Ventricular tachycardia in mixed drug overdose treated successfully with lidocaine and magnesium sulfate

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Objective
Ventricular tachycardia (VT) is life threatening in drug overdose patient. The treatment of VT in mixed drug overdose is rarely discussed. We presented a patient of mixed drug overdose presented with pulseless VT refractory to defibrillations treated successfully with intravenous lidocaine and magnesium sulfate.

Case report
A 45-year-old female with a history of major depression presented to hospital due to unconsciousness for unknown duration. Empty drug packs of a total of quetiapine E.R. 16800mg, hydroxyzine 700mg, mirtazapine 1680mg, lorazepam 84mg, sulpiride 11200mg, flurazepam 1680mg, and zaleplon 560mg were found next to her. Her arriving vital signs were a temperature of 36.1°C, a pulse rate of 114 beats/min, and a blood pressure of 97/57 mmHg. On physical exam, her GCS was 3, isocoric pupil of 4mm in diameter with normal light reflex, clear breath sound, and regular heart beat. The blood sodium, potassium, calcium, magnesium, arterial blood gas and troponin-I were all normal. Urine benzodiazepine level was >1000 ng/mL. The electrocardiogram disclosed sinus tachycardia with QTc 408ms. There was no structure lesion over brain computed tomography. Mixed drug intoxication was impressed. Six hours after hospital visit, her GCS recovery to E2V3M5. Frequent ventricular premature complex was noted over monitor and repeat electrocardiogram disclosed short run VT with QTc 761ms (Figure 1 and 2). Pulseless VT occurred immediately and biphasic 200J defibrillation was delivered. The cardiac rhythm returned to sinus rhythm temporarily. Pulseless VT recurred for 2 more times which all recovery after biphasic 200J defibrillations. Loading dose of intravenous lidocaine 200mg, magnesium sulfate 2g and a maintain dose of lidocaine 2mg/min were prescribed. No more VT episode occurred after lidocaine and magnesium sulfate treatment. She was transferred to intensive care unit for close observation. One day after hospital visit, the electrocardiogram disclosed normal sinus rhythm with QTc 539ms. She was discharged uneventfully 3 days after hospitalization.

Conclusion
Four (quetiapine, hydroxyzine, mirtazapine, sulpiride) of the medications this patient took have been reported inducing QT prolong and torsades de pointes. This case illustrates that lidocaine and magnesium sulfate can effectively terminate VT which is refractory to defibrillations in mixed QT prolongation drug overdose.

References