Brexpiprazole for the Treatment of Tics in a Patient With Schizophrenia

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A tic is a sudden, rapid, recurrent, nonrhythmic motor movement or vocalization according to the *DSM-5*. Antipsychotic medications, including haloperidol, pimozide, aripiprazole, fluphenazine, and risperidone, have been used to treat tic disorders. Paradoxically, previous reports suggested that antipsychotics such as chlorpromazine,[1] risperidone,[2] paliperidone,[3] olanzapine,[4] amisulpride,[5] and quetiapine might induce tics.[6] Two case reports showed improvement of tics that emerged during antipsychotic treatment with switching to aripiprazole.[2,3] Brexpiprazole is chemically and pharmacologically related to aripiprazole. Herein, we present a case of antipsychotic-induced tics in a patient with schizophrenia that was successfully treated with brexpiprazole.

Case Report

A 28-year-old man was diagnosed with schizophrenia according to *DSM-5* criteria at the age of 18 years. He had no family history of movement disorders, tic disorders, or psychiatric disorders, including obsessive-compulsive disorder. His first hospitalization was at age 25 years, when he was admitted due to referential delusion, delusion of being controlled, thought broadcasting, and auditory hallucination. The patient developed eye blinking after 7 days of risperidone 4 mg daily treatment. Physical examination, neurologic examination, and laboratory examinations revealed results within normal limits. The eye blinking did not respond to biperiden, a medication used to improve acute extrapyramidal side effects related to antipsychotic drug therapy. His psychotic symptoms were mostly controlled by risperidone 6 mg/d after 3 months of hospitalization. However, the eye blinking persisted.

During outpatient follow-up, risperidone was shifted to paliperidone long-acting injection 150 mg monthly. The eye blinking caused significant suffering to the patient, so paliperidone long-acting injection was switched to aripiprazole 5 mg/d. His psychotic symptoms exacerbated while taking aripiprazole 5 mg/d, and he was admitted to the hospital for the second time at age 28 years. After 2 weeks of taking aripiprazole 30 mg/d, both psychotic symptoms and eye blinking showed no improvement. Akathisia induced by aripiprazole also developed. Therefore, aripiprazole 30 mg/d was cross-tapered to olanzapine 20 mg/d. Psychosis gradually subsided after 4 weeks of treatment with olanzapine 20 mg/d, but the tic-like eye blinking showed no improvement. A trial with brexpiprazole combined with olanzapine was started. The Yale Global Tic Severity Scale (YGTSS)[7] was used to assess the severity of tic-like movements in the patient. Before the initiation of brexpiprazole, the YGTSS score was 16/50. After 2 months of treatment with brexpiprazole 2 mg/d plus olanzapine 20 mg/d, the YGTSS score showed significant improvement to 9/50, which was a 44% reduction in symptom severity.

Discussion

Tics emerged when the patient started taking risperidone. Despite switching to paliperidone, aripiprazole, and olanzapine, no improvement was seen except with the initiation of brexpiprazole. This observation indicates the potential of treating tic disorder with brexpiprazole. Like aripiprazole, brexpiprazole is a D_2 partial agonist, 5-HT_{1A} partial agonist, 5-HT_{2A} antagonist, and norepinephrine α_{1B} receptor antagonist.[8] Brexpiprazole, in comparison to aripiprazole, exhibits lower intrinsic activity at the D_2 receptor, resulting in fewer activating adverse events, including akathisia. Moreover, brexpiprazole demonstrates higher potency as a 5-HT_{1A} partial agonist, 5-HT_{2A} antagonist, and norepinephrine α_{1B} receptor antagonist compared to aripiprazole. These receptor actions have the potential to decrease akathisia, extrapyramidal symptoms, and hyperprolactinemia induced by D_2 antagonists.[8,9] This is the first report, to our knowledge, of brexpiprazole effectively treating tics. Further well-designed placebo-controlled trials are needed to establish the efficacy of brexpiprazole in the treatment of tic disorder.

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