Life-threatening Flecainide Toxicity related to Alteration of Milk Feeding in an Infant.

Julia Zhuo Shi  
Sit-yee Kwok  
Pak-cheong Chow  
Kin-shing Lun  
Tak-cheung Yung

Introduction: We describe an infant who developed life-threatening bradycardia with wide QRS complex secondary to flecainide toxicity. The predisposing factor was reduced milk feeding during an intercurrent illness.

Methods: A 6-month-old boy with known atrial tachycardia well controlled with oral nadolol, amiodarone and flecainide, was hospitalized for viral gastroenteritis and reduced milk feeding for three days. ECG on admission showed sinus rhythm at 107 beats per minute. He was given oral rehydration salt for replacement of fluid loss. One day after admission, he developed acute onset of reduced responsiveness and pale looking. Clinical examination revealed hypotension, bradycardia and poor perfusion. 12-lead ECG showed isorhythmic atrioventricular dissociation, wide complex ventricular escape rhythm at 49 bpm with right bundle branch block pattern (Figure 1). Echocardiogram showed satisfactory ventricular contraction. He had significant metabolic acidosis with pH 7.03 and base deficit 14 mmol/L. Serum electrolytes were normal. He was immediately given fluid resuscitation, sodium bicarbonate infusion and inotropic support. All antiarrhythmic agents were discontinued. Over the following 24 hours, we managed to gradually wean off all inotropes. ECG was normalized after 30 hours (Figure 2). With ECG characteristics suggestive of flecainide overdose, serum flecainide level was taken at the time of acute deterioration. The flecainide level was 1.44mcg/ml (reference: 0.2-1.0mcg/ml), confirming flecainide toxicity. The drug prescription and administration were retrospectively audited by physician, nursing staff and pharmacist and confirmed not to be erroneous during his hospitalization. The pharmacokinetics of increased flecainide absorption due to reduced milk intake in this infant was the most appropriate explanation of flecainide toxicity in this case.

Result: Flecainide is a common drug of choice for management of childhood tachyarrhythmias. Generally, it is administered in children without regard to food, although reduced drug absorption associated with milk feeding had been reported in infants. Monitoring of serum flecainide concentration with or without adjustment of drug dosage should be considered when there was reduction or withdrawal of milk intake in young infants treated with flecainide. Intriguingly, the presentation of flecainide toxicity was relatively late at the recovery phase of the intercurrent gastroenteritis. This may be explained by the long half-life of flecainide, resulting in high cumulative dose after four days of poor feeding.

Conclusion: Flecainide toxicity is life-threatening and it could be inadvertently caused by increased absorption due to reduced milk feeding in infants. Paediatric cardiologists should be aware of this potential pharmacokinetic interaction and perform careful clinical and drug level monitoring preemptively.