

ECG

Yazan Omar Alawneh

Dx	ECG Findings	Mx
Myocardial Infarction (MI)	Pathological Q, ST elevation (convex upwards unlike pericarditis), T wave biphasic then symmetrically inverted	M- Morphine O- Oxygen N- Nitrate A- Aspirin
Atrial Fibrillation (A.Fib)	P wave absent, replaced by f wave which may be: coarse, fine, absent irregular pulse, QRS narrow normal	Rate control: beta blocker Rhythm control: amiodarone
Atrial Flutter	Multiple P waves (saw teeth pattern – F waves), irregular	Rate control: beta blocker Rhythm control: amiodarone
Ventricular Tachycardia Ventricular Fibrillation	Regular tachycardia, QRS is wide and bizarre	DC Shock or Cardioversion
Supraventricular Tachycardia (SVT)	Junctional (nodal) tachycardia absent p wave, regular tachycardia	DC shock 6 mg IV adenosine if the pt is stable The Valsalva maneuver, carotid sinus massage, breath holding, and head immersion in cold water
Heart block (3 rd degree)	Regular P-P interval, Regular R-R interval, Lack of an apparent relationship between the P waves and QRS complexes, More P waves are present than QRS complexes	Pace-maker
LBBB/RBBB	RBBB: deep S wave in lead 1, V6, and tall R wave in V1, with wide QRS LBBB: deep S wave in V1, and tall R in lead 1, V6. with wide QRS	Might need a pace-maker

Dx	ECG Findings	Mx
Pericarditis	new diffused widespread ST-elevation or PR depression; new/worsening pericardial effusion	NSAID, Steroids
Hyperkalemia	Tall, peaked T waves, with widening of the QRS complex	IV Ca+2 Gluconate Insulin Albuterol Glucose
Wolff Parkinson White Syndrome (WPW)	delta wave, which is a slurred upstroke in the QRS complex that is associated with a short PR interval.	Radiofrequency catheter ablation Medical options include procainamide or quinidine.
Ventricular Bigeminy	Irregular pulse, broad and bizarre QRS, 2 strokes then pause, normal p wave	Calcium channel blockers (CCB) Amiodarone
Electrical Alterans (Cardiac Tamponade)	alternation of QRS complex amplitude or axis between beats and a possible wandering base-line	Pericardiocentesis

Myocardial Infarction “MI”

Dx	ECG Findings	Mx
Myocardial Infarction (MI)	Pathological Q, ST elevation (convex upwards unlike pericarditis), T wave biphasic then symmetrically inverted	M- Morphine O- Oxygen N- Nitrate A- Aspirin

“Name the wall & the artery affected”

I Lateral Circumflex Artery	aVR	V1 Septal Left Anterior Descending Artery	V4 Anterior Right Coronary Artery
II Inferior Right Coronary Artery	aVL Lateral Circumflex Artery	V2 Septal Left Anterior Descending Artery	V5 Lateral Circumflex Artery
III Inferior Right Coronary Artery	AVF Inferior Right Coronary Artery	V3 Anterior Right Coronary Artery	V6 Lateral Circumflex Artery

