

The problem of defining cause or effect when relating electrocardiographic findings with mortality in acute cerebrovascular disease

El problema de definir causa o efecto al relacionar hallazgos electrocardiográficos con la mortalidad en la enfermedad cerebrovascular aguda

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To the Editor:


The electrocardiogram is a diagnostic tool that is over 100 years old, which has been used in multiple studies looking for electrocardiographic patterns of sudden death risk or, simply, related to death.

I have read with great interest the article entitled “Characterization of electrocardiographic findings and their relationship with mortality in acute cerebrovascular disease”, by Cabrera-Rego *et al*¹; because, if the future proposal is as they state in their conclusions: “...it will allow a more complete risk stratification as well as to prevent future complications...”, the intention will have a scientific outcome of inestimable value. However, I would like to point out some issues that may improve, in my opinion, future research projects in this area. The authors considered as an objective, stated in the abstract, the following: “To characterize the electrocardio-

graphic findings in the first 72 hours of evolution of the cerebrovascular disease and its relationship with mortality”. This corresponds perfectly with the article’s title, which transmits a scientific interest that captivates the reader. Why then, at the end of the introduction, they propose a different objective? “Identifying possible early complications in the course of an acute stroke, and being able to be evaluated by means of an electrocardiographic tracing”. These two approaches have nothing in common. The first one, shown in the abstract, does correspond with what the results show.

On the other hand, within the studied variables we find the QT interval of the electrocardiogram; that is why, besides the exclusion criteria established by the authors, the patients who –in one way or another– were receiving any drug that affected the duration of the mentioned interval had to be excluded as well^{2,3}, because the use of these would alter its measures; much more when it is associated to a cerebrovascular disease, since it would be the sum of several elements that prolong the QT interval. In addition, there are other risk factors for the prolongation of this interval^{2,3}, which must be taken into consideration and always clarify in the methodology of the study.

Cabrera-Rego *et al*¹ describe the relationship between the diagnosis of the cerebrovascular disease and the presence or absence of electrocardiographic

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changes, reason why they detail that the conventional 12-lead electrocardiogram was performed upon the patient's arrival, and daily, during the first 72 hours of evolution. It would have been interesting to show the existing evolutionary changes, which would provide the reader with more information to consider if those changes were really evolutionary changes, thus avoiding some of the following questions:

- Was the presence of premature atrial contractions subsequently related to the appearance of atrial fibrillation (AF)?
- Was the AF paroxysmal?
- Was the presence of AF related to ischemic or hemorrhagic stroke?
- At what point was the ST-segment elevation detected? Was it at the patient's arrival? Was it related to ischemic or hemorrhagic stroke?

In short, there are several unknown issues that, in my opinion, may respond to several factors. Premature atrial contractions may be the trigger of AF, which, if it is paroxysmal and being related to ischemic stroke, would be very difficult to know which one came first: whether the AF produced the cardioembolic stroke or if it was the acute cerebrovascular disease that led to the appearance of AF⁴. Moreover, there is not described if the ST-segment elevation was observed at the patient's arrival or during his/her evolution; knowing this fact would be interesting because acute myocardial infarctions can be complicated by paroxysmal AF or produce intracardiac thrombi, which are two important causes of cerebral embolism, a phenomenon that has been associated with diabetes mellitus⁵.

Mr. Editor, the complexity of the research in question lies in defining the factors that may be cause or effect, in order to avoid scientific bias and mistakes in the interpretation of the results.

CONFLICT OF INTERESTS

None declared.

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