

# Bayés Syndrome

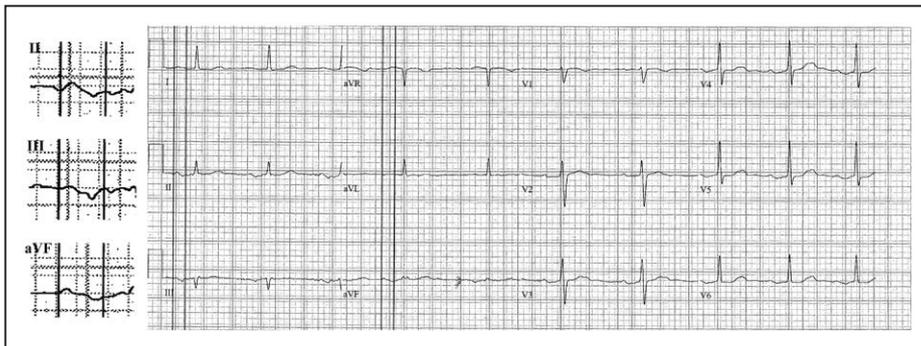
## What Is It?

### ECG CHALLENGE

The patient is a 76-year-old woman with history of arterial hypertension treated with angiotensin-converting enzyme inhibitors and calcium antagonists. She complained about palpitations, usually of short duration, more frequently during the night. The 12-lead ECG is shown in Figure 1. What is the electrocardiographic diagnosis?

Please turn the page to read the diagnosis.

**Adrian Baranchuk, MD**  
**Pelayo Torner, MD**  
**Antoni Bayés de Luna,**  
**MD, PhD**

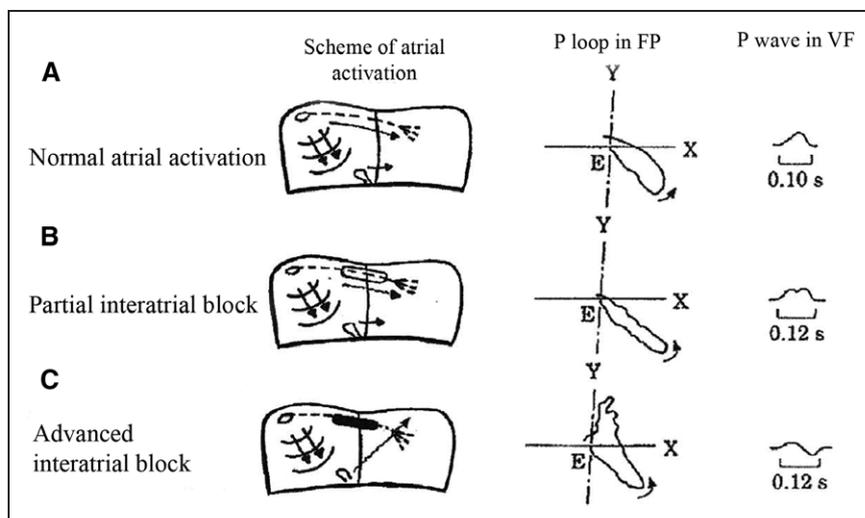


**Figure 1.** Typical example of advanced interatrial block with P ± in leads II, III, and VF and a duration >120 milliseconds.

When the P wave is amplified, we can see much better the beginning and end of P waves in the 3 leads.

**Correspondence to:** Antonio Bayés de Luna, MD, PhD, C/ Sant Antoni M<sup>a</sup> Claret, 167, 08025 Barcelona, Spain. E-mail abayes@csic-iccc.org

© 2018 American Heart Association, Inc.



**Figure 2.** Diagram of atrial activation.

**A**, Normal circumstances, **(B)** partial interatrial block, and **(C)** advanced interatrial block (see text). P wave in VF indicates P in VF lead; and P loop in FP, P loop in frontal plane.

## RESPONSE TO ECG CHALLENGE

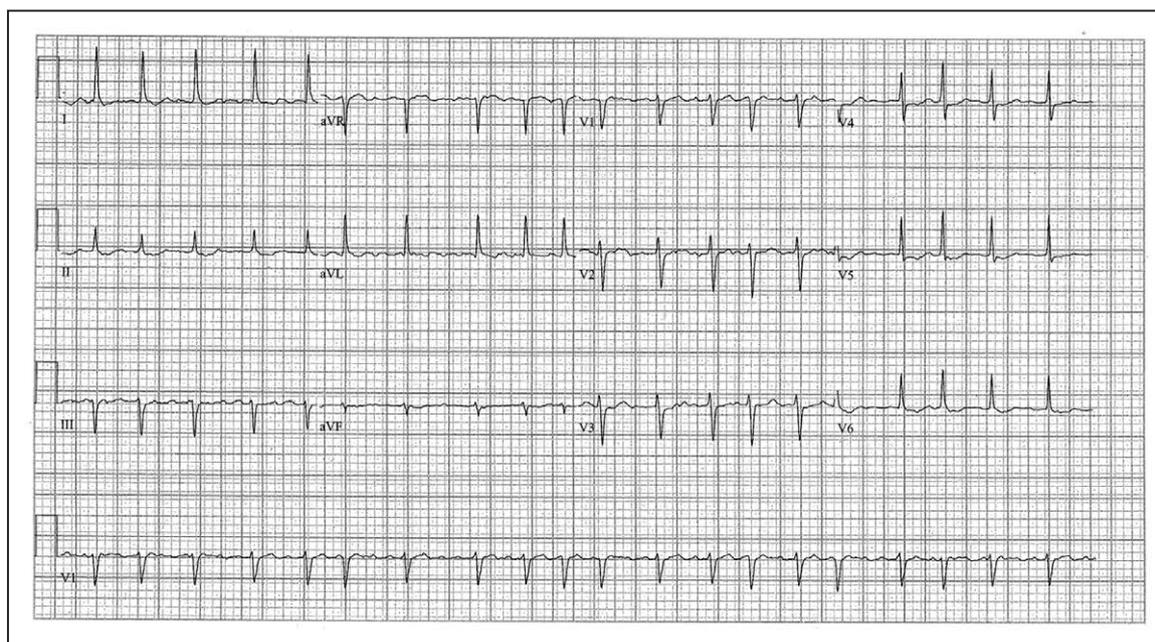
This 12-lead ECG shows sinus rhythm with first-degree atrioventricular block (PR=250 milliseconds) and with low-voltage R-wave complexes in leads I, aVL, and V<sub>6</sub> without q waves that may be explained by partial left bundle-branch block. The presence of a small r wave in lead V<sub>1</sub> may be caused by depolarization of the right ventricular wall. The echocardiogram confirmed normal left ventricular wall thickness.

The major abnormality of this 12-lead ECG is the P wave. Calipers and magnification of the ECG are needed to assess the duration and voltage of the P wave properly. The duration of the P wave is very long (185 milliseconds) and in the inferior leads (II, III, and aVF) depicts biphasic ( $\pm$ ) morphology. These changes represent the current definition criteria of advanced inter-

atrial block (A-IAB).<sup>1</sup> The duration of the P wave must be measured in the frontal plane leads from the earliest detection of the P wave in any lead (onset) to the last one (offset) (Figure 1).

Figure 2 depicts the atrial activation in normal circumstances (Figure 2A) and in the case of partial block (Figure 2B) and A-IAB (Figure 2C).<sup>1</sup> In the last, the stimulus is completely blocked in the Bachmann region, and activation of the left atrium (LA) occurs retrogradely through a zone located close to the coronary sinus. This explains the final negative component of the P wave in the inferior leads.

Atrial fibrosis is considered the anatomic substrate of A-IAB, which does not necessarily mean that the LA is enlarged. In fact, in this case, the LA measured by echocardiogram was only 37 mm, and the P-terminal



**Figure 3.** The patient presented with frequent crises of paroxysmal atrial fibrillation that even may be recorded in a surface ECG.

force in lead V<sub>1</sub> is normal (Morris index <40 mm·ms), which corresponds to a normal LA size. However, both processes (A-IAB and LA enlargement) can often be associated.

An ECG pattern, to be considered a true block, has to meet the following 3 criteria<sup>1,2</sup>: It must be experimentally reproducible; it must be transient; and it must be present in the absence of chamber enlargement or ischemia, as happens in this case.

It is currently accepted<sup>2</sup> that patients with A-IAB, especially elderly patients with P-wave duration >140 milliseconds, can develop atrial fibrillation (AF) and atrial flutter in a short-term follow-up. In this case, Holter monitoring presents frequent runs of AF. One of them was captured in a 12-lead ECG (Figure 3). The association of a-IAB and AF has been called Bayés syndrome.<sup>2,3</sup>

Recent studies showed that A-IAB was associated with AF/atrial flutter and even with stroke in many different clinical scenarios, including a large cohort of the general population.<sup>2</sup> The association with stroke, without documented AF, could open the door to the hypothesis of early anticoagulation. More definitive answers in this regard will be provided by prospective registries and ongoing randomized trials involving this population.

In summary, we presented a case that shows that careful evaluation of the surface P wave may result in

valuable clinical information to predict the risk of AF and stroke.

## DISCLOSURES

None.

## AFFILIATIONS

Heart Rhythm Service, Kingston Hospital, Ontario, Canada (A.B.). Department of Electrophysiology and Arrhythmias, St. Pau Hospital, Barcelona, Spain (P.T.). Autonomous University of Barcelona, Institut Català Ciències Cardiovasculars–St. Pau Hospital, and Quiron Barcelona Hospital, Spain (A.B.d.L.).

## FOOTNOTES

*Circulation* is available at <http://circ.ahajournals.org>.

## REFERENCES

1. Bayés de Luna A, Platonov P, García-Cosío F, Cygankiewicz I, Pastore C, Baranowski R, Bayés-Genis A, Guindo J, Viñolas X, García-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.
2. Baranchuk A. *Interatrial Block and Supraventricular Arrhythmias: Clinical Implications of Bayés' Syndrome*. Minneapolis, MN: Cardiotext Publishing; 2017.
3. Bacharova L, Wagner GS. The time for naming the interatrial block syndrome: Bayes syndrome. *J Electrocardiol*. 2015;48:133–134. doi: 10.1016/j.jelectrocard.2014.12.022.

## Bayés Syndrome: What Is It?

Adrian Baranchuk, Pelayo Torner and Antoni Bayés de Luna

*Circulation*. 2018;137:200-202

doi: 10.1161/CIRCULATIONAHA.117.032333

*Circulation* is published by the American Heart Association, 7272 Greenville Avenue, Dallas, TX 75231

Copyright © 2018 American Heart Association, Inc. All rights reserved.

Print ISSN: 0009-7322. Online ISSN: 1524-4539

The online version of this article, along with updated information and services, is located on the  
World Wide Web at:

<http://circ.ahajournals.org/content/137/2/200>

**Permissions:** Requests for permissions to reproduce figures, tables, or portions of articles originally published in *Circulation* can be obtained via RightsLink, a service of the Copyright Clearance Center, not the Editorial Office. Once the online version of the published article for which permission is being requested is located, click Request Permissions in the middle column of the Web page under Services. Further information about this process is available in the [Permissions and Rights Question and Answer](#) document.

**Reprints:** Information about reprints can be found online at:  
<http://www.lww.com/reprints>

**Subscriptions:** Information about subscribing to *Circulation* is online at:  
<http://circ.ahajournals.org/subscriptions/>