The 12-Lead ECG: Anatomic Locations and Supplying Coronary Arteries

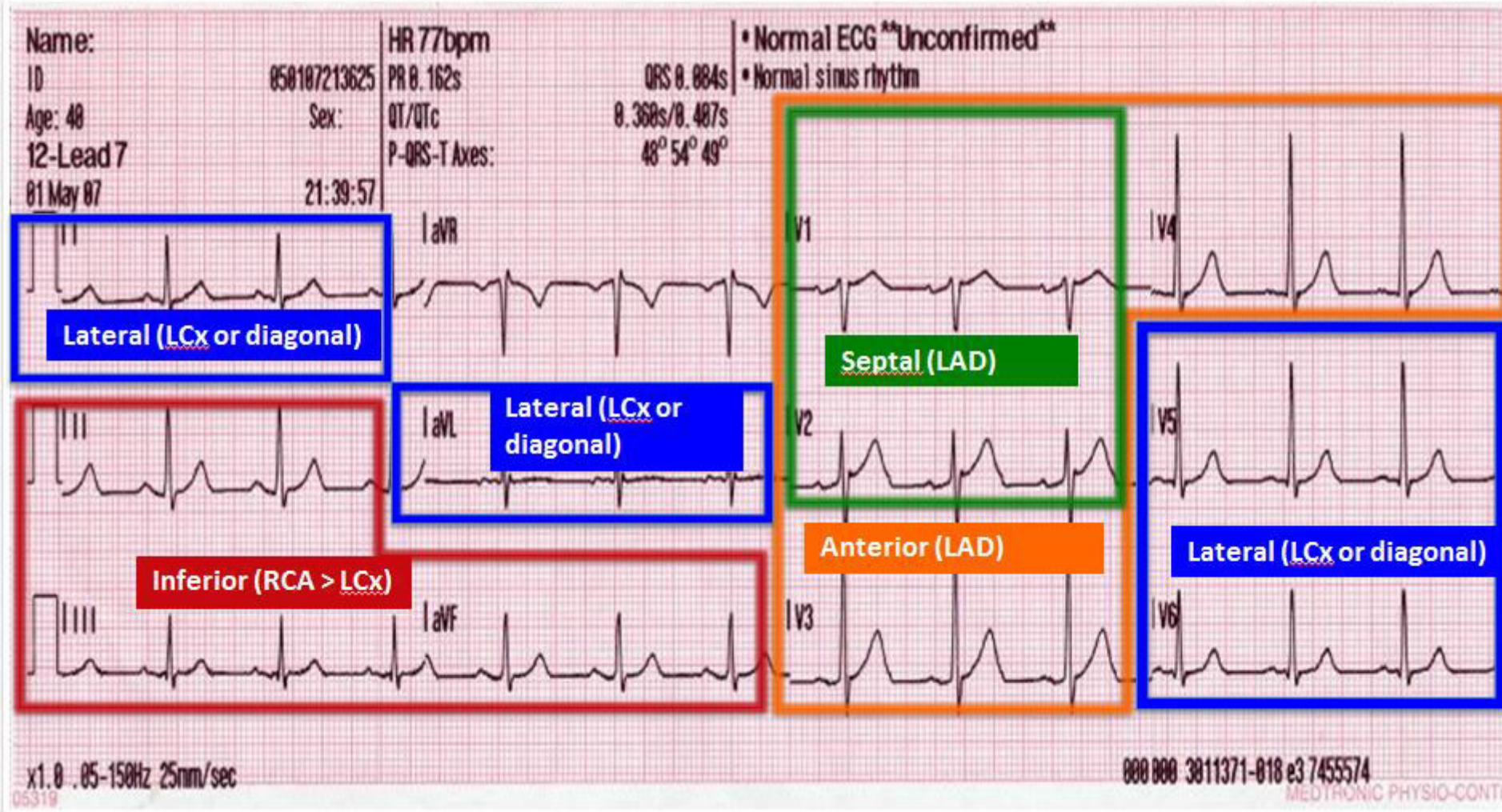
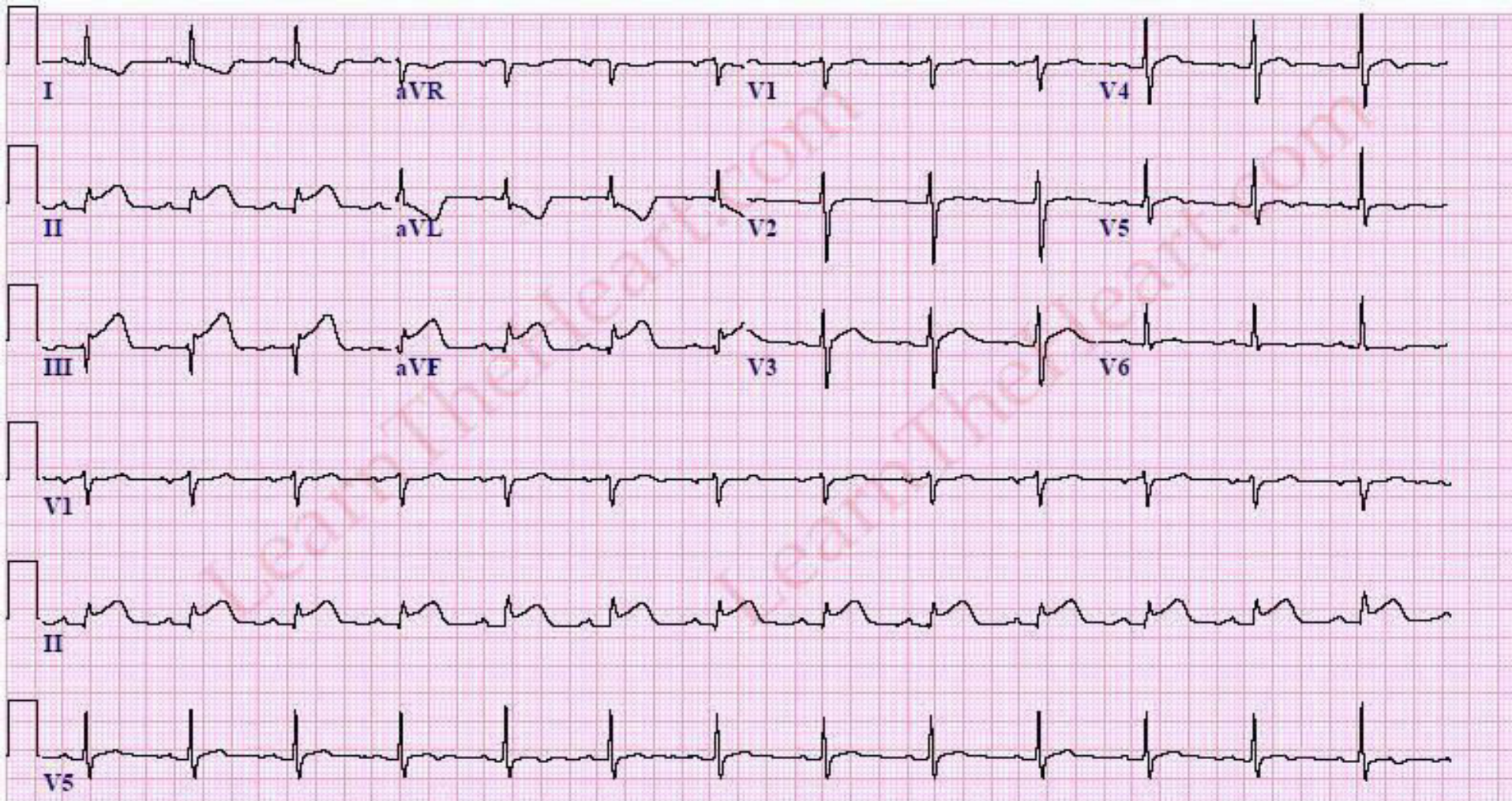


