

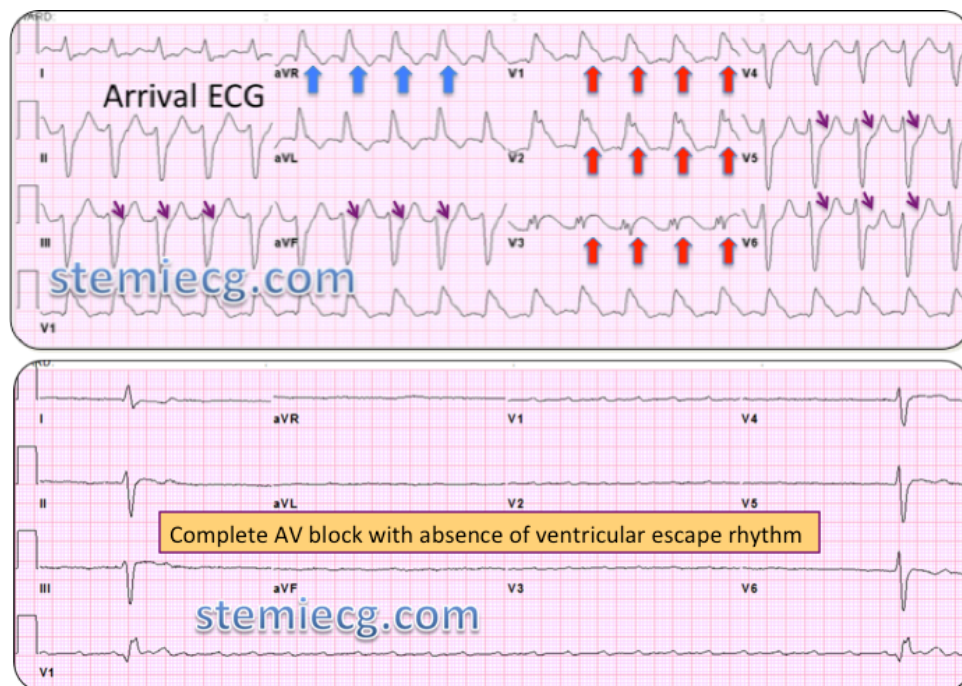
Case 11: Questions & Answers:

1. STEMI? Yes, with new or unknown onset RBBB and LAFB.
2. Territory? Anterior & septal walls
3. What is the Culprit Vessel? Proximal LAD

Findings that favor proximal LAD occlusion:

1. ST-segment elevation in V1-V3 (red arrows)
2. ST-segment elevation in aVL or aVR (blue arrows)
3. Concomitant ST-segment depression in the inferior leads (purple arrows)
4. ST-segment depression in V5 (purple arrows)
5. Disappearance of preexistent septal Q waves in lateral leads
6. New RBBB with a Q wave preceding the R wave (QRBBB) in lead V1 is a specific but insensitive marker

Beware with proximal LAD STEMI; since they may be more at risk of serious complications such as pump failure and rhythm abnormalities with the risk of complete AV block. This patient arrived with < 1-hour evolution of STEMI with cardiogenic shock and new onset RBBB & LAFB. In matters of minutes from his presentations the patient developed complete AV block and developed ventricular asystole.



Conduction abnormalities, including bundle-branch block or varying forms of heart block during acute myocardial infarction, may be associated with a poor prognosis.

The incidence of conduction abnormalities associated with AMI has diminished in the era of early revascularization therapy, but the mortality and morbidity associated with these abnormalities remain unchanged.

As opposed to inferior myocardial infarction, conduction disease associated with anterior myocardial infarction is not related to heightened vagal tone but instead to necrosis of the intramyocardial conduction system. This condition occurs almost exclusively in the presence of proximal occlusion of the LAD artery and septal necrosis. Complete heart block results from extensive necrosis of the ventricular septum. It usually occurs abruptly during the first 24 hours after myocardial infarction and is almost always preceded by the development of right bundle-branch block with right or left-axis deviation. The development of bifascicular block with anteroseptal infarction is associated with as much as 30% excess risk of complete heart block.

