Dose response to nadolol in congenital Long QT Syndrome.

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Abstract

Background: Betablocker therapy is the corner stone to treat long QT syndrome patients (LQTS). Few details are given on the dose to be used. As the response is variable between patients, we systematically evaluated effect of treatment by performing an exercise test.

Objectives: This study aimed to explore dose response to nadolol on exercise test in LQTS patients in order to propose a more personalized therapeutic approach.

Methods: LQTS patients followed in the Referral Centre of Nantes with at least one exercise test under nadolol have been included retrospectively between 1993 and 2017. All patients underwent gradual cycle exercise tests. Doses were recorded adjusted to weight and response to treatment was evaluated by percentage of the age predicted maximum heart rate reached on exercise test.

Results: 95 patients were included. 337 stress tests under nadolol were analyzed. No correlation existed between dose and percentage of the age predicted maximum heart rate reached on exercise tests (p=0.19). Twenty-one patients were over-responders mostly LQTS1, whereas twenty were under-responders patients mainly LQTS2 (p=0.0229). Forty-two patients had at least three stress tests under nadolol (195 stress tests). We found negative correlation between dose change and percentage of the age predicted maximum heart rate change (p<0.0001). We then proposed a table to adapt dose according to response at the first exercise test.

Conclusions: Our study demonstrated a major variability of dose response to nadolol in LQTS underlining the need of a tailored dosage for each patient. Intra individual analysis showed a relatively constant dose response relationship allowing a guided dose adaption after the first exercise test.