1546061

Effects of Tilt-Table Testing on the QT Interval.

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Background. The QT interval shortens in response to sympathetic stimulation and the response of the QT interval to epinephrine infusion in healthy individuals and patients with long QT syndrome has been thoroughly studies. Head-up tilt-table (HUT) testing is an easy way to achieve brisk sympathetic stimulation. Yet, little is known about the response of the QT interval to HUT.

Methods. We reviewed the electrocardiograms of HUT tests performed at our institution and compare the heart rate, QT and QTc obtained immediately after HUT with the rest values.

Results. The study group consisted of 27 females and 14 males aged 23.9 ± 8.4 years. Head-up tilting led to a significant shortening of the R-R interval (from 825 ± 128 msec at rest phase to 712 ± 130 msec in the upward tilt phase, $p<0.001$) but only to a moderate shortening of the QT interval (from 363.7 ± 27.9 msec during rest to 355 ± 30.3 msec during upward tilt, $p=0.001$). Since the R-R interval shortened more than the QT interval, the QTc actually increased (from 403 ± 21.5 msec during rest phase to 423.2 ± 27.4 msec during upward tilt, $p<0.001$). The QTc value measured for the upward tilt position was longer than the resting QTc value in 33 of 41 patients. Of those, 4 male patients and 2 female patients developed upward-tilt QTc values above what would be considered abnormal at rest.

Conclusions. During HUT the QT shortens less than the RR interval. Consequently, the QTc increases during head-up tilt.