



## A Case of Asenapine-Induced Tinnitus

**To the Editor:** Asenapine is a new atypical antipsychotic for the treatment of schizophrenia and acute mania associated with bipolar disorder. The US Food and Drug Administration (FDA) accepted the manufacturer's New Drug Application (NDA) in November 2007; since asenapine is a fairly new drug, very few data on it are available. The data indicate that it has minimal anticholinergic and cardiovascular side effects.

Asenapine has high affinity for receptors, including serotonin, adrenergic, dopamine, and histamine receptors. It has lower affinity for muscarinic acetylcholine receptors.

Asenapine was found to be equally effective for manic and mixed states in bipolar disorder compared to placebo control and to olanzapine after 3 weeks of treatment. Asenapine was not found to be efficacious for depression symptoms.<sup>1</sup> Cases have been reported on suicidal ideation caused by asenapine and resolution of such ideations on discontinuation of asenapine.<sup>2</sup> It has also been reported that weight gain with asenapine is less than that with other atypical antipsychotics.<sup>3</sup> As is the case with other antipsychotics, higher doses of asenapine can cause sedation. However, an extensive search using the keywords *tinnitus* and *asenapine* revealed no data or case report suggesting tinnitus is related to asenapine treatment.

**Case report.** Ms A, a 50-year-old white woman, presented to the emergency department in 2011 in a state of acute alcohol intoxication and with suicidal ideations. She had a long history of *DSM-IV* bipolar disorder and alcohol dependence. She had had 3 months of sobriety but relapsed and binged for 3 days. Her suicidal ideations started when she started having tinnitus 2 weeks prior to presentation, which was distressing for her. She was on treatment with asenapine 10 mg/d for bipolar disorder, to which she attributed her tinnitus. Her dose of asenapine was decreased from 10 mg/d to 5 mg/d, which resolved her tinnitus. Her past medical history was significant for chronic obstructive pulmonary disease (COPD). On assessment the next day, she had no suicidal ideations, but she was depressed. For her COPD, she was taking albuterol via inhaler as needed, fluticasone and salmeterol via inhaler twice daily, and tiotropium bromide once daily. She was also taking bisacodyl for constipation. No other cause of tinnitus was found.

Although no studies have shown that asenapine causes tinnitus or the mechanism by which it causes tinnitus, the patient described in our report did experience tinnitus that resolved with the discontinuation of asenapine.

Tinnitus and hearing loss can be caused by acute intoxication and long-term administration of a large range of drugs. The mechanism that causes drug-induced ototoxicity is not known, but may involve biochemical and electrophysiologic changes in the inner ear and impulse transmission in the eighth cranial nerve. The major classes of drugs that cause ototoxicity include the aminoglycosides and other antimicrobials, antiinflammatory agents, diuretics, antimalarials, antineoplastic agents, and some topically administered agents. Drug-induced ototoxicity can be prevented by avoiding the risk factors and monitoring renal function, drug serum level, and hearing tests before and during the treatment.<sup>4</sup>

As demonstrated in this case, tinnitus can cause distress and noncompliance in patients using asenapine. Physicians should discuss such uncommon side effects with patients. Dose reduction or even discontinuation of the drug may be necessary in such cases.

## REFERENCES

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