



Interatrial Block and the Risk of Ischemic Stroke

We read with great interest the paper by Wu *et al.*¹⁾ regarding the usefulness of CHADS2 and CHA2DS2-VASc scores to predict the risk of ischemic stroke or transient ischemic attack in patients with interatrial block without atrial fibrillation. This interesting study is in line with previous results^{2, 3)} suggesting a relation of advanced interatrial block with an increased risk of ischemic stroke. These findings open the door to the use of anticoagulation therapy in patients interatrial block⁴⁾, particularly in those with high CHADS2 and CHA2DS2-VASc and Bayes syndrome (advanced interatrial block associated with atrial fibrillation)⁵⁾. We appreciate the important contribution of the present study, and we would like to point out two essential issues when studying the ECG of patients with interatrial block. The first is the need to differentiate advanced from partial interatrial block. In both blocks, the P wave duration is ≥ 120 ms; but in the typical cases of advanced block, there is also a biphasic pattern in leads II, III, and aVF⁶⁾ (**Fig. 1**). This is an important distinction as the association of this type of interatrial block with supraventricular arrhythmias and ischemic stroke is higher than with partial interatrial block^{2, 3, 7, 8)}. The second issue is how to measure the P wave duration. The correct method is to measure the difference between the start of the P wave in the earliest lead where it appears and to finish in the last one (**Fig. 2**). To interpret the ECG on the computer, we use a program called GeoGebra. GeoGebra is available on multiple platforms with its desktop applications for Windows, Mac OS, and Linux. It allows defining points on an image, trace lines, and segments. We have done a series of measurements on ECG grids with this application that allow us to say that the error of our method is 0.063%.

Conflict of Interest

The authors have no conflict of interest.

Address for correspondence: Manuel Martínez-Sellés, Calle Doctor Esquerdo, 46, Hospital General Universitario Gregorio Marañón, 28007 - Madrid, Spain.

Email: mmselles@secardiologia.es

Received: July 12, 2016

Accepted for publication: July 20, 2016



Fig. 1. Advanced interatrial block with P wave duration ≥ 120 ms and a biphasic pattern in leads II, III, and aVF

References

- 1) Wu JT, Wang SL, Chu YJ, Long DY, Dong JZ, Fan XW, Yang HT, Duan HY, Yan LJ, Qian P: CHADS2 and CHA2DS2-VASc scores predict the risk of ischemic stroke outcome in patients with interatrial block without atrial fibrillation. *J Atheroscler Thromb*, 2017; 24: 176-184
- 2) Martínez-Sellés M, Massó-van Roessel A, Álvarez-García J, García de la Villa B, Cruz-Jentoft AJ, Vidán MT, López Díaz J, Felix Redondo FJ, Durán Guerrero JM, Bayes-Genis A, Bayes de Luna A; Investigators of the Cardiac and Clinical Characterization of Centenarians (4C) registry: Interatrial block and atrial arrhythmias in centenarians: Prevalence, associations, and clinical implications. *Heart Rhythm*, 2016; 13: 645-651
- 3) O'Neal WT, Kamel H, Zhang ZM, Chen LY, Alonso A, Soliman EZ: Advanced interatrial block and ischemic stroke: The Atherosclerosis Risk in Communities Study. *Neurology*, 2016; 24: pii: 10.1212/WNL.0000000000002888 [Epub ahead of print]

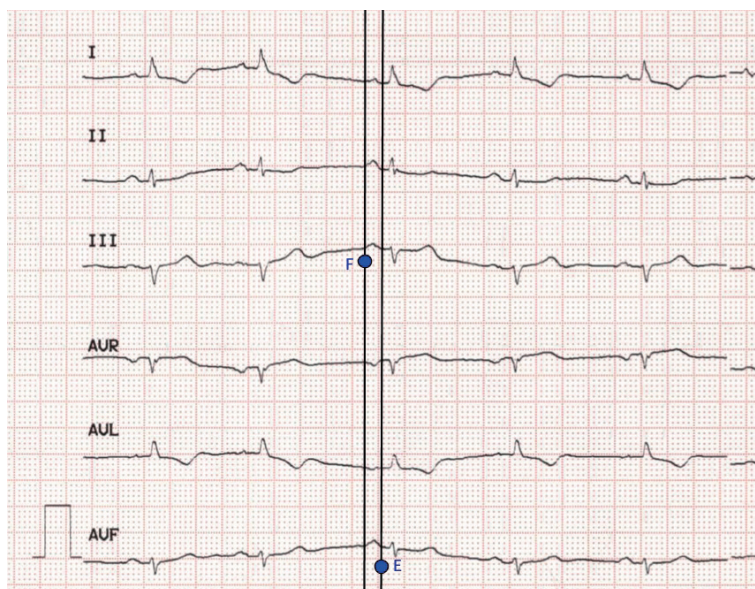


Fig. 2. The method to measure the P wave duration is to quantify the difference between the first (F) start of the P wave and the end (E) in the last one

In this case, lead III is the lead that shows first the start of P wave and lead VF is the last one that records the end of P wave.

- 4) Martínez-Sellés M, Fernández Lozano I, Baranchuk A, Bayes-Genis A, Bayés de Luna A: Should we anticoagulate patients at high risk of atrial fibrillation? *Rev Esp Cardiol*, 2016; 69: 374-376
- 5) Conde D, Seoane L, Gysel M, Mitrione S, Bayés de Luna A, Baranchuk A: Bayés' syndrome: the association between interatrial block and supraventricular arrhythmias. *Expert Rev Cardiovasc Ther*, 2015; 13: 541-550
- 6) Bayes de Luna A, Fort de Ribot R, Trilla E, Julia J, Garcia J, Sadurni J, Riba J, Sagues F: Electrocardiographic and vectorcardiographic study of interatrial conduction disturbances with left atrial retrograde activation. *J Electrocardiol*, 1985; 18: 1-14
- 7) Bayés de Luna A, Platonov P, Cosio FG, Cygankiewicz I, Pastore C, Baranowski R, Bayés-Genis A, Guindo J, Viñolas X, Garcia-Niebla J, Barbosa R, Stern S, Spodick D: Interatrial blocks. A separate entity from left atrial enlargement: a consensus report. *J Electrocardiol*, 2012; 45: 445-451
- 8) Sadiq Ali F, Enriquez A, Conde D, Redfearn D, Michael K, Simpson C, Abdollah H, Bayés de Luna A, Hopman

W, Baranchuk A: Advanced interatrial block predicts new onset atrial fibrillation in patients with severe heart failure and cardiac resynchronization therapy. *Ann Noninvasive Electrocardiol*, 2015; 20: 586-591

Manuel Martínez-Sellés¹,
Luis Alberto Escobar Robledo² and
Adrian Baranchuk³

¹Hospital General Universitario Gregorio Marañón y Universidad Europea y Universidad Complutense, Madrid, Spain

²Fundació Investigació Cardiovascular, ICCV, Barcelona, Spain

³Queen's University, Kingston, Ontario, Canada