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Letters to the Editor

Main challenges of electrolyte imbalance in older patients with COVID-19 and risk of QT prolongation

Principales desafíos del desequilibrio electrolítico en pacientes geriátricos con COVID-19 y riesgo de prolongación del intervalo QT

To the Editor,

We read with interest the recent article published by Bonanad et al.[1]

The topic of this consensus document is valuable and important; however, we encountered ambiguities and questions in one part of the article.

In table 3 of the article, in the description of the adverse cardiovascular effects of drugs investigated for COVID-19 treatment, the authors state that correction of hyperkalemia and hypermagnesemia is vital, while correction of hypokalemia and hypomagnesemia may be particularly imperative since low serum levels of potassium and magnesium enhances the possibility of QT prolongation.[2]

Hypokalemia, probably by modification of ion potassium channel function, can prolong the QT interval in a manner that results in heterogeneity and dispersion of repolarization. Similarly, hypomagnesemia is a well-established predisposing risk factor for torsade de pointes.[3] In addition, potassium deficiency seems to be common in severe coronavirus disease 2019 (COVID-19).[4] Several findings indicated that serum potassium should be maintained in the high normal range (4.5-5.0 mmol/L), although more evidence is needed to support this practice.[3,5]

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Main challenges of electrolyte imbalance in older patients with COVID-19 and risk of QT prolongation. Response

Principales desafíos del desequilibrio electrolítico en pacientes geriátricos con COVID-19 y riesgo de prolongación del intervalo QT. Respuesta

To the Editor,

We appreciate the interest and comments from Rezazadeh et al.[1] regarding our article, and we agree on the relevance of electrolyte imbalance in patients with coronavirus 2019 disease (COVID-19), in particular hypokalemia and hypomagnesemia; the reference to hyperkalemia and hypermagnesemia corresponds to a translation error in the document, which has already been corrected. We would like to point out that hypokalemia, as well as hyponatremia and hypocalcemia, appear to be common in patients with severe clinical forms of COVID-19.[2–4] Infection with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) occurs thanks to the binding of the virus to angiotensin-converting enzyme 2, reducing the expression of the enzyme with a consequent increase in circulating angiotensin II, which promotes renal potassium loss.[2,3,5] In addition, the inflammatory state and gastrointestinal losses can contribute to these imbalances, with potentially significant consequences due to the association with arrhythmic events secondary to QT interval prolongation (especially torsade de pointes), the risk for which increases with the use of certain drugs and also with the inflammatory state itself.[1,5,6] The infection may also predispose to myocardial damage, especially in patients with existing cardiovascular disease.[2,3] The pathophysiological changes in aging make older patients particularly vulnerable to electrolyte imbalances, so adequate monitoring and early correction are essential.[7]

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