Long QT syndrome

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TO THE EDITOR: Levine and colleagues have done an excellent review of congenital long QT syndrome.[1] I would like to emphasize that there are significant differences in risk between children and adults with long QT syndrome. According to a recent registry study,[2,3] the following are salient differences.

In children[2]:

- A prolonged corrected QT interval (QTc) (ie, > 500 ms) seems to predict risk of sudden cardiac death in boys.
- Syncope predicts aborted cardiac arrest or sudden cardiac death in both boys and girls, with recent syncope carrying a higher risk than a remote history of syncope.
- Although 63% of the sample in the registry consisted of girls, who also had longer baseline QTc intervals than boys, only 1% of girls had events, compared with 5% of boys.
- Family history of sudden cardiac death does not predict risk of cardiac events during childhood regardless of genotype.

In adults[3]:

- Event rates were similar regardless of QTc interval in men, whereas women with longer QTc intervals had more events than those without significantly prolonged QTc intervals.
- Recent syncope carries a tenfold increased hazard ratio for serious adverse events.
- A prolonged QTc interval predicts a substantial risk of aborted cardiac arrest or sudden cardiac death in people older than 40 years.
- The combination of a family history of sudden cardiac death and the LQT3 (long QT syndrome type 3) mutation carries a significant mortality rate.

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TABLE 1

Long QT syndrome: Risk subsets by age

AGE	LOW RISK	MODERATE RISK	HIGH RISK
0–18	Asymptomatic	Female sex and syncope	Male sex and syncope Male sex and QTc ≥ 500 ms
10–20	Asymptomatic and QTc < 530 ms	Syncope within past 2–10 years QTc ≥ 530 ms	Syncope within past 2 years Males 10–12 years old
18–40	LQT3 or LQT1 Asymptomatic	History of syncope at age 0–18 LQT2 QTc 500–549 ms Female sex	QTc ≥ 550 msec Syncope after age 18
Over 40	LQT1 Genotype negative Syncope > 10 years ago	Syncope 2–10 years ago LQT2 QTc ≥ 530 ms (age 41–60)	Syncope within past 2 years LQT3

ADAPTED FROM DATA IN GOLDENBERG I, MOSS AJ. LONG QT SYNDROME. J AM COLL CARDIOL 2008; 51:2291–2300.

IN REPLY: In contrasting the findings of two recent papers on long QT syndrome in children and in adults age 40 years or older, Dr. Ramaraj makes an excellent point—ie, that risk stratification strategies need to be age-dependent.[1,2] We agree with him and thank him for calling the readers' attention to the issue. Apropos of his letter, we wish to highlight additional data recently published from the long QT syndrome registry summarizing the age-dependent relationships for risk of aborted cardiac arrest or death in long QT syndrome between ages 1 and 75.[3–5] Notably, beta-blocker therapy reduced risk at all ages, although the effect was of borderline significance in the older age groups.

Specifically, we would also like to stress the work of Sauer et al[4] that deals specifically with patients ages 18 to 40. Their study demonstrated the ability to use sex, genotype, QTc, and history of cardiac events as risk stratification tools in long QT syndrome patients. Specifically, Sauer et al found that:

- Patients with LQT2 are at greater risk of arrhythmic events than patients with LQT1 or LQT3.
- QTc remained a significant predictor of events in this cohort.
- Aborted cardiac arrest or sudden death was related to QTc ≥ 500 ms, female sex, and having experienced a syncopal event after the age of 18.
- Beta-blocker therapy resulted in a 60% reduction in risk; most of that risk reduction was in the LQT1 and LQT2 genotypes.

TABLE 1 highlights the major risk factors for life-threatening events (as opposed to syncope alone) in patients across the spectrum of age.

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