

**QUIZ 13<sup>th</sup> Nov 2019 (answers below)**

1. What are the clinical features of quetiapine toxicity?
2. How would you manage the hypotension of quetiapine toxicity?
3. What are the ECG changes in tricyclic antidepressant toxicity?
4. What is the role of sodium bicarbonate in tricyclic antidepressant toxicity?
5. Describe and interpret the following ECG.

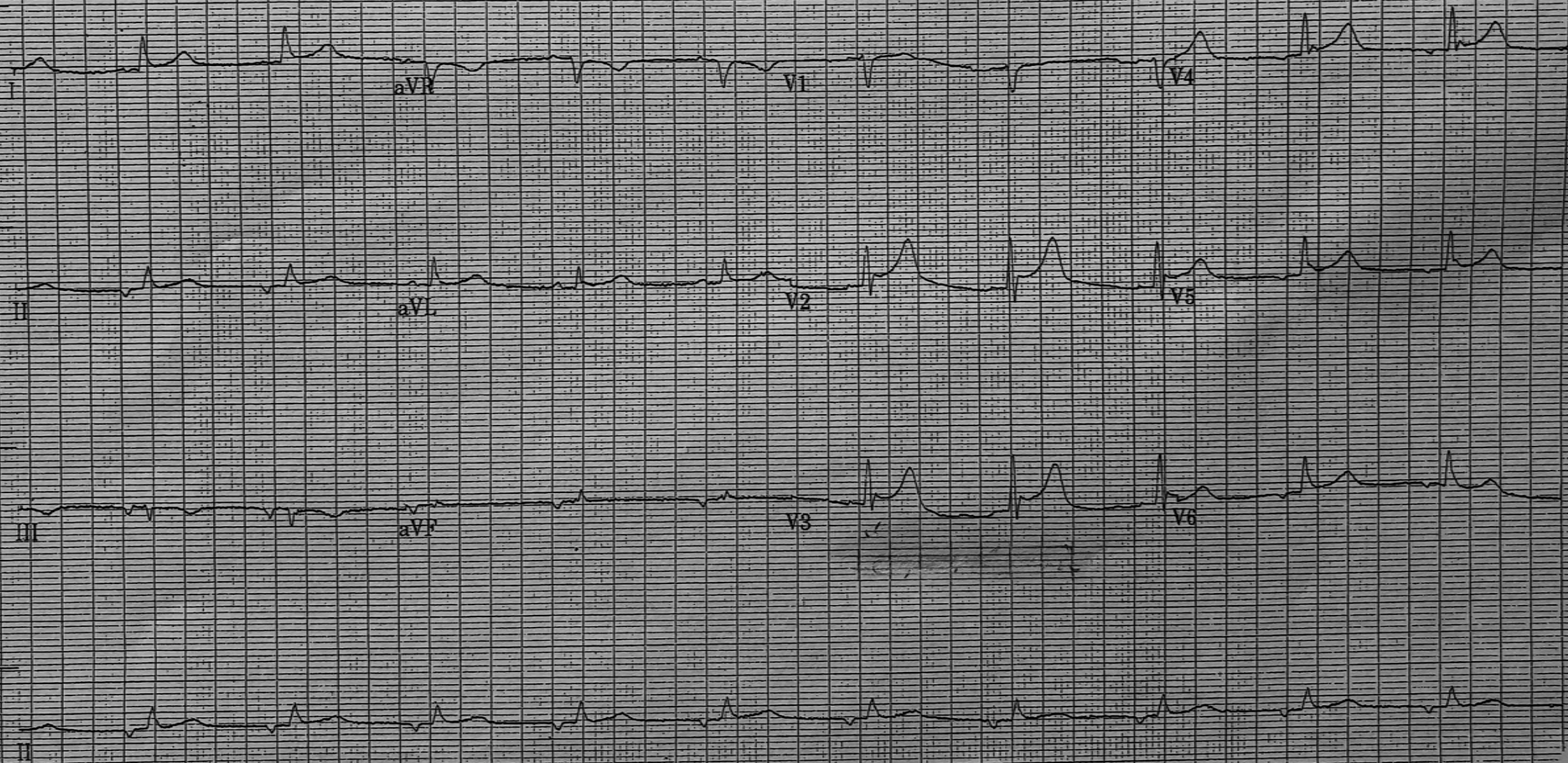
P-R-T axes -82 6 4

Abnormal ECG

Technician:

Test ind:

Unconfirmed



100 Hz 25.0 mm/s 10.0 mm/mV

4 by 2.5s 1 rhythm lead

MAC55 010B

Q-12SL™ V9

## QUIZ answers 13<sup>th</sup> Nov 2019

### 1. What are the clinical features of quetiapine toxicity?

- <3g    *Mild-Mod sedation*  
         *Sinus tachycardia, which can exceed 120/min*  
         *Minor QT prolongation – no reports of Torsades*
- >3g    *Increasing sedation leading to coma*  
         *Hypotension (antagonism at peripheral  $\alpha_1$  receptors)*  
         *Delirium (due to central anticholinergic action)*  
         *Seizures*

### 2. How would you manage the hypotension of quetiapine toxicity?

*Fluid bolus 20mL/kg crystalloid.*  
*If response to fluid resuscitation is inadequate, use Noradrenaline.*  
*Of note, Adrenaline may paradoxically exacerbate the hypotension. This is due to excessive  $\beta_2$  vasodilation.*

### 3. What are the ECG changes in tricyclic antidepressant toxicity?

*Fast sodium channel blockade:*

- *QRS widening*  
         *>100msec is associated with seizures*  
         *>160msec is associated with ventricular dysrhythmias*
- *Right axis deviation of the terminal QRS*  
         *Terminal R wave >3mm in aVR*  
         *R/S ratio > 0.7 in aVR*

*Potassium channel blockade:*

- *QT prolongation*

*Anticholinergic effect:*

- *Tachycardia*

### 4. What is the role of sodium bicarbonate in tricyclic antidepressant toxicity?

*Sodium bicarbonate provides both a sodium and a bicarbonate load.*

*Bicarbonate*

- *Raises serum pH which improves fast sodium channel function*  
         *This effect is maximal at pH 7.5- 7.55*
- *Elevated pH reduces the proportion of drug in un-ionised form*  
         *This reduces its ability to cross cell membranes and hence reduces the proportion of drug that distributes to tissue compartments.*

*Sodium load*

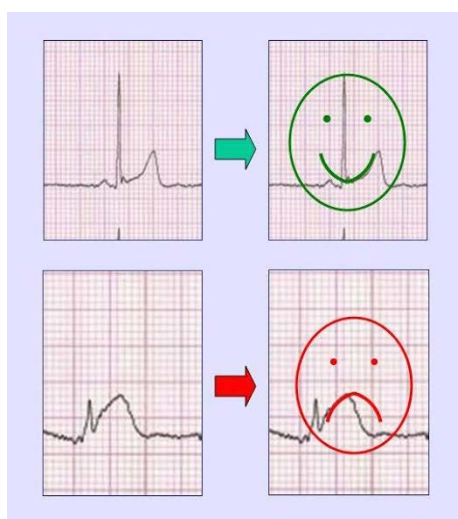
- *Separate and additive positive effect on sodium channel function*

*Sodium bicarbonate is recommended in ventricular dysrhythmias, hypotension and cardiac arrest as a result of tricyclic antidepressant toxicity. Doses of 2mmol/kg IV are repeated until haemodynamic stability is achieved. In the intubated patient, alkalinisation can be achieved with hyperventilation. The pH aimed for is 7.5 – 7.55.*

## 5. Describe and interpret the following ECG.

Rate	Regular 64/min
P waves	All present and conducted Inverted inferiorly (II, III and aVF) and laterally (V4-6)
PR interval	Normal
QRS	Narrow Normal axis (~0 degrees) No pathological q waves Counterclockwise rotation (aka early transition in chest leads) - but no evidence of RV hypertrophy
ST segments	Early repolarisation evident in V2-4 (see diagram below)
T waves	NAD
QTc	Not prolonged

➔ *Coronary sinus rhythm*  
*Early repolarisation*



Early repolarisation (happy) Vs.  
Pathological ST elevation (sad)

