



LETTER TO THE EDITOR

Sertraline-induced visual hallucination in an adolescent girl

Nur Seda Gulcu Ustun 

Elazig Fethi Sekin City Hospital, Department of Child and Adolescent Psychiatry, Elazig, Turkiye

Dear Editor,

Sertraline is an antidepressant from the selective serotonin reuptake inhibitor (SSRI) family that blocks the action of serotonin transporters in the presynaptic terminals (1). It is approved by the Food and Drug Administration for the treatment of major depressive disorder, obsessive-compulsive disorder, social anxiety disorder, panic disorder, post-traumatic stress disorder, and premenstrual dysphoric syndrome. Generally, sertraline is considered a well-tolerated psychotropic medication with a safe side-effect profile for both children and adults. Common side effects include nausea, headaches, dizziness, drowsiness or insomnia, sweating, tremors, dry mouth, anxiety, restlessness, and weight gain (2). Additionally, there are rare side effects, (2) among which hallucinations have been documented (3, 4). In the literature, few cases of sertraline-induced hallucinations have been reported so far (3–9). Most of these hallucinations have been documented in adults; fewer cases have been reported in children (3, 4). In this letter, we report the case of a 16-year-old girl who developed visual hallucinations following sertraline administration.

The patient, accompanied by her mother, presented at our clinic with chief complaints of persistent sadness, negative self-perception, and lack of energy. The patient and her parents provided verbal consent for this report. According

to the anamnesis obtained from the family and the adolescent, no known psychosocial stressors were identified that could have triggered the patient's depression. During the mental status examination, the patient was conscious, cooperative, and exhibited a depressed mood and sad affect. She described feelings of helplessness and hopelessness, displayed regular associations, reduced speech speed, decreased psychomotor activity, and demonstrated partial insight. Furthermore, the patient's medical history, as reported by both her and her mother, showed no episodes of mania. The Children's Depression Inventory (CDI) was administered as part of a psychometric evaluation, yielding a score of 32. Scores on this scale range from 0-54, with scores of 19 or above indicating major depressive disorder. Based on the psychiatric evaluation and according to the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition (DSM-5) criteria, a diagnosis of major depressive disorder was confirmed. The patient presented with no comorbidities.

It was decided to initiate treatment with sertraline due to its well-documented efficacy as an antidepressant. The patient began with a dosage of 25 mg/day to evaluate tolerance for potential side effects, with a follow-up appointment scheduled for three weeks later. The plan included a gradual increase in dosage of sertraline to 50 mg/day. Two weeks into the sertraline treatment, the patient reported experiencing visual disturbances, such as

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Correspondence: Nur Seda Gulcu Ustun, Elazig Fethi Sekin City Hospital, Department of Child and Adolescent Psychiatry, Elazig, Turkiye

E-mail: nursesdagulcu@gmail.com

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seeing black spots and perceiving that the seats in her home were moving simultaneously. The patient reported that these symptoms occurred daily over the past week, beginning approximately 30 minutes after taking the drug, and continued intermittently throughout the day. She was clearly disturbed by these visual disturbances. Consequently, sertraline treatment was discontinued, and at the follow-up examination one week later, she reported a complete resolution of the symptoms. Additionally, the psychiatric examination revealed no delusions, derealization, depersonalization, or amnesia, except for visual hallucinations.

The patient did not have any other chronic medical illnesses. She was not taking any complementary or medical medicines regularly, and her physical examination showed no abnormalities. She had no history of smoking, alcohol, or substance use. The patient was referred to a neurologist, and no pathology was observed during her neurological examination. Her laboratory test results, including complete blood count, electrolytes, liver and kidney function tests, and blood glucose levels, were all within normal limits. A Magnetic Resonance Imaging scan of the brain revealed no significant abnormalities.

With these results from laboratory tests, imaging methods, and physical/neurological examination findings, it was determined that the visual hallucinations were secondary to the sertraline medication. The patient was then started on fluoxetine at 5 mg/day, and at the follow-up visit three weeks later, she reported no side effects. During the follow-up, the fluoxetine dosage was increased to 20 mg/day, leading to substantial improvement in her clinical symptoms and complaints. Her score on the CDI decreased to 16. The follow-up of the patient is still ongoing during the preparation of this manuscript.

