Question of the Week

February 28, 2017

Why is it important to admit an asymptomatic patient with a bupropion overdose?

Bupropion (brand name: Wellbutrin and Zyban) is medication that is FDA-approved to treat depression, to prophylactically treat seasonal affective disorder and to aid in smoking cessation. Off-label uses for bupropion include ADHD and bipolar disorder.

Bupropion is in a category of its own from other antidepressants (the SSRIs, SNRIs and tricyclics) because its mechanism of action is a little different. Bupropion inhibits the reuptake of norepinephrine and dopamine. This indirectly increases serotonin levels and acts as a stimulant.

Because it is often prescribed and available in households, intentional overdose occurs. Patients may present with nausea/vomiting, tachycardia, tremors, agitation, and seizures. In very high doses, a wide complex tachycardia and hypotension can be seen. Patients may also have hallucinations, lethargy and confusion. Because of the indirect effect on serotonin, a patient could also present after an overdose with serotonin syndrome.

Bupropion is metabolized to three active metabolites, the majority to hydroxybupropion. Though bupropion reaches peak levels in the blood 2h after ingestion and has a half-life of 16h, the active metabolite is around longer and does not reach peak levels until all the bupropion is metabolized. This active metabolite is what causes seizures. As the active metabolite slowly increases, patients may seizure 12 to18 hours after the initial ingestion of bupropion. This may be further delayed in any extended release preparations. Because of the length of time that the active metabolites are in the system, it is important to keep a close eye and seizure precautions on any bupropion overdose. The seizures are usually self-limited and can be treated with benzodiazepines. Benzodiazepines can also be used to treat any extreme agitation or tremors that may develop.

As an interesting aside, the structure of bupropion is similar to that of amphetamines and can cause a false positive on a urine drug screen.

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I am interested in any questions you would like answered in the Question of the Week. Please email me with any suggestion at [donna.seger@vanderbilt.edu](mailto:donna.seger@vanderbilt.edu)

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