Indications for permanent pacing after myocardial infarction (MI) in patients experiencing AV block are related in large measure to the presence of intraventricular conduction defects. The criteria for patients with MI and AV block do not necessarily depend on the presence of symptoms. Furthermore, the requirement for temporary pacing in AMI does not by itself constitute an indication for permanent pacing. The long-term prognosis for survivors of AMI who have had AV block is related primarily to the extent of myocardial injury and the character of intraventricular conduction disturbances rather than the AV block itself.

Recommendations for Temporary Transvenous Pacing in Acute Myocardial Infarction*:

CLASS I

- 1. Asystole.**
- 2. Symptomatic bradycardia (includes sinus bradycardia with hypotension and type-I second-degree AV block with hypotension not responsive to atropine).**
- 3. Bilateral BBB (alternating BBB or RBBB with alternating LAFB or LPFB).**
- 4. New or indeterminate age bifascicular block (RBBB with LAFB or LPFB, or LBBB) with first-degree AV block.**
- 5. Mobitz type-II second-degree AV block.**

CLASS IIa

- 1. RBBB and LAFB or LPFB (new or indeterminate age).**
- 2. RBBB with first-degree AV block.**
- 3. LBBB, new or indeterminate age.**

4. Incessant VT, for atrial or ventricular overdrive pacing.
5. Recurrent sinus pauses (greater than 3 seconds) not responsive to atropine.

CLASS IIb

1. Bifascicular block of indeterminate age.
2. New or age-indeterminate isolated RBBB.

CLASS III

1. First-degree heart block.
2. Type I second-degree AV block with normal hemodynamics.
3. Accelerated idioventricular rhythm.
4. Bundle branch block or fascicular block.

It should be noted that in choosing an intravenous pacemaker system, patients with substantially depressed ventricular performance, including RV infarction, may respond better to AV sequential pacing than ventricular pacing.

Recommendations for Permanent Pacing After the Acute Phase of Myocardial Infarction**

CLASS I

1. Permanent ventricular pacing is indicated for persistent second-degree AV block in the His-Purkinje system with alternating bundle-branch block or third-degree AV block within or below the His-Purkinje system after ST-segment elevation MI. (*Level of Evidence: B*)
2. Permanent ventricular pacing is indicated for transient advanced second- or third-degree infranodal AV block and associated bundle-branch block. If the site of block is uncertain, an electrophysiological study may be necessary. (*Level of Evidence: B*)
3. Permanent ventricular pacing is indicated for persistent and symptomatic second- or third-degree AV block. (*Level of Evidence: C*)

CLASS IIb

1. Permanent ventricular pacing may be considered for persistent second- or third-degree AV block at the AV node level, even in the absence of symptoms. (*Level of Evidence: B*)

CLASS III

1. Permanent ventricular pacing is not indicated for transient AV block in the absence of intraventricular conduction defects. (*Level of Evidence: B*).

2. **Permanent ventricular pacing is not indicated for transient AV block in the presence of isolated left anterior fascicular block. (*Level of Evidence: B*).**
3. **Permanent ventricular pacing is not indicated for new bundle-branch block or fascicular block in the absence of AV block. (*Level of Evidence: B*).**
4. **Permanent ventricular pacing is not indicated for persistent asymptomatic first-degree AV block in the presence of bundle-branch or fascicular block. (*Level of Evidence: B*)**

* Ryan et al. ACC/AHA Guidelines for the Management of Patients With Acute Myocardial Infarction. JACC 1996; Vol. 28. Unchanged on future updates.

** Epstein et al. ACCF/AHA/HRS 2012 Focused Update to 2008 Guidelines for Device-Based Therapy of Cardiac Rhythm Abnormalities. JACC 2013; Vol. 61.

Zimetbaum et al. Use of the Electrocardiogram in Acute Myocardial Infarction. NEJM 2003; 348.

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