In this report, we present a case involving a 16-year-old girl who developed visual hallucinations while taking sertraline. To the best of our knowledge, there have been very few reported cases of sertraline-induced hallucinations in children and adolescents (3, 4). For instance, auditory hallucinations were observed in a 16.5-year-old girl after she began a regimen of sertraline at 150 mg/day, as reported by Kolthof (4). In their case, hallucinations were not detected until the sertraline dose was increased to 150 mg/day. After the hallucinations were detected, more intense episodes were observed until the dosage of sertraline was decreased and eventually discontinued

(4). They noted that auditory hallucinations seemed less associated with the onset, discontinuation, and dosage of the drug. In our case, visual hallucinations occurred at a lower sertraline dose of only 25 mg/day and ceased upon discontinuation of the medication. De Proost and de Meulenaere (3) reported a case involving a 13-year-old girl who, a few days after starting a 25 mg/day sertraline treatment, exhibited auditory and visual hallucinations, paranoid delusions, and was subsequently diagnosed with psychosis. This psychosis resolved after a single dose of haloperidol injection and the discontinuation of sertraline. Additionally, there was a family history of mood disorders in this case, but it was not specified whether there were any manic symptoms accompanying the psychotic symptoms in this patient (3). In our case, only visual hallucinations were detected with sertraline. In another adult case, a 70-year-old woman experienced visual hallucinations after starting sertraline; however, she had previously reported delusions in her medical history and has been medicated for them (5). In our case, there were no known delusions or psychotic illnesses in the patient's past medical history. In the case of a 34-year-old male with visual hallucinations, there was non-psychiatric multiple drug use in addition to sertraline (6). In a 36-year-old male, visual hallucinations occurred after the combined use of sertraline, clonazepam, and propranolol (7). A male patient in his sixties described visual hallucinations following concurrent use of zolpidem and sertraline (8). Our patient did not use any medication other than sertraline during the period when visual hallucinations occurred.

Although many publications report that sertraline triggers hallucinations, there are also studies that do not support this assertion (10, 11). A retrospective study involving 69 children and adolescents found that SSRIs were not associated with psychotic symptoms (10). Furthermore, SSRIs have been reported as effective in the treatment of Charles Bonnet Syndrome, where visual hallucinations were present, according to a case report (11).

Visual hallucinations in our case were assessed using the Naranjo Adverse Drug Reaction Probability Scale. The Naranjo Scale evaluates whether side effects that occur during drug use are associated with the drug (12, 13). On this scale, the reaction is considered 'definite' if the score is 9 or higher, 'probable' if it ranges from 5 to 8, 'possible' if from 1 to 4, and 'doubtful' if 0 or less. In our case, the total

score was found to be 6, classifying the reaction as 'probable.' It was very likely related to sertraline, as the adverse reaction occurred after the drug was administered and diminished following its discontinuation. Furthermore, the patient had no prior history of psychosis or hallucinations, and no other alternative causes for the hallucinations were detected.

There are several hypotheses concerning the etiology of medication-induced hallucinations. According to one proposed model, it occurs when priorities stored in the unconscious are perceived, and the internal narrative produced by the default mode network (DMN) emerges uncontrollably. This DMN activity involves dysregulated activity of brain neurotransmitters (14). Three main transmitters are believed to play a role in the mechanism of hallucinations: serotonin (5-HT), acetylcholine, and dopamine (5). All SSRIs increase dopamine in the mesolimbic pathway by stimulating 5-HT-2 and 5-HT-3 receptors, which may lead to psychosis (15). Unlike other SSRIs, sertraline has a higher dopamine receptor affinity (5). D2 receptors are located in the dorsal striatum, nucleus accumbens, substantia nigra, and ventral tegmental area—regions in the brain where the dopaminergic network is concentrated (16). Thus, the increase in dopamine may lead to psychosis by stimulating D2 receptors (3). Additionally, sertraline is also effective on the sigma 1 transporter in neurotransmission in the hippocampus (3), which is involved in the pathology of psychotic disorders. Sertraline may cause psychotic symptoms by acting antagonistically on the sigma 1 transporter in this region (3, 17).

Clinicians should be aware of this rare adverse effect when prescribing sertraline to adolescents. A side effect such as hallucination may negatively impact the treatment compliance of adolescents and their families. For this reason, special attention should be given to this adverse effect, especially in patients with a personal or family history of psychotic disorders.

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