

Drug Induced QT Prolongation – Patient Scenarios

Scenario 1

A 42 year old man attends the GP surgery and is diagnosed with community acquired pneumonia (CRB65 = 0). The patient is penicillin allergic and is prescribed clarithromycin 500 mg BD for 7 days. The patient has no cardiac history, he is an ex-intravenous drug user and his only current medication is methadone 120 mg daily. There are no recent U+Es or LFTs on the system although 6 months ago these were normal.

What are the issues?

Methadone, particularly at doses above 100 mg daily, can cause prolongation of the QT interval. Clarithromycin can also cause QT prolongation and there is potential for additive QT prolonging effects. In addition clarithromycin may inhibit the metabolism of methadone and further increase the risk of QT prolongation. Caution is advised if using methadone and clarithromycin concomitantly. In this case there are no other obvious risk factors for QT prolongation, however, there are no recent U+Es.

What could be done in this patient?

To address the potential interaction, alternatives to clarithromycin should be considered. Doxycycline is an alternative therapy included in the primary care infection management guidelines for community acquired pneumonia.

Scenario 2

An 85 year old female is admitted to a medical ward, medicines reconciliation reveals she is currently prescribed citalopram 40 mg daily and quetiapine 50 mg BD. She has a history of congestive cardiac failure and is also prescribed furosemide 40 mg daily.

What are the issues?

There are a number of issues in this patient. The maximum dose of citalopram in elderly patients over 65 years is 20 mg daily; it is also contra-indicated in combination with other drugs that prolong the QT interval which includes quetiapine. The patient has a number of risk factors for QT prolongation such as congestive cardiac failure, elderly, female sex and potential electrolyte imbalance due to diuretic therapy.

What could be done in this patient?

Review of both citalopram and quetiapine should be undertaken to address the contraindication. The citalopram could be switched to an alternative such as sertraline if clinically appropriate. The decision on which medication to review may have to involve the patient's GP or specialist mental health services if they are involved in the patient's care. If the citalopram was to continue, the dose should be reduced stepwise to 20 mg daily as per [GGC mental health recommendations](#). In this case it may be prudent to do an ECG initially to determine if the patient

has existing QT prolongation as this may affect the course of action and urgency of changing the medication regimen. Any modifiable risk factors such as electrolyte disturbance should be corrected.

Scenario 3

A 74 year old man with a history of AF attends the GP surgery reporting symptoms of light-headedness and palpitations. He is referred for an ECG which demonstrates a QTc interval of 484 ms. He also has a history of major depression and congestive heart failure. His current medication regimen includes citalopram 20 mg daily and amiodarone 200 mg daily.

What are the issues?

The patient has several risk factors for QT prolongation – congestive heart failure, age >65 years and concurrent use of two drugs that are known to prolong the QT interval. The patient is experiencing symptoms which are suggestive of arrhythmia and the ECG has shown QTc prolongation. The only modifiable risk factor is drug therapy.

What could be done in this patient?

Review of citalopram and amiodarone should be undertaken to address the contraindicated combination. Cardiology input may be needed.

Scenario 4

A 65 year old male inpatient is suffering from severe nausea and vomiting. The cause of which is being investigated. He is currently prescribed citalopram 20 mg daily. His U+Es, renal and liver function are normal.

What are the issues?

A number of antiemetics are associated with QT prolongation and would therefore be contra-indicated in combination with citalopram. The MHRA have recently alerted healthcare professionals to a risk of ventricular arrhythmias and sudden cardiac death with domperidone. The risk is higher in those over 60 years and with doses higher than 30 mg daily. Ondansetron may also prolong the QT interval and should be avoided in combination with other drugs known to prolong the QT interval.

What could be done in this patient?

Cyclizine would be the anti-emetic of choice in this patient as it has not been associated with QT prolongation. Metoclopramide is another option. The MHRA has also issued advice on the use of metoclopramide. To minimise the risk of potentially serious neurological adverse effects metoclopramide is now restricted to a maximum daily dose of 30mg (or 0.5mg/kg/day if less than 60kg), and for no longer than five days. Domperidone and ondansetron should be avoided.