DoloMeeting Arrhythmias

international workshop

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Bolzano

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AV BLOCK IN YOUNG PATIENTS. IS PACEMAKER REALLY NECESSARY?

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Introduction

The third-degree heart block is a disorder of cardiac conduction system where there is complete dissociation of atrial and ventricular activity due to the absence of conduction through the atrioventricular node or His-Purkinjie system.

The prevalence of third-degree AV block in healthy young people is 0.04%worldwide

congenital complete AV block 1/ 20-22.000 birth.

- Persistent AV block : intrinsic mechanism

- Intermittent AV block : intrinsic and extrinsic mechanisms (vagal or idiopatic)

Most common causes of advanced atrioventricular block in otherwise healthy young or middle-aged individuals:

Intrinsic disease

- Coronary artery disease
- Degenerative disease(Lenegre and Lev disease)
- Nonischemic cardiomyopathies-de novo or familiar dilated cardiomyopathies
- Infectious causes
- Rheumatic and autoimmune disease
- Infiltrative processes (amyloidosis,sarcoidosis)

Extrinsic causes

- Vagally induced
- Iatrogenic causes.

(Pace 2012; 35:1395-1404)

Rare causes of advanced atrioventricular block in otherwise healthy young or middle-aged individuals:

- Neuromuscolar or neurologic disorders(myotonic dystrophy, becker muscular dystrophy)
- Metabolic causes (hypoxia, hiperkaliemia, thyroid disorders
- Idiopatic AV block
- Radiation -induced
- Acute rheumatic fever
- Left ventricular noncompaction

Pace 2012; 35:1395-1404

2013 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy

Indication for pacing in intermittent documented bradycardia

Recommendations	Class [a]	Level [b]	Ref. [c]
1) Sinus node disease (including brady-tachy form). Pacing is indicated in patients affected by sinus node disease who have the documentation of symptomatic bradycardia due to sinus arrest or sinus-atrial block.	I	B	1, 6–9
2) Intermittent/ paroxysmal AV block (including AF with slow ventricular conduction). Pacing is indicated in patients with intermittent/paroxysmal intrinsic third- or second-degree AV block.	I	C	-
3) Reflex asystolic syncope. Pacing should be considered in patients ≥40 years with recurrent, unpredictable reflex syncopes and documented symptomatic pause/s due to sinus arrest or AV block or the combination of the two.	IIa	B	5, 18, 19
4) Asymptomatic pauses (sinus arrest or AV block). Pacing should be considered in patients with history of syncope and documentation of asymptomatic pauses >6 s due to sinus arrest, sinus-atrial block or AV block.	IIa	C	-
5) Pacing is not indicated in reversible causes of bradycardia.	III	C	-

AF = atrial fibrillation; AV = atrioventricular.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendation(s).

2013 ESC Guidelines on cardiac pacing and cardiac resynchronization therapy

Indication for pacing in patients with persistent bradycardia

Recommendations	Class [a]	Level [b]	Ref. [c]
1) Sinus node disease. Pacing is indicated when symptoms can clearly be attributed to bradycardia.	I	B	1, 6–9
2) Sinus node disease. Pacing may be indicated when symptoms are likely to be due to bradycardia, even if the evidence is not conclusive.	IIb	C	-
3) Sinus node disease. Pacing is not indicated in patients with SB which is asymptomatic or due to reversible causes.	III	C	-
4) Acquired AV block. Pacing is indicated in patients with third- or second-degree type 2 AV block irrespective of symptoms.	I	C	-
5) Acquired AV block. 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 EPS.	IIa	C	-
6) Acquired AV block. Pacing is not indicated in patients with AV block which is due to reversible causes.	III	C	-

AV = atrioventricular; EPS = electrophysiological study; SB = sinus bradycardia.
[a]Class of recommendation.
[b]Level of evidence.
[c]Reference(s) supporting recommendation(s).

2018 ACC/AHA/HRS Guideline on evaluation and management of Patients with bradycardia and cardiac conduction delay

Recommendations for Acute Medical Therapy for Bradycardia Attributable to Atrioventricular Block
Referenced studies that support recommendations are summarized in Online Data Supplements 27 and 28.

COR	LOE	RECOMMENDATIONS
IIa	C-LD	1. For patients with second-degree or third-degree atrioventricular block believed to be at the atrioventricular nodal level associated with symptoms or hemodynamic compromise, atropine is reasonable to improve atrioventricular conduction, increase ventricular rate, and improve symptoms (S6.3.2-1–S6.3.2-3).
IIb	B-NR	2. For patients with second-degree or third-degree atrioventricular block associated with symptoms or hemodynamic compromise and who have low likelihood for coronary ischemia, beta-adrenergic agonists, such as isoproterenol, dopamine, dobutamine, or epinephrine, may be considered to improve atrioventricular conduction, increase ventricular rate, and improve symptoms (S6.3.2-3–S6.3.2-7).
IIb	C-LD	3. For patients with second-degree or third-degree atrioventricular block associated with symptoms or hemodynamic compromise in the setting of acute inferior MI, intravenous aminophylline may be considered to improve atrioventricular conduction, increase ventricular rate, and improve symptoms (S6.3.2-8–S6.3.2-11).

2018 ACC/AHA/HRS Guideline on evaluation and management of Patients with bradycardia and cardiac conduction delay

Recommendations for Permanent Pacing for Chronic Therapy/Management of Bradycardia Attributable to Atrioventricular Block
Referenced studies that support recommendations are summarized in Online Data Supplements 34, 39, and 40.

COR	LOE	RECOMMENDATIONS
I	B-NR	1. In patients with acquired second-degree Mobitz type II atrioventricular block, high-grade atrioventricular block, or third-degree atrioventricular block not attributable to reversible or physiologic causes, permanent pacing is recommended regardless of symptoms (S6.4.4-1–S6.4.4-7).
I	B-NR	2. In patients with neuromuscular diseases associated with conduction disorders, including muscular dystrophy (e.g., myotonic dystrophy type 1) or Kearns-Sayre syndrome, who have evidence of second-degree atrioventricular block, third-degree atrioventricular block, or an HV interval of 70 ms or greater, regardless of symptoms, permanent pacing, with additional defibrillator capability if needed and meaningful survival of greater than 1 year is expected, is recommended (S6.4.4-8–S6.4.4-15).
I	C-LD	3. In patients with permanent AF and symptomatic bradycardia, permanent pacing is recommended (S6.4.4-2, S6.4.4-16, S6.4.4-17).
I	C-LD	4. In patients who develop symptomatic atrioventricular block as a consequence of guideline-directed management and therapy for which there is no alternative treatment and continued treatment is clinically necessary, permanent pacing is recommended to increase heart rate and improve symptoms (S6.4.4-18–S6.4.4-24).

2018 ACC/AHA/HRS Guideline on evaluation and management of Patients with bradycardia and cardiac conduction delay

IIa	B-NR	5. In patients with an infiltrative cardiomyopathy, such as cardiac sarcoidosis or amyloidosis, and second-degree Mobitz type II atrioventricular block, high-grade atrioventricular block, or third-degree atrioventricular block, permanent pacing, with additional defibrillator capability if needed and meaningful survival of greater than 1 year is expected, is reasonable (S6.4.4-25–S6.4.4-30).
IIa	B-NR	6. In patients with lamin A/C gene mutations, including limb-girdle and Emery-Dreifuss muscular dystrophies, with a PR interval greater than 240 ms and LBBB, permanent pacing, with additional defibrillator capability if needed and meaningful survival of greater than 1 year is expected, is reasonable (S6.4.4-31–S6.4.4-33).
IIa	C-LD	7. In patients with marked first-degree or second-degree Mobitz type I (Wenckebach) atrioventricular block with symptoms that are clearly attributable to the atrioventricular block, permanent pacing is reasonable (S6.4.4-34–S6.4.4-37).
IIb	C-LD	8. In patients with neuromuscular diseases, such as myotonic dystrophy type 1, with a PR interval greater than 240 ms, a QRS duration greater than 120 ms, or fascicular block, permanent pacing, with additional defibrillator capability if needed and meaningful survival of greater than 1 year is expected, may be considered (S6.4.4-9–S6.4.4-13, S6.4.4-15).