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2:1 AV block

The orphan of organizational guidelines for cardiac pacing

It is strange that 2:1 AV block has not achieved better prominence in the major organizational guidelines for cardiac pacing. The reasons are unclear. 2:1 AV block is an important entity and the limitations regarding its importance involve both the ACCF/AHA/HRS and the ESC guidelines [1, 2].

2012 ACCF/AHA/HRS focused update incorporated into the ACCF/AHA/HRS 2008 guidelines for device-based therapy of cardiac rhythm abnormalities

The 2012 ACCF/AHA/HRS guidelines define advanced second-degree AV block as the blocking of two or more consecutive P waves and therefore do not include 2:1 AV block in this classification [1]. Referring to 2:1 AV block, the guidelines state that "when AV conduction occurs in a 2:1 pattern, block cannot be classified unequivocally as type I or type II, although the width of the QRS can be suggestive, as just described." This is illogical because 2:1 AV block is neither type I nor type II AV block. The suggested description in the guidelines is as follows, but it does not clarify the related statement about 2:1 AV block: "Type II second-degree AV block is characterized by fixed PR intervals before and after blocked beats and is usually associated with a wide QRS complex" [1].

The 2012 ACC/AHA/HRS guidelines indicate that "it is not always possible to determine the site of AV block without electrophysiological evaluation, because type I second-degree AV block can be infranodal even when the QRS is narrow. If type I second-degree AV block with a narrow or wide QRS is found to be intra- or infra-Hisian at electrophysiological study, pacing should be considered." There is no mention of asymptomatic 2:1 AV block in this statement where it would be appropriate. However, it appears in the form of "second-degree AV block" in the formal recommendations: Class IIa. "Permanent pacemaker implantation is reasonable for asymptomatic second-degree AV block at intra- or infra-His levels found at electrophysiological study." These guidelines could be interpreted to mean that all patients with asymptomatic second-degree AV block including 2:1 AV block (except those with type II block), regardless of QRS duration, should undergo electrophysiological testing to determine the site of block. Further details to guide clinical practice would be beneficial.

Finally, the ACC/AHA guidelines provide recommendations for pacing based on the rate during asymptomatic complete AV block, but no such recommendations exist for asymptomatic 2:1 AV block, especially when the QRS is narrow and conservative treatment is being evaluated.

2013 ESC guidelines on cardiac pacing and cardiac resynchronization therapy

There is no mention at all of symptomatic or asymptomatic 2:1 AV block in the sections on acquired AV block (which is very brief) and in that on syncope with bundle branch block [2]. There are only two pertinent entries.

Class I: Pacing is indicated in patients with third- or second-degree type 2 AV block, irrespective of symptoms.

Class IIa: Pacing should be considered in patients with second-degree type 1 AV block which causes symptoms or is found to be located at intra- or infra-His levels at an electrophysiological study.

The second recommendation would be more complete with the addition of asymptomatic 2:1 AV block with bundle branch block in which infranodal block is found.

Conclusion

The organizational guidelines have served us well. Most of the missing points about 2:1 AV block presented here are implied in the guidelines and generally do not affect clinical practice. It could be argued that no minor changes regarding 2:1 AV block are necessary. However, their implementation may improve clarity of the guidelines and promote their better understanding and improved clinical practice.

Abbreviations

ACCF	American College of Cardiology Foundation
AHA	American Heart Association
AV block	Atrioventricular block
ESC	European Society of Cardiology
HRS	Heart Rhythm Society

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