Intentional Flecainide Overdose

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Intentional Flecainide Overdose
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INTRODUCTION

- 32 year old male with a past medical history of atrial fibrillation and depression presented to the hospital after an intentional overdose with flecainide and metoprolol succinate
- Home medications = flecainide & metoprolol succinate
- Patient was lucid in the Emergency Department (ED) and stated that he took thirty to forty 100 mg flecainide tablets along with an unknown amount of metoprolol succinate

INITIAL WORK UP & EARLY MANAGEMENT

- Vitals in the ED = mild hypotension but otherwise hemodynamically stable
- Lab values = serum K+ 3.4 mmol/L, Mg2+ 1.9 mg/dL, and lactate 4.4 mmol/L
- Toxicology was consulted & recommended starting a sodium bicarbonate infusion along with intermittent 3% normal saline boluses (with a goal pH > 7.5) to prevent QRS widening
- Patient was then admitted to the medical intensive care unit (MICU)

CONTINUED CASE

- In the MICU, patient had a subsequent cardiac arrest
- The initial rhythm revealed ventricular fibrillation (VF) but this quickly degenerated to pulseless electrical activity (PEA) prior to any attempted defibrillation
- Given on-going cardiopulmonary resuscitation (CPR), patient underwent placement of VA-ECMO along with a transvenous pacemaker
- Patient was then transferred to the cardiac intensive care unit (CICU)

CASE OUTCOME

- In the CICU, toxicology escalated interventions to include 20% intra- lipid emulsion followed by high dose insulin given escalating vasopressor requirements
- Thirty six hours into the admission, patient had progressed to multi-organ failure
- Exam revealed fixed and dilated pupils, corneal reflexes were absent bilaterally, and gag reflex was absent
- After discussion with family, the decision was made to withdraw care, and the patient passed away

ELECTROCARDIOGRAPHIC CHARACTERISTICS

- Initial electrocardiographic (EKG) characteristics (two hours after ingestion of flecainide) = wide complex tachycardia (QRS 142 ms) with a PR of 210 ms and QTc of 517
- This will be referred to as hour two (HR2)
- Patient did have an old EKG from 2018 = normal sinus rhythm with normal PR & QRS intervals (reference PR < 200 ms & QRS < 120 ms)
- HR3.5 = Continued widening of QRS (162 ms), PR (224 ms), & QTc (579)
- HR5.5 = Patient developed a Brugada pattern in V1-2, which has been well documented in the literature in regards to flecainide toxicity [1,2,3]
- HR6.0 = Brugada pattern becomes more pronounced & QRS (172 ms) continues to widen; PR (188 ms) & QTc (552) stabilize
- HR7.5 = Immediately prior to cardiac arrest; QRS widens to 180 ms, PR widens to 240 ms, & QTc prolongs to 585
- Shortly thereafter, patient goes into VF arrest & subsequently PEA
- HR13.5 = Status post VA-ECMO placement
- Patient was given 20% intra- lipid emulsion & high dose insulin was initiated given increasing vasopressor requirements
- HR17.5 = Ventricular pacing and QRS widening (218 ms) approaching a sinusoidal pattern; this was the last EKG obtained prior to withdrawal of care

FLECAINIDE

- Flecainide acetate is a class 1C antiarrhythmic most often used for supraventricular arrhythmias
- Intentional overdose is rare and life threatening
- Flecainide depresses all conduction pathways, manifesting with prolongation of the PR & QRS intervals on EKG, making these patients highly prone to fatal arrhythmias [4]
- As stated flecainide toxicity has been associated with Brugada pattern
- It has been postulated in a number of case reports that the toxicity may actually be underlying Brugada Syndrome unveiled by the sodium channel blockade of flecainide [2]

MECHANICAL CIRCULATORY SUPPORT

- One large study (systemic review of 21 articles) evaluated EKG characteristics in flecainide overdose along with the subsequent need for mechanical circulatory support (MCS) & mortality
- Study compared patients with QRS <= 200 ms & those with QRS > 200 ms
- Patients with a QRS > 200 ms required MCS more often and had higher mortality rates [4]
- Our case demonstrated a poor outcome associated with a wide complex tachycardia (QRS > 200) in a patient who required MCS & eventually passed away

REFERENCES