profile in schizophrenic patients on atypical antipsychotic and controls (age group 31-45 years).**

Group	Total Cholesterol mg/dl	Total Triglycerides mg/dl	HDL – C mg/dl	LDL – C mg/dl
Patients Group ( P )	199.92 ±36	175.5 ± 93.0	29.6±17.74	135.4 ± 33.35
Controls ( C )	178.43 ± 26.41	139.57 ± 73.01	30.64 ± 6.16	226.36 ±27.29
p-value	> 0.05	> 0.05	> 0.05	> 0.05

(Results are expressed as mean ± SD)

Rondanelli et al<sup>8</sup> also found similar results that atypical antipsychotics do not cause rise in serum lipids in elderly patients with Alzheimer's disease.

Smith et al conducted a comparative study of atypical antipsychotics including Clozapine, Risperidone, Olanzapine and typical antipsychotics and reported that most mean fasting glucose and lipid levels were within normal range and were not significantly different across the four treatment groups.<sup>9,10</sup>

However our findings are not consistent with a large number of studies in available literature.<sup>11,15</sup> The possible explanations for our results may be that we have included all the different available antipsychotics in our study. While there are many studies which show higher lipids with Olanzapine and Clozapine but no or minimum increase with Risperidone.<sup>12,13,15</sup>

Another reason may be a smaller sample size of our study and still another may be that we included only those patients who were taking these medications for the last one to six months only.

### CONCLUSION

We conclude that atypical antipsychotics do not cause any significant derangement in lipid profile and their use should not be discouraged because of the risk of metabolic syndrome.

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