Reserach letter

QT interval importance in complicated patients. How much it should be focused?

Sir,

QT interval is a practically feasible and accessible index, which denotes the repolarization quality of myocytes and its prolongation. QT interval might be important in some of the clinical disorders such as syncope, seizure and cardiac arrest. QTc normally varies in different age periods from 330 to 440 ms in late adolescence, whereas in adults but after then QTc over 450-470 ms in female and more than 450 msec in male has been considered as prolonged QTc.[1] The incidence of prolonged QTc interval is not same in all studies. In critically ill patients, prolongd QTc may occur up to 52%.[2] QTc interval changes with race and gender, and it been reported that the increment in average QTc interval of 16 msec in women and 6 msec in black race can increase their mortality rate after cardiac events.[3] Prolonged QTc defined as a value over 440 msec can be met in 8.7% of normal population and many different factors can do shorten or lengthen the QTc. For example it can decrease by diabetes and smoke and prolonged due to electrolyte disorders, coronary artery disease and advancement with age.[3-5]

In this study, we have tried to find incidence of QTc prolong (>450 msec) and lethal QTc (QTc >510 msec)[6] in two groups of females. Group 1 had females with end stage renal disease (ESRD) and group 2 had hypertensive females without chronic kidney disease (CKD). QTc longer than 450 msec occurred in 36% of hypertensive group and 50% of patients with ESRD, this difference was not significant (p=0.3). On the other hand, QTc over 510 msec occurred in 7% of hypertensive and 19% of ESRD group, but this difference was also not significant (p=0.1). Systolic blood pressure (SBP), diastolic blood pressure (DBP) and age were compared in two groups of patients with prolonged QTc (over than 450 msec). Nevertheless, prolonged QTc was not related to SBP, DBP and age in both groups (Table 1). Many studies focus on the effect of DBP,[3] SBP or serum calcium level. The prolongation of QTc depends on many factors, such as drugs administered per se or their interaction and the additive effects of cardiac risk factors on myocyte repolarization reserve. All these risks can be meet in 69% of critically ill patients, who are susceptible to prolonged QTc interval and fatal arrhythmia.[6]

Table 1: Comparison of SBP, DBP and age between short and long QTc in two groups of patients

	High BP group			ESRD group		
	QT less than 450 ms	*P*	QT over 450 ms	QT less than 450 ms	*P*	QT over 450 ms
SBP (mmHg)	158±19	0.3	167±32	136±37	0.5	144±27
DBP (mmHg)	87±11	0.7	90±19	94±30	0.5	87±20
Age (years)	62±12	0.8	61±18	36±21	0.7	40±24

BP: Blood pressure, ESRD: End stage renal disease, SBP: Systolic blood pressure, DBP: Diastolic blood pressure

This study performed on outpatient cases with ESRD and hypertension, indicates that the higher prevalence of prolonged QTc interval is not related to the three established factors such as age, SBP and DBP. Thus, it appears that prolonged QTc is a complex phenomen, which may be unaffected by these risk factors. This could be due to the consequences of different vectors and factors that can affect myocyte repolarization quality, which should be monitored in risk groups as a main criterion that increase mortality rate.

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