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IS THERE ANY RELATIONSHIP BETWEEN LITHIUM-INDUCED QT PROLONGATION AND PLASMA OR ERYTHROCYTE CONCENTRATION OF LITHIUM?

SIMIN DASHTI-KHAVIDAKI, HOSSEIN KHALILI, SEYED ALI AHMADI-ABHARI, PADIDEH GHAELI, MASOUD ESLAMI, HASSAN FARSAM, AHMAD-REZA DEHPOUR

Abstract:

This study was designed to find possible relationship between QTc prolongation and erythrocyte or plasma lithium concentrations. Fifty-six patients with bipolar disorder entered this case- control study. Subjects were between 17 to 63 years of age and were receiving lithium alone, or lithium plus haloperidol or lithium plus thioridazine. The exclusion criteria were past history of cardiovascular, hepatic, renal or metabolic disorders or using other medications known to cause rhythm disturbances. The case group included males with QTc³ 450ms and females with QTc³ 470ms while the control group included males and females with QTc<450 and QTc< 470ms, respectively. Serum sodium and potassium levels, erythrocyte and plasma lithium concentrations as well as lithium ratio were determined for all subjects and compared between the case and control groups by independent sample t-test. The mean of these levels were not different between the case and control groups. Additionally, no correlations were found between QTc and erythrocyte or plasma lithium concentration, lithium ratio, serum sodium or potassium levels. Analyzing the data for patients treated with lithium alone showed no significant correlations between QTc prolongation and erythrocyte or plasma lithium concentration, lithium ratio or serum potassium level. However, a significant correlation was found between serum sodium concentration and QTc prolongation. It should be noted that QTc prolongation occurred six times more in patients who were taking thioridazine and lithium concomitantly. This study noted no influence of sex or co-administration of haloperidol with lithium on QTc prolongation. It is concluded that plasma or erythrocyte lithium levels may not be able to predict QTc prolongation and its consequences.

Keywords:

Lithium ، Erythrocyte lithium concentration ، Plasma lithium concentration ، Lithium ratio ، QTc prolongation

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