Hypokalemia with Trifluoperazine at Therapeutic Dose

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ABSTRACT
This case report outlines a rare presentation of hypokalemia with therapeutic doses of trifluoperazine in a patient with schizophrenia. Although there was comorbid diabetes mellitus in the patient, its effect was ruled out subsequently. On recovery, rechallenge with trifluoperazine resulted in the same effect at a milder level. No cardiac abnormalities were detected with the presentation. Naranjo adverse drug reaction probability scale reported definite relation with the drug.

Key words: Antipsychotic, hypokalemia, trifluoperazine

INTRODUCTION
Hypokalemia is common among acute psychiatric inpatients. Both agitation and the use of antipsychotics were postulated to contribute to the high prevalence of hypokalemia among acutely ill psychiatric patients.1 This may be explained by adrenergic stimulation due to agitation observed in the acute phase of psychiatric disorders which results in intracellular movement of potassium. Reports of hypokalemia along with electrocardiographic changes were reported for drugs such as risperidone, quetiapine, ziprasidone, and clozapine.2-4 Here, we report a case of hypokalemia of mild to moderate intensity with therapeutic doses of trifluoperazine.

CASE REPORT
A 40-year-old unmarried, illiterate, unemployed male patient with a history of mental illness for 14–15 years, a wandering destitute for 3 months was brought for consultation in psychiatry outdoor. He was diagnosed as having schizophrenia, undifferentiated type and was admitted and initial baseline investigations were done. His routine blood and urine, lipid profile, kidney and liver function test, serum sodium and potassium were within normal range. His random blood sugar was 147 mg/dl. Risperidone was started initially, but as random blood sugar became 340 mg/dl, it was changed to trifluoperazine which was started at 5 mg/day and later increased up to 20 mg/day. Furthermore, trihexyphenidyl...
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2 mg/day, lorazepam 2 mg/day, and metformin tablets 1500 mg/day were added. The patient was maintaining with the above drugs for 56 days when 1 day he had complaints of sweating, confused behavior, and passage urine in clothes. On examination, he was afebrile; clouding of consciousness present, pulse rate of 84/min, blood pressure 170/90 mm of Hg with diminished deep tendon jerks and an indeterminate plantar response. His random blood sugar was 116 mg/dl. His serum sodium was 134 meq/L and serum potassium 3.0 meq/L. His fasting and postprandial blood glucose done next morning were 119 mg/dl and 331 mg/dl, respectively. The other blood and urine parameters were normal. Electrocardiogram (ECG) done and it was within normal limits.

All medications were stopped, and the patient was managed with IV fluids, and potassium chloride solution and lorazepam injections were given 3 times daily. Human mixtard insulin was started for the management of raised blood glucose and trifluoperazine was restarted again at a dose of 5 mg/day and later increased to 10 mg/day. One week later, serum potassium level was found to be 3.4 meq/L and serum sodium 137 meq/L. Due to this, trifluoperazine tablet was stopped. Aripiprazole tablets were started, and it was titrated to 15 mg/day. Patients were later discharged on aripiprazole 15 mg/day, lorazepam 2 mg/day, and human mixtard insulin 14 units/day. The patient followed up a month later in outdoor. He revealed fasting and postprandial blood glucose of 160 mg/dl and 260 mg/dl respectively, serum sodium 140 meq/L and serum potassium 4.6 meq/L.

**DISCUSSION**

In our case, a mild to moderate hypokalemia is seen as the patient was put on trifluoperazine. The patient presented with symptoms of confusion and autonomic hyperactivity. The presentation of symptom was nearly 2 months after initiation of trifluoperazine. Even after stopping and later initiating trifluoperazine, 1 week later mild hypokalemia was seen. ECG done following hypokalemia also did not reveal any abnormality. Naranjo adverse drug reaction probability scale[5] gives a score of 9 which means a definite relation with the drug can be established.

Furthermore, it was seen that patient had raised blood glucose level during this whole episode. Increased blood glucose levels are associated with secretion of insulin, and that may result in hypokalemia.[6] However, it was seen that later on, while the patient was on aripiprazole his blood glucose levels were at higher levels similarly as before, but now serum potassium levels were within normal limits. From this, we can infer that higher blood glucose level has little to do with hypokalemia in this case.

Hypokalemia can be an effect of acid-base imbalance, insulin, catecholamines, and aldosterone. However, in our case, none of the postulated could be established.[6] The previous case studies of hypokalemia with antipsychotics have focused on cardiac abnormalities which are also not present in our case.

In view of the paucity of exact mechanism for hypokalemia with trifluoperazine, further studies will be appreciated. In addition, cautions need to be exercised while prescribing the drug.

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**Conflicts of interest**
There are no conflicts of interest.

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