

# A Therapeutic Anaesthetic

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## Abstract

A 16 year old boy was admitted following a massive Flecainide overdose causing life threatening broad complex tachycardia. A rapid sequence induction was performed for emergency cardioversion using Propofol and Suxamethonium.

The patient cardioverted to sinus rhythm on induction. Propofol and or Suxamethonium may have a role in the future in emergency or elective cardioversions.

## CASE REPORT

A 16 year old boy was brought to A&E with a two hour history of tachycardia and vomiting and impaired consciousness. On admission his respiratory rate was 20 per minute; Pulse was 126 per minute; Blood pressure was 170/120 and GCS was 13/15. The rest of his history and examination was unremarkable (except that his mother was on a prescription of Flecainide for Supraventricular Tachycardia).

His ECG showed a Broad Complex Tachycardia with Right Bundle Branch Block. The patient was seen by the medical registrar and was given Lignocaine 50 mg intravenously with no effect. A few minutes later his blood pressure dropped to 80 / 55. Arterial Blood Gas analysis showed pH 7.283, pO<sub>2</sub> 41.77, pCO<sub>2</sub> 6.16, HCO<sub>3</sub> 21.2, Base excess (-) 4.0 and Lactate 3.53 mmol/l . There was no major electrolyte abnormality.

Anaesthesia was requested at this stage for urgent DC cardioversion. Just before intravenous induction the patient had a heart rate of 150 - 175 per minute. A rapid sequence induction was performed using Propofol 200mg and Suxamethonium 100mg.

Soon after the patient spontaneously reverted to sinus rhythm with a heart rate of 90 - 100 minute. The patient was maintained on 15 milligram boluses of Propofol and ventilated for next the 15 minutes in case cardioversion was required. During this time arterial blood gas analysis was unremarkable.

The patient was extubated and admitted to the Coronary Care Unit . He had further episodes of Ventricular

Tachycardia which were treated with a loading dose of intravenous Amiodarone. The patient was admitted subsequently due to self poisoning an unknown amount of Flecainide and a decision was made to avoid any further antiarrhythmics. He remained asymptomatic and was discharged from the hospital two days later under psychiatric care.

## DISCUSSION

Flecainide is a Class 1c antiarrhythmic in the Vaughn - Williams Classification of antiarrhythmic drugs. It has effects against atrial and ventricular arrhythmias including WPW syndrome. Flecainide prevents the fast Sodium ion influx into cardiac tissue and prolongs phase 0 of the action potential. It has no effect on the duration of action potential or the refractory period but has significant effects on myocardial conducting pathways. Although Flecainide usually decreases the heart rate, it can paradoxically increase the ventricular rate particularly in atrial fibrillation and flutter.

A previous study (1) quoted that whereas drug overdose in general has an overall mortality of less than 1%, self poisoning with Class 1C antiarrhythmic drugs of was associated with a mean mortality of 22.5%. Nausea, which may occur within the first 30 minutes after ingestion, is one of the earliest symptoms. Spontaneous vomiting probably limits further symptoms in about half the patients. Bradycardia and, less frequently, tachyarrhythmia may occur after about 30 minutes to 2 hours. Fatal outcome was mainly due to cardiac conduction disturbances progressing to electromechanical dissociation or asystole.

Propofol causes bradycardia and reduces Sodium channel opening times ( $t_{50}$ ). It is believed to have a membrane stabilising effect. Suxamethonium stimulate Cardiac M<sub>2</sub> receptors causing bradycardia.

In anaesthesia for electro convulsive therapy ( ECT ) the current practice is using small doses of Suxamethonium to avoid excessive muscle convulsions. This property could be useful in cardioversions as Suxamethonium might also provide a degree of bradycardia with an option of DC cardioversion always remaining.

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