CHAPTER 19

Effects of Psychiatric Medications on Lipid and Glucose Metabolism

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INTRODUCTION

Psychiatric medications can cause changes in lipid and glucose metabolism due to their effects on central nervous system and complex receptor profiles. In this section, first of all, the effects of mental disorders such as psychotic and mood disorders on lipid and glucose metabolism will be briefly mentioned and subsequently the effects of antipsychotics, antidepressants, mood stabilizers, and other psychiatric medications on glucose and lipid metabolism will be examined.

EFFECTS OF ANTIPSYCHOTIC DRUGS ON GLUCOSE METABOLISM

Schizophrenia is thought to be associated with diabetes mellitus (DM) independent of pharmacological treatment. Before the initiation of treatment for first-episode psychosis patients, it was found that fasting plasma glucose, insulin, and cortisol levels were higher compared to healthy controls (1). High cortisol levels in psychotic patients are associated with increased stress response (2). While an increase in plasma glucose levels was observed in 15% of untreated schizophrenia patients, a modest increase in fasting insulin levels was found (3). In addition individuals with psychotic disorders, metabolic disorders can also occur with antipsychotic medications. Although a relationship between weight gain due to antipsychotic treatment and DM is thought to exist, there are also studies showing deterioration in glucose and lipid parameters independent of weight gain (4). The possible mechanisms effects of antipsychotic drugs on glucose metabolism are as follows:

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increase adiponectin levels, and ultimately reduce hyperglycemia and hyperinsulinemia (119,120). Ramelteon, a melatonin agonist, has been found to reduce serum cholesterol levels without altering blood sugar or insulin levels in schizophrenia patients (120). Patients diagnosed with DM and comorbid depressive disorder treated with another melatonin agonist, agomelatine, a decrease in HbA1c levels was observed (121).

Methylphenidate: Methylphenidate treatment has been shown to increase serum glucose levels, which may be caused by increased stress. Additionally, methylphenidate treatment has been found to be associated with increased heart rate and blood pressure, particularly in adults, which may be related to increased cardiovascular disease risk. In a study examining the effects of methylphenidate on blood lipids, it has been shown that methylphenidate have positive effects on atherosclerosis and to decrease total cholesterol, TG, LDL-C, and lipoprotein a (122).

CONCLUSION

Psychiatric drugs can affect lipid and glucose metabolism through various mechanisms. Many drugs and mechanisms have not yet been studied or have insufficient evidence. Patients using antipsychotics like clozapine and olanzapine, tricyclic antidepressants, and mood stabilizers like valproic acid should be monitored for metabolic disorders.

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