Vilazodone May Cause Sodium Channel Blockade in Overdose

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Background:
• Vilazodone (VIIBRYD®) is a recently FDA approved antidepressant (Figure 1)
• Vilazodone is both a 5-HT₁A partial agonist and selective serotonin reuptake inhibitor
• Few cases of overdose reported symptoms consistent with serotonin syndrome
• None of the reported cases provide confirmatory serum levels
• No cases describe cardiac toxicity

Hypothesis:
• Vilazodone toxicity may cause sodium channel blockade in overdose

Methods:
• Single patient chart review of a 15-year-old boy who intentionally ingested 780 mg of vilazodone in a suicide attempt
• Three hours after ingestion, the patient developed agitation, tachycardia, clonus, and lower extremity hyperreflexia consistent with serotonin toxicity
• An electrocardiogram obtained 9.5 hours after ingestion demonstrated evidence of sodium channel blockade with a QRS of 130 msec (Figure 2)

Results:
• Initially given 200 mEq sodium bicarbonate IV bolus and infusion initiated at 150 mL/hr
• QRS narrowed to 96 ms and QTc improved to 484 ms, right bundle branch block pattern resolved
• Serum vilazodone level 9 hours after ingestion was 830 ng/mL (reference range <156 ng/mL at 40 mg daily)
• Mental status was at baseline by hospital day 2 and patient discharged to a psychiatric hospital without sequelae on hospital day 3

Discussion:
• Only six cases of vilazodone toxicity have been reported to date — none reported cardiac toxicity nor confirmed vilazodone levels
• ECG changes were consistent with known sodium channel blockers of the Vaughn Williams IA and IC anti-dysrhythmics classes
• Based on experience with sodium channel antagonists we suggest sodium bicarbonate for QRS widening due to vilazodone toxicity

Conclusion:
• This case demonstrates serotonergic vilazodone toxicity as well as previously unreported cardiac toxicity