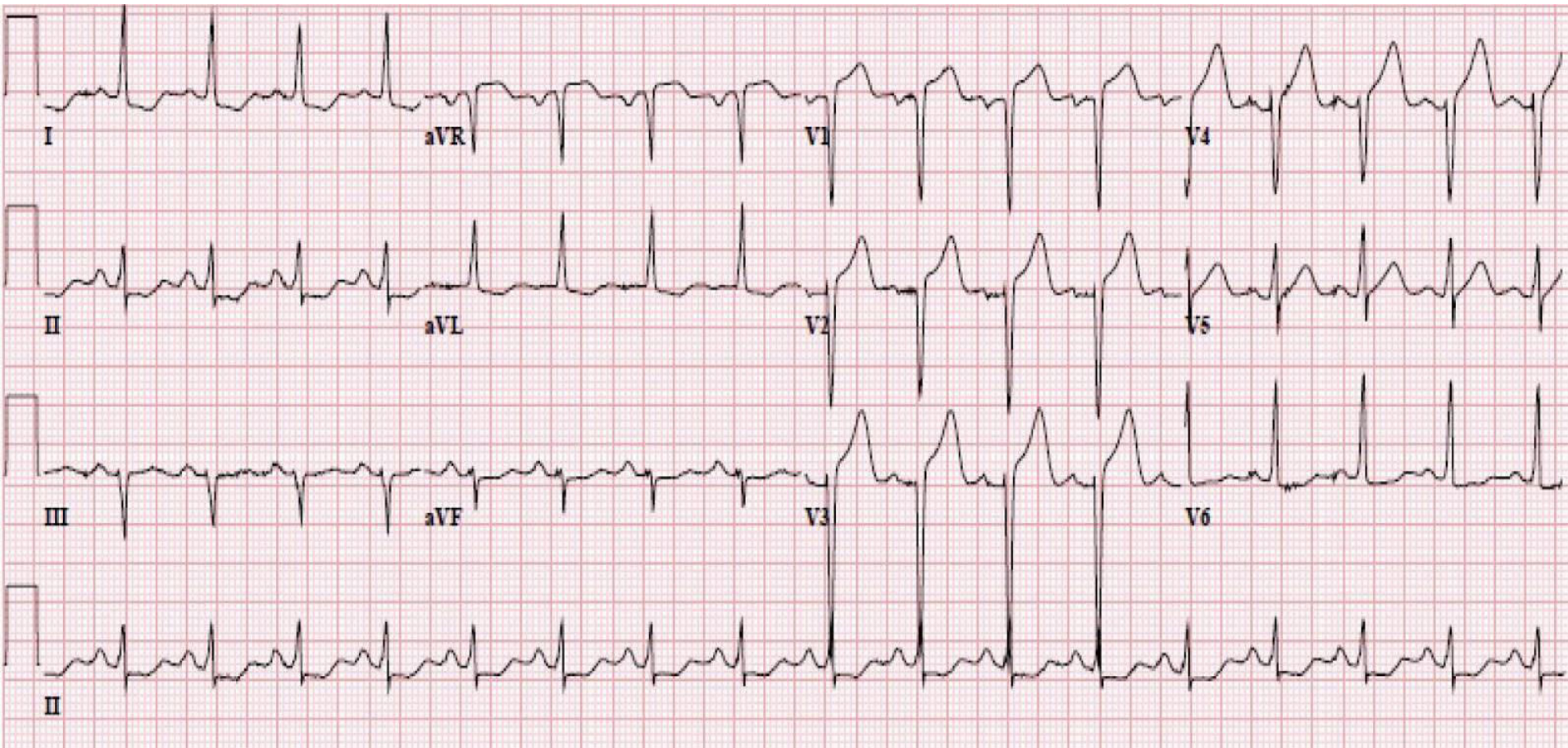
Image adapted by Sumaya Mekkaoui.

Original Image by Glen Larson. Own work, Public Domain, <https://commons.wikimedia.org/w/index.php?curid=2599842>

Inferior wall MI, Artery affected RCA (ST-elevation in lead II,III,aVF)

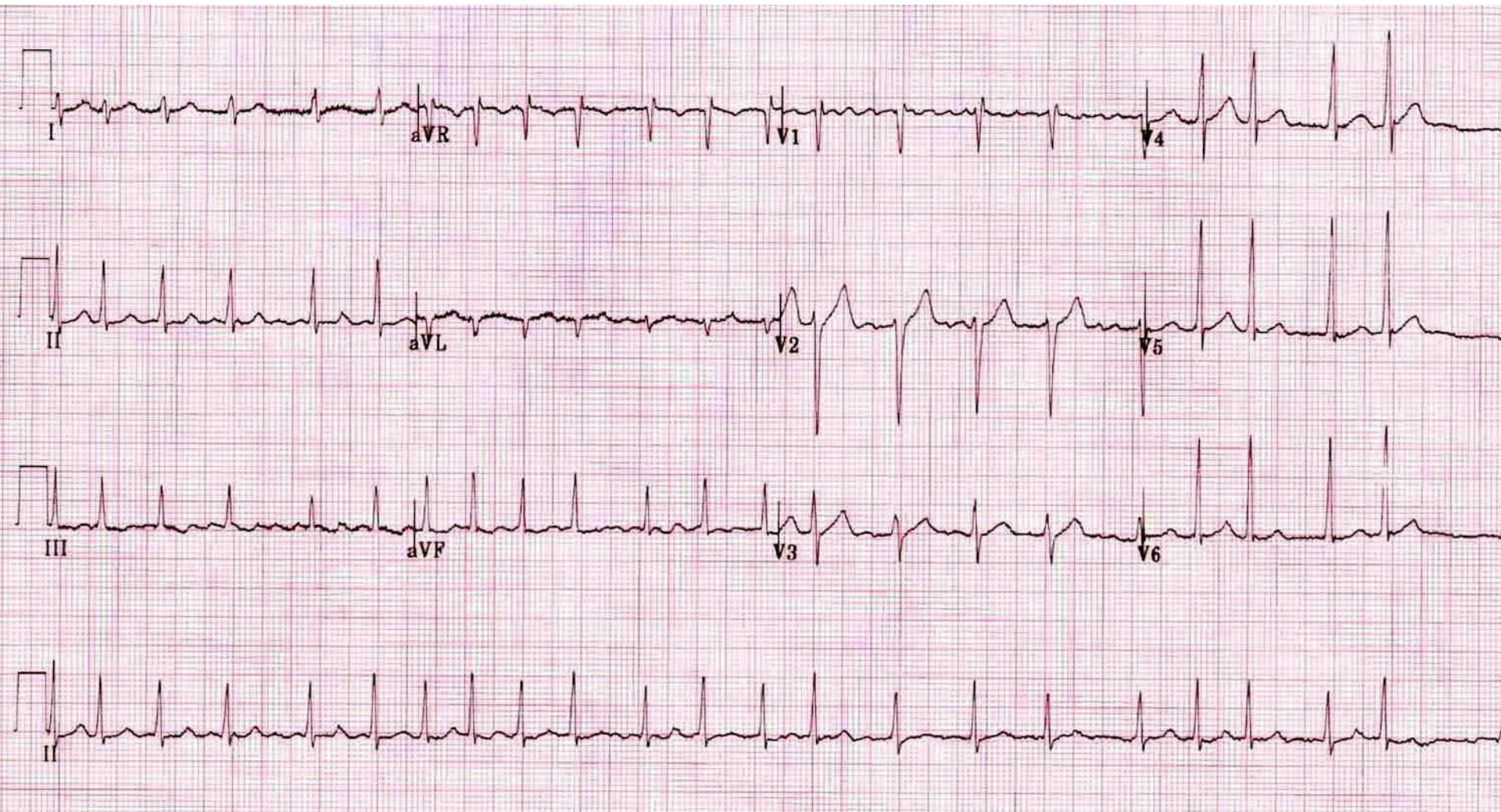


Antero-septal wall MI, Artery affected LAD (ST-elevation in lead V1,2,3,4)



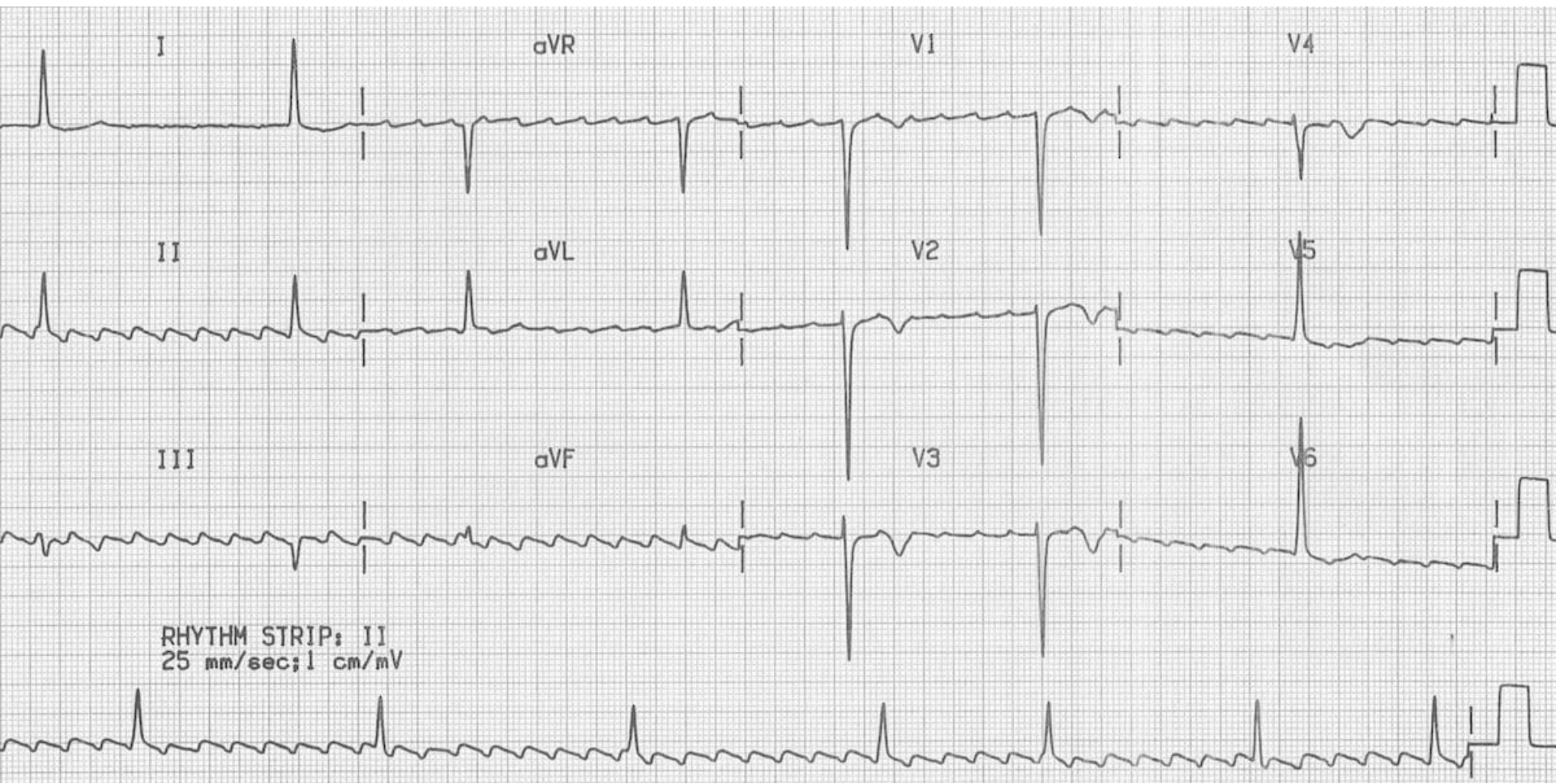
Atrial Fibrillation

Dx	ECG Findings	Mx
Atrial Fibrillation (A.Fib)	P wave absent, replaced by f wave which may be: coarse, fine, absent irregular pulse, QRS narrow normal	Rate control: beta blocker Rhythm control: amiodarone



Atrial Flutter

Dx	ECG Findings	Mx
Atrial Flutter	Multiple P waves (saw teeth pattern – F waves), irregular	Rate control: beta blocker Rhythm control: amiodarone



Ventricular Tachycardia

Dx	ECG Findings	Mx
Ventricular Tachycardia Ventricular Fibrillation	Regular tachycardia, QRS is wide and bizarre	DC Shock or Cardioversion



Ventricular Fibrillation

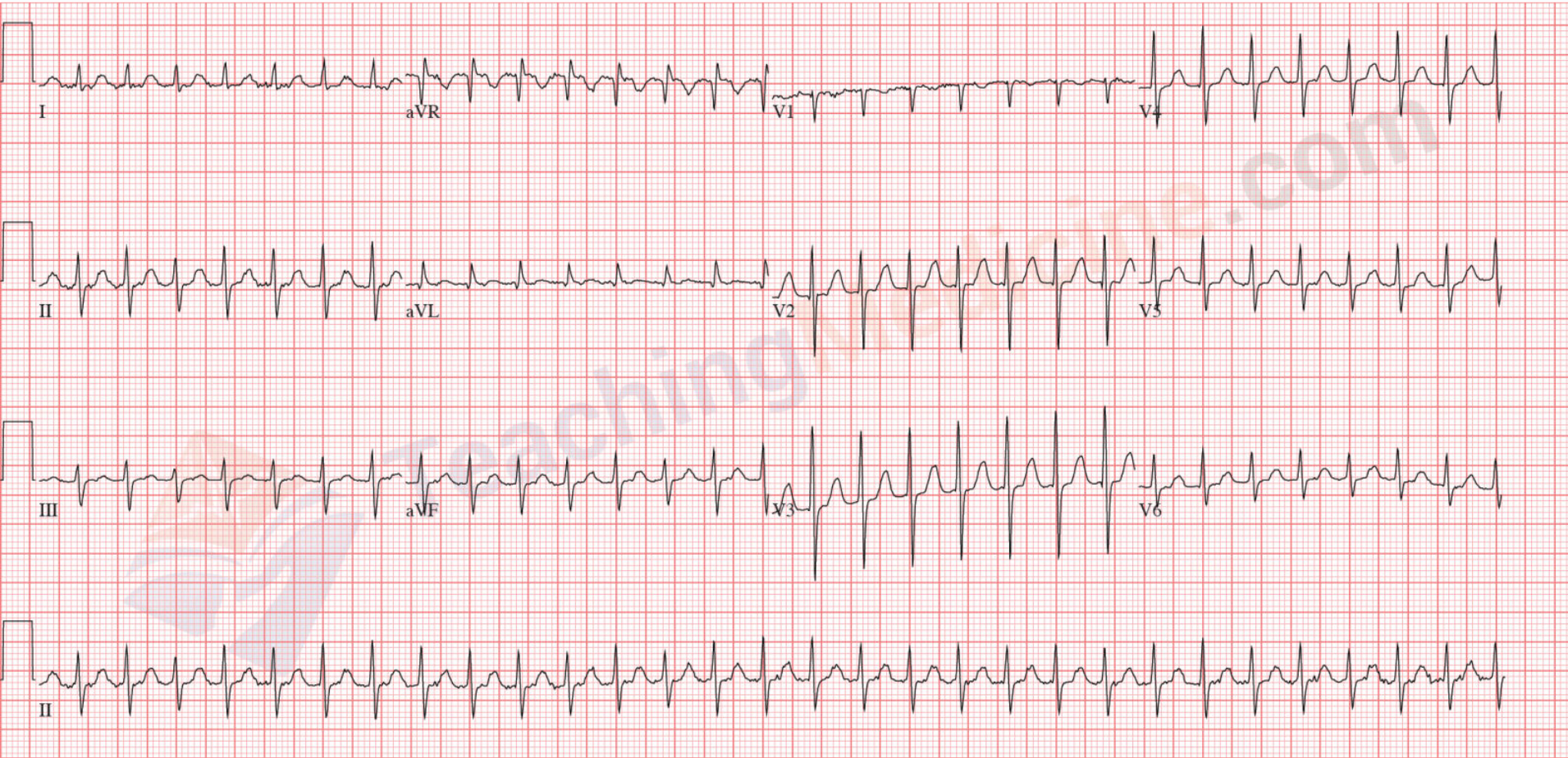
Dx	ECG Findings	Mx
Ventricular Tachycardia Ventricular Fibrillation	Regular tachycardia, QRS is wide and bizarre	DC Shock or Cardioversion

Courtesy of Jason E. Roodiger, CCT, CRAT



Supra-ventricular Tachycardia SVT

Dx	ECG Findings	Mx
Supraventricular Tachycardia (SVT)	Junctional (nodal) tachycardia absent p wave, regular tachycardia	DC shock 6 mg IV adenosine if the pt is stable The Valsalva maneuver, carotid sinus massage, breath holding, and head immersion in cold water



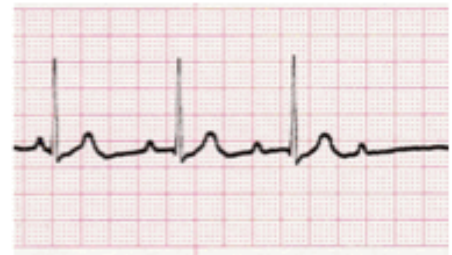
Heart Blocks

Constant P-R interval

Variable P-R Interval

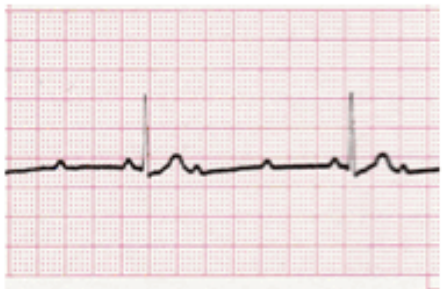
First Degree Heart Block

Second Degree Heart Block Type I



Second Degree Heart Block Type II

Third Degree Heart Block



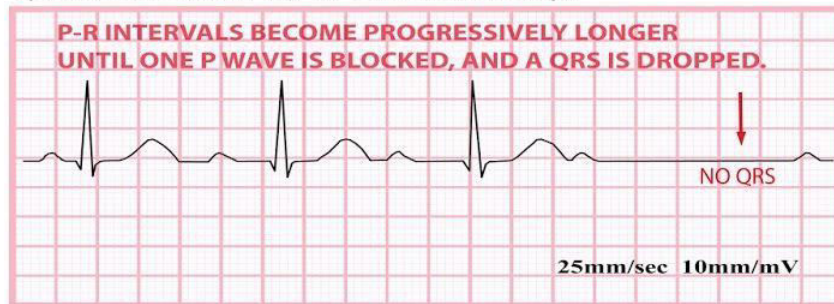
ECG Basics - Heart Blocks

First Degree AV Block



Rhythm:	Regular
PR interval:	Prolonged >0.20 sec
P Wave:	Normal
QRS:	<0.11 sec

Second Degree AV Block - Type 1 (aka Mobitz 1, Wenckebach):



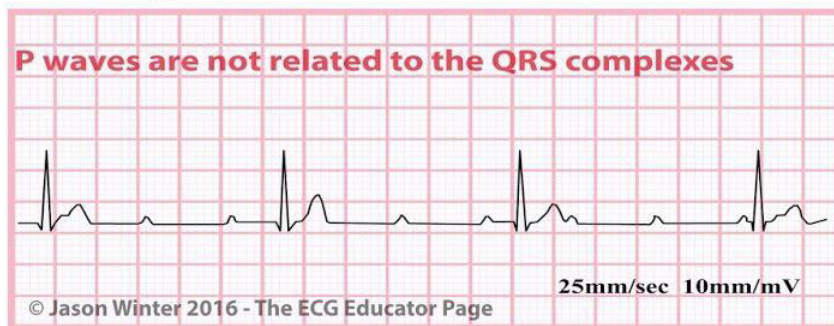
Rhythm:	Increasingly Prolonged
PR interval:	Irregular
P Wave:	Normal
QRS:	<0.11

Second Degree AV Block - Mobitz Type 2



Rhythm:	Irregular
PR interval:	Normal (more P waves than QRS)
P Wave:	Normal
QRS:	Usually wide >0.10

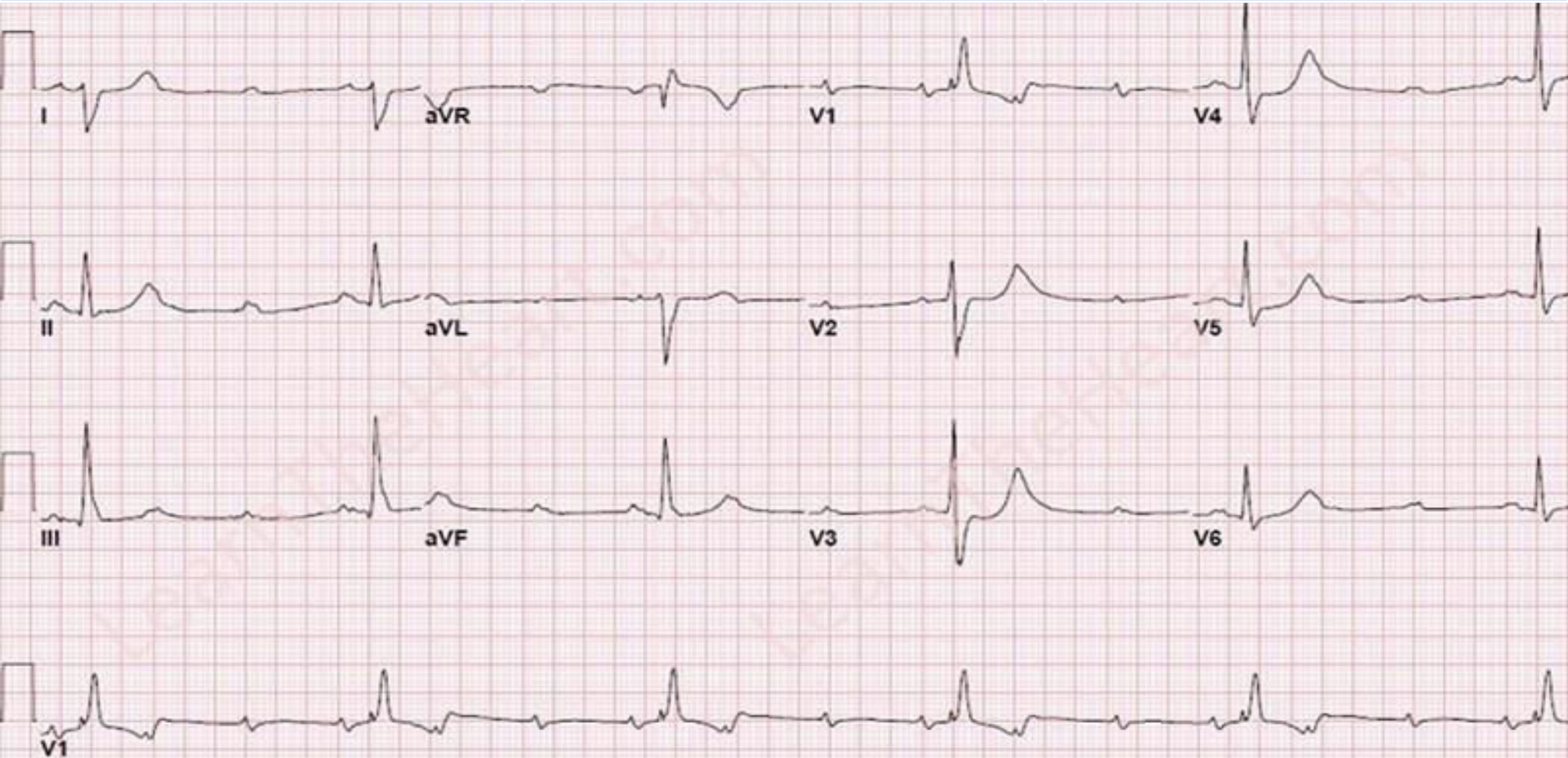
3rd Degree AV Block



Rhythm:	Regular
PR interval:	None
P Wave:	Normal does not relate to QRS
QRS:	Normal or wide

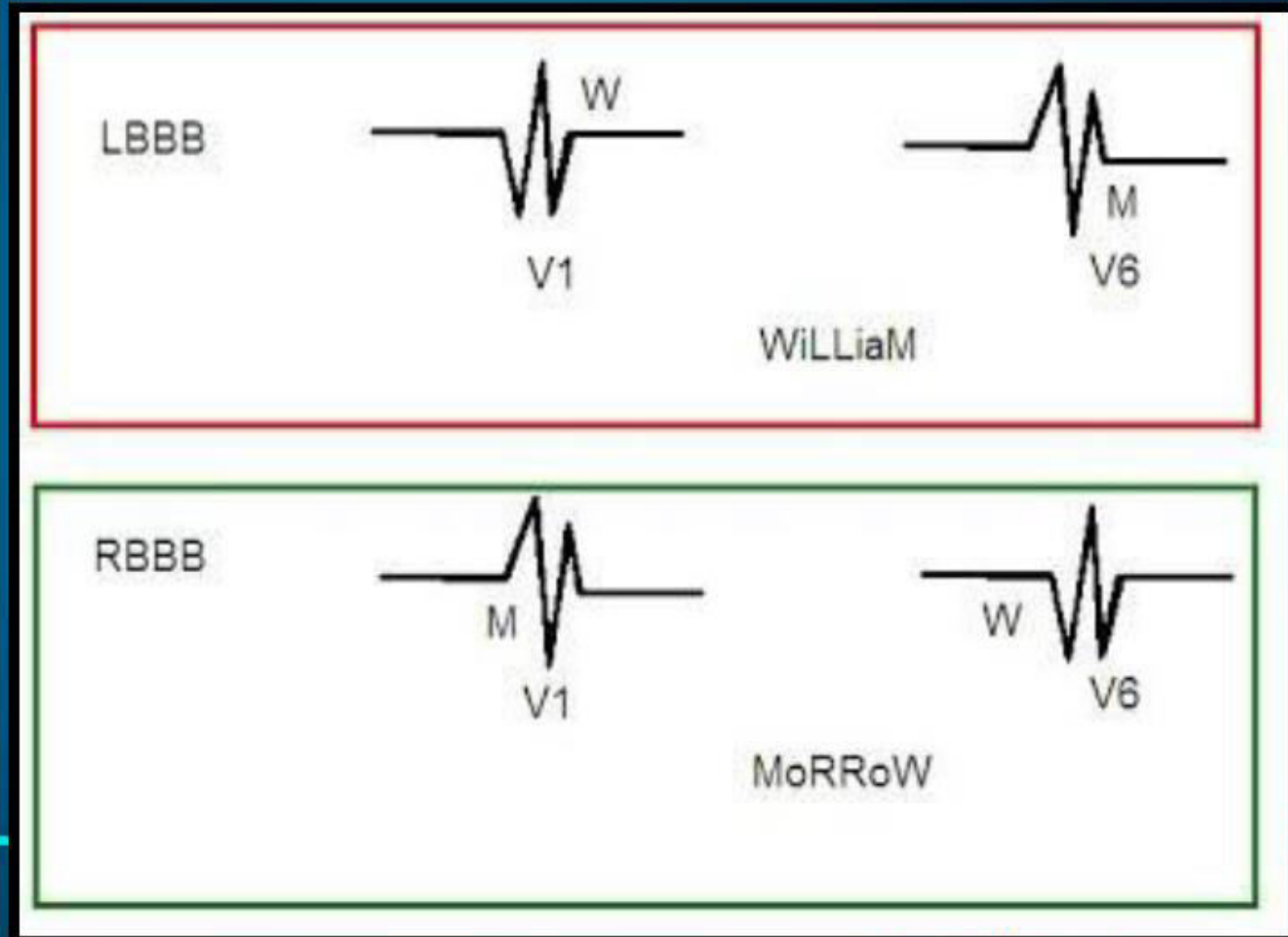
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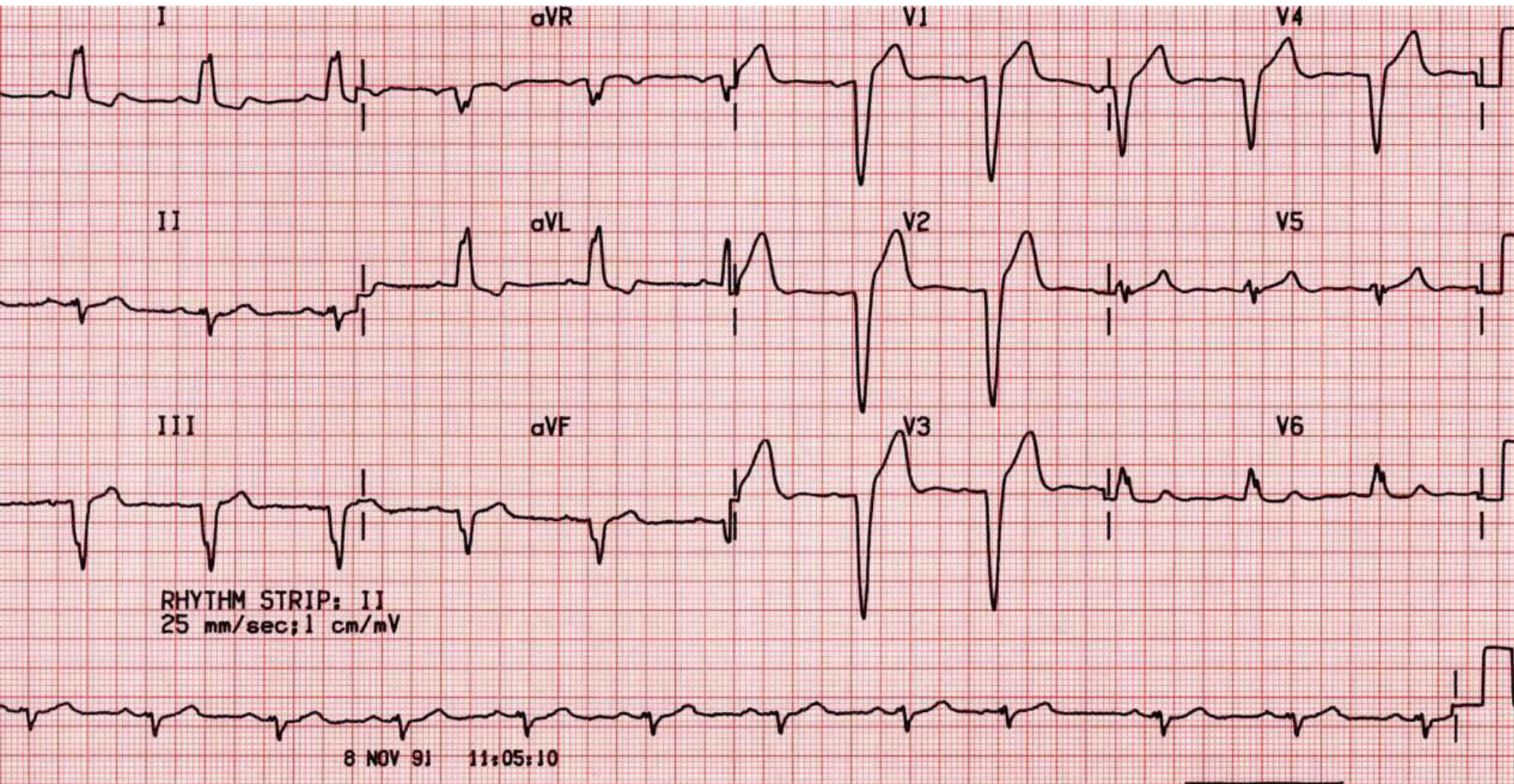
e. Bundle branch Block: Right and Left

WILLIAM
MORROW



