

Firat Duru

Clinic for Cardiology, University Hospital, Zurich

## Second degree atrioventricular block: type I or type II?

### Case Report

A 24-hour Holter ECG (fig. 1) was performed on a 46-year-old male patient who experienced a presyncopal event.

What is your ECG diagnosis? Second degree atrioventricular (AV) block; type I or type II?

### Explanatory answers

Second degree AV block is an often misdiagnosed cardiac rhythm disorder. This may have clinical consequences, as type II block is almost always infranodal, whereas type I Wenckebach block is mostly due to block in the AV node (a mostly benign condition).

In this tracing, the first three PR intervals remain almost constant prior to a single blocked impulse, suggesting at first impression the presence of a type II second degree AV block. There is actually a type I block due to following reasons:

Classically, the sinus rate must be constant when PR intervals are measured to determine

rate increases (and a block occurs in the shorter cycle) because a vagal effect can be ruled out based on the rate increase.

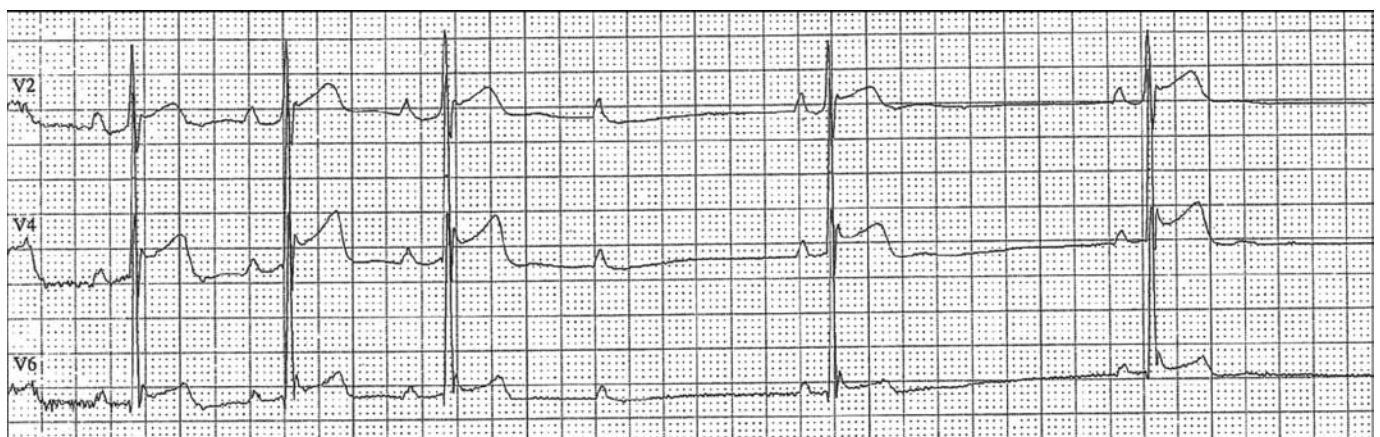
Secondly, the diagnosis of type II block necessitates an unchanged PR interval of the first conducted beat after the blocked impulse. Type II block cannot be diagnosed when a shortened PR interval occurs after a blocked single P wave, regardless of the number of constant PR intervals before the block.

The most appropriate and accepted definition: "Type II second degree AV block is defined as the occurrence of a single non conducted P wave associated with constant PR intervals before and after a single blocked impulse, as long as the sinus rate or the P-P interval is constant and there are at least 2 consecutively conducted P waves to determine the behavior of the PR interval."

### Reference

- 1 Barold SS, Hayes D. Second-degree atrioventricular block: a reappraisal. *Mayo Clin Proc.* 2001;76:44–57.

**Figure 1**  
Holter ECG tracings showing AV block.



the type of second degree AV block. One should not diagnose a type II block with a narrow QRS if the P-P interval lengthens (as seen in this case) before the block. This condition suggests rather a vagal surge with involvement of both the sinus and the AV nodes. On the contrary, type II block can be diagnosed when the sinus

There is no conflict of interest.

Correspondence:  
Prof. F. Duru  
Clinic for Cardiology  
University Hospital  
Rämistrasse 100  
CH-8091 Zurich  
E-Mail: firat.duru@usz.ch