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LETTER TO THE EDITOR

Artificial intelligence applied to the diagnostic accuracy of left ventricular hypertrophy using electrocardiographic criteria

Inteligencia artificial aplicada a la precisión diagnóstica de hipertrofia ventricular izquierda mediante criterios electrocardiográficos

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We were interested to read Cáceres et al.'s[1] article titled "Diagnostic accuracy of electrocardiographic criteria for left ventricular hypertrophy compared with echocardiographic findings," whose objective was to determine the diagnostic accuracy of electrocardiographic criteria compared to echocardiograms. Thus, we would like to contribute the following:

An electrocardiogram (ECG) is a basic, low-cost test that provides useful information on left ventricular hypertrophy (LVH); however, its sensitivity is 15 to 30%. Today, new strategies have been sought to provide more accurate diagnoses. Thus, with the advent of new technologies, artificial intelligence (AI) has recently achieved a very promising performance in terms of diagnoses and medical imaging, and has proven to have a better diagnostic performance than conventional methods, including the cardiologist's assessment[2].

Liu et al.[3] developed an AI-based ECG model to detect LVH and predict cardiovascular death, with a sensitivity of 90.3% and a specificity of 69.3%, and compared it with the diagnosis made by cardiologists using a 12-lead ECG, with a sensitivity of 38.2% and specificity of 89.7%. Therefore, they noted that AI has more diagnostic accuracy and is a very useful tool for detecting LVH, even when patients have a variety of comorbidities. The cases diagnosed with this model were consistently associated with greater cardiovascular mortality when validated externally with a Japanese cohort, concluding that automated ECG AI performs very well not only for early diagnosis, but also for predicting cardiovascular mortality.

Artificial intelligence significantly surpassed the conventional LVH criteria applied manually by cardiologists, including the Romhilt-Estes score, Cornell criteria and Sokolow-Lyon criteria. Kashou et al.[4] developed an AI-ECG algorithm in which they evaluated 20,000 patients with simultaneous ECGs and echocardiograms and determined that the algorithm combining ECG and electrocardiogram data functioned much better than the different scoring systems currently in use, as it obtained a 159.9% greater sensitivity than the specialists' performance. Although Cáceres et al.[1] stated that the Peguero-Lo Presti electrocardiographic criteria were more sensitive and specific than other criteria, AI has been proven to surpass them, making it the most accurate diagnostic method today.

In conclusion, some criteria manually employed in medical practice have proven to have greater diagnostic accuracy than others; however, AI has less interpretive bias and greater sensitivity and specificity than all the currently proposed methods and their combinations. We recommend continuing research in this field, and having authors include AI in the proposed designs and comparisons to ensure that the most accurate method

to date is being studied. It is advisable to continue performing studies to describe populations with different demographic characteristics and thus give rise to future interventions in this field, without ignoring the infrastructure, financial and digital capacity limitations that hospitals may have in adequately implementing these AI-based strategies and innovating in Colombian clinical practice.

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Conflicts of interest

The authors declare no conflicts of interest.

Ethical considerations

Human and animal protection. The authors declare that no experiments were conducted on humans or animals in the course of this study.

Data confidentiality. The authors declare that no patient data appear in this article. Furthermore, the authors have examined and followed the SAGER guidelines according to the type and nature of the study.

Right to privacy and informed consent. The authors declare that no patient data appear in this article.

Use of artificial intelligence to generate text. The authors declare that they have not used any type of generative artificial intelligence in drafting this manuscript or creating figures, graphs, tables or their respective captions or legends.

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