Incidental finding of Concealed QT prolongation revealed after Epinephrine administration used for routine Angioedema management in the Emergency room.

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Background:
Long QT syndrome (LQTS) is a channelopathy that can cause cardiac arrest. As Cardiology and Electrophysiology professionals, we are aware of Epinephrine challenge utilized to induce QT prolongation (1) as well as to unmask suspicious Long QT(3). Herein, this case report provides a different perspective on the role of Epinephrine when utilized in a routine setting and its effect on QT prolongation.

Case report:
A 33-year-old white male with no significant history of cardiac or medical problems, reportedly presented to the ER for “lower lip swelling”. No reports of food allergies or consuming anything out of the ordinary. He received Epinephrine and Benadryl for management with a subsequent EKG obtained showed normal sinus rhythm (NSR) and corrected QT(QTc) interval 586 ms (Fig: 1). He was referred to our clinic for EP evaluation. A week later following ER visit, EKG in the clinic showed QTc 414 ms (Fig:2)
Reportedly has had normal EKGs with annual physicals at the occupational health department.
Not on any medications.
He worked for police academy and exercised regularly with aggressive physical training.
Echo obtained for evaluation with reports of decreased aerobic capacity. Ejection Fraction (EF) 60-65%, no other structural or valvular abnormalities reported.
Genetic testing revealed “ KCNH2 VUS” indicating LQTS type II variant.
He was recommended Nadolol, low impact activity and genetic counseling. Thereafter transitioned from Police academy to desk job. He remains asymptomatic on beta blockers.

Conclusion:
The effect of Epinephrine on QT prolongation should be considered in an alternative setting. ER physicians and clinicians will need to take into consideration clinical or legal implications in such incidental cases, which may not receive appropriate work up when it is warranted. This case provides an avenue to explore further.

References:

Keywords: Concealed QT, Epinephrine, Angioedema
Figure 1: QT interval prolonged

Figure 2: Normal QT interval