Supraventricular Tachycardia Caused by Amisulpride Intoxication

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With the recent increase in use of atypical antipsychotics, the possible side effect profile of this group of drugs is expanding in clinical practice. In addition to galactorrhea, sexual dysfunction, metabolic syndrome, and extrapyramidal side effects, cardiac side effects are also seen with atypical antipsychotics. Cardiac side effects include orthostatic hypotension, ventricular tachycardia, corrected QT (QTc) prolongation, myocarditis, pericarditis, syncope, and sudden death.[1]

Amisulpride is an atypical antipsychotic with selective affinity for D_2/D_3 receptors. The most common side effects of amisulpride include sleep disturbance, anxiety, agitation (5%–10%), drowsiness, constipation, and nausea. Vomiting and dry mouth (2%) as well as bradycardia could also occur, but these side effects are rather rare. High doses of amisulpride have been shown to cause QTc prolongation and torsades des pointes (TdP).[2,3] However, a study[4] of the electrocardiographic (ECG) data of 341 patients revealed no QTc prolongation with amisulpride.When the cardiac effects of amisulpride, olanzapine, clozapine, and sertindole were compared, amisulpride was found to be the safest at a resting heart rate.[5] In an observational study[6] examining the metabolic, endocrinologic, and cardiac side effects of amisulpride, the medication was found to be safe with the exception of high prolactin levels. Although amisulpride is considered safe regarding cardiac side effects, they may occur at high doses, as in our case. In this report, we present the case of a patient who developed supraventricular tachycardia after high-dose intoxication with amisulpride, which is considered safe as a side effect in most studies.

Case Report

A 42-year-old woman was brought to the cardiology emergency department by emergency services with complaints of tachycardia and syncope. The initial examination revealed palpitations and partial consciousness. Her vital signs were arterial blood pressure: 100/60 mm Hg, pulse: 180 bpm, body temperature: 37°C (98.6°F), and respiratory rate: 18 breaths/minute. During the cardiac examination, her heart rate was rhythmic and tachycardic. Her ECG showed supraventricular tachycardia. The QTc was calculated as 440 ms. The neuropsychiatric examination revealed that her consciousness was partially confused and disoriented. Disorganized speech and behavior and paranoid thought content were observed, and associations tended to disintegrate. According to her relatives, the patient had been taking amisulpride 800 mg/d for 2 years with the diagnosis of atypical psychosis but had used it irregularly in the past, sometimes taking 10 tablets on the same day. Once stable, the patient confirmed that she took 10 of the 200-mg tablets on the same day.

Gastric lavage was performed. Emergency brain tomography showed no pathology in the report. No abnormality was detected in the patient's complete blood count, C-reactive protein, thyroid function, or biochemistry tests. The arterial blood gas results were pH: 7.38, bicarbonate: 22.1 mEq/L, partial pressure of carbon dioxide: 38.0 mm Hg, and partial pressure of oxygen: 95 mm Hg. The patient received a 6-mg injection of adenosine, and 12 mg was repeated according to the control ECG. The patient's heart rate decreased to 98 bpm. After 24 hours of follow-up, the patient was conscious, oriented, and cooperative, and her vital signs (arterial blood pressure: 110/70 mm Hg, pulse: 85 bpm, body temperature: 37°C (98.6°F), respiratory rate: 14 breaths/minute) were stable, and she was transferred to the psychiatry service for elective treatment.

Discussion

The cardiovascular side effects of antipsychotic drugs are well known. Sudden death and ventricular arrhythmias associated with prolongation of the QT interval are the most worrisome.[7] However, supraventricular arrhythmias are more common than ventricular arrhythmias. Most supraventricular arrhythmias are episodes of sinus tachycardia, but the most worrisome with antipsychotic drug use is atrial fibrillation of the supraventricular arrhythmia.[8] Patients using antipsychotics had a 17% higher risk of atrial fibrillation compared to nonusers, which was associated with hypertension, diabetes, and ischemic heart disease.[9] In a study[10] of patients taking typical or atypical antipsychotics, the effects on heart rate, including severe tachycardia, were suggested to be dose related with little difference between groups. On the contrary, the risk of ventricular arrhythmia and sudden cardiac death may be higher among those who take typical antipsychotics compared to second-generation antipsychotics.[7]

Antipsychotic drugs with a high risk of ventricular arrhythmia and sudden cardiac death include haloperidol, prochlorperazine, sulpiride, thioridazine, quetiapine,

and risperidone. Clozapine and olanzapine have been associated with an increased risk of ventricular arrhythmias and sudden cardiac death.[7] In a retrospective study[2] of amisulpride intoxication cases, which is an atypical antipsychotic that is considered safe in terms of cardiac side effects, a high rate of pathologic QTc prolongation and a TdP event rate of 7% were observed.

Prolongation of the QTc interval is a vector marker for a drug to cause TdP. An increase in absolute QTc interval > 500 msec or 60 msec from baseline in individual patients is considered indicative of an increased risk of TdP. The degree of QTc prolongation is dose dependent and varies between antipsychotics, reflecting their different capacities to block cardiac ion channels.[11] In addition, the effect of antipsychotic use on ventricular arrhythmia and sudden cardiac death was thought to be dose dependent.[12] Supraventricular tachycardia occurred in a patient who was titrated with clozapine, and, as in our case, a treatment response to adenosine was obtained.[13] In our case, supraventricular tachycardia arose with a dose of amisulpride as high as 2,000 mg and responded to adenosine.

In conclusion, atypical and typical antipsychotics have the potential to contribute to severe tachycardia. However, as in our case, when an atypical antipsychotic such as amisulpride is taken in high doses, it may cause heart rate changes such as supraventricular tachycardia. It should be considered that antipsychotics may cause supraventricular tachycardia when taken in sudden high doses, and tachycardia that may occur with chronic use may lead to cardiac diseases such as cardiomyopathy.

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