LETTER TO THE EDITOR

Is Prolonged QTc Sufficient to Predict Survival in Patients with Intracerebral Hemorrhage?

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Dear Editor,

I read with interest the article entitled "Electrocardiographic Abnormalities and Elevated cTNT at Admission for Intracerebral Hemorrhage: Predictors for Survival?" by Hjalmarsson et al. in a recent issue of the journal.¹ I have some comments about this study.

As the authors¹ mentioned several studies^{2,3} have found an association between electrocardiographic changes and mortality in patients with intracerebral hemorrhage.

The Bazett's⁴ formula is dependent to heart rate. For example, increasing the heart rate from 60 to 160 bpm typically shortens the QT interval by 25–40%.⁵ It should be noted that Bazett's formula has an upper normal limit at least 23 msn longer than that of the others (e.g., Friderica, Hodges).⁶ At high heart rates, the Bazett's formula overestimates the QT interval and leads to an artifactually prolonged corrected QT interval (QTc). In other words, independently from the QT interval any intervention such as hemostatic therapy could effect the QTc with influencing the heart rate.⁷ In the present study,¹ the percentage of patients with low and high heart rates (sinus tachycardia, atrial fibrillation, sinus bradycardia) can be a confounding factor. What is the average heart rate of patients with atrial fibrillation? Also there is no

information about the drug usage other than beta blockers. There are many diseases and drugs that alter the dependence of QT interval on heart rate, such as stroke, diabetes mellitus, hypertension, and beta blockers.⁷ They¹ concluded that prolonged QTc might reflect an increased mortality risk due to life threatening arrhythmias but the risk of QT-dependent arrhythmias are usually associated with the absolute rather than relative or rate QTc.⁸ For this reason, correcting the QT interval with regard to heart rate for arrhythmic purpose may not be necessary. Indeed, both QT and QTc are dynamic parameters, and individual QTc values in excess of 500 ms have been observed in healthy individuals.⁹ In an another study, Hjalmarsson et al.¹⁰ reported that prolonged QTc seems to be associated with higher mortality during the acute phase, but not 1 year after stroke (ischemic or hemorrhagic).

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Finally, I think it is hard to draw such a conclusion from this study as the author suggested.

Conflict of interest: None

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