



# Prolonged QT syndrome: An unexpected pause

- **Knowing what to assess and when can prevent a dangerous complication for older adults.**

By Jennifer Russell, BSN, RN, and Helen Farrar, PhD, RN

**BETTY JENKINS**, who's 72 years old, is brought to the emergency department (ED) by her daughter. Ms. Jenkins has been experiencing dizziness for 3 days and says she "can't catch my breath." She also reports that lately she's been "so tired." Her health history reveals osteoarthritis, heart failure, and major depression. Ms. Jenkins' initial vital signs are temperature 98.2° F (36.8° C), heart rate (HR) 60 beats per minute (bpm), respiratory rate (RR) 16 breaths per minute, blood pressure (BP) 110/75 mmHg, and oxygen saturation (SpO<sub>2</sub>) 96% on room air. She's admitted to the telemetry unit for cardiac monitoring and workup.

## History and assessment hints

Ms. Jenkins' labs reveal abnormalities: potassium level is 3.1 mEq/L and magnesium level is 1.0 mg/dL (both below normal). The electrocardiogram (ECG) performed in the ED shows sinus rhythm with a rate of 54 bpm. The ECG report includes an alert that the QT interval was 505 ms. Ms. Jenkins denies a history of hypertension or myocardial infarction. Her current home medications include aspirin 81 mg daily, furosemide 40 mg daily, lisinopril 2.5 mg daily, quetiapine 300 mg daily, and ibuprofen 800 mg three times daily as needed for arthritis pain.

When Molly Walker, the bedside nurse, completes her admission assessment, Ms. Jenkins says that she spent a few days in a psychiatric unit a few weeks ago after being "really depressed and I didn't want to live anymore." It was during that hospitalization that she was prescribed quetiapine. Ms. Jenkins had recently seen her psychiatrist, who increased her daily quetiapine dose from 150 mg to 300 mg daily. Her daughter is worried that this new medication may be too strong for her.

## On the scene

Ms. Jenkins presents with several risk factors for prolonged QT syndrome as well as an actual prolongation of her QT interval at 505 ms. Armed with the knowledge that two of Ms. Jenkins' medications (quetiapine and furosemide) are on the CredibleMeds® list for QT prolongation ([crediblemeds.org/healthcare-providers](http://crediblemeds.org/healthcare-providers)),

Molly contacts the provider to discuss the possibility that these medications may be prolonging Ms. Jenkins' QT interval and increasing her risk of torsades de pointes (polymorphic ventricular tachycardia). The provider reduces Ms. Jenkins' quetiapine dose to 150 mg daily and initiates a referral to psychiatry service to consider alternative medications to treat her depression symptoms. The provider also reduces Ms. Jenkins' dose of furosemide from 40 mg to 20 mg daily for 3 days with a plan to reevaluate before discharge to home.

## Education and follow-up

Prolonged QT syndrome is a disturbance in the electrical QRS complex that can result in torsades de pointes and lead to death if not corrected. Risk factors for prolonged QT syndrome include age 65 years or older, baseline QT prolongation, bradycardia, hypokalemia, hypomagnesemia, underlying heart disease, concurrent diuretic therapy, and female gender.

Many older adults are prescribed psychiatric medications—including antipsychotics, selective monoamine oxidase inhibitors, and tricyclic and tetracyclic antidepressants—that may cause prolonged QT syndrome.

After the medication adjustments, including being switched to a new antidepressant, Ms. Jenkins' QT interval returns to normal. Before discharging Ms. Jenkins, Molly explains the importance of providing a list of all the medications she's taking when she interacts with clinicians in the hospital or in the provider's office to avoid prolonged QT interval in the future.

Being aware of the many factors that can contribute to prolonged QT syndrome will help you more quickly identify patients who are at risk for this deadly syndrome. ★

\*Names are fictitious.

Jennifer Russell is a staff nurse at Northeastern Health System in Tahlequah, Oklahoma. Helen Farrar is an assistant professor at the Fran and Earl Ziegler College of Nursing at the University of Oklahoma Health Sciences Center in Tulsa.

## Selected reference

Tisdale JE, Jaynes HA, Kingery JR, et al. Development and validation of a risk score to predict QT interval prolongation in hospitalized patients. *Circ Cardiovasc Qual Outcomes*. 2013;6(4):479-87.