QT prolongation by dexamphetamine: Does experience matter?

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Abstract

INTRODUCTION:
Case reports of life-threatening cardiac arrhythmias and sudden cardiac arrest (SCA) among amphetamine users have raised serious concerns about the cardiac safety of this class of drugs. This is important in light of the high prevalence of dexamphetamine (dAMPH) prescription for attention-deficit/hyperactivity disorder (ADHD), and its rising use as a recreational drug. The objective was to investigate electrocardiogram (ECG) parameters upon intravenous administration of a single dAMPH dose in habitual recreational dAMPH users (users) and healthy gender/age/ intelligence-quotient-matched controls (non-users).

METHODS AND RESULTS:
ECG recordings were made in 18 users and 18 non-users during administration of dAMPH (0.3 mg/kg body weight). Baseline ECG was normal in both groups. dAMPH elicited increased heart rate and corrected QT time (QTc) prolongation in both groups (all $P < 0.001$, QTc = 502 in one individual). QTc prolongation was attenuated in users compared to non-users, exhibiting a significant interaction effect ($P = 0.04$).

CONCLUSION:
SCA associated with amphetamine use may be related to its QTc prolonging effects, particularly during first-time use. These observations may provide a rationale for conducting ECG analysis immediately after the first-time use of amphetamines, as this could potentially unmask vulnerable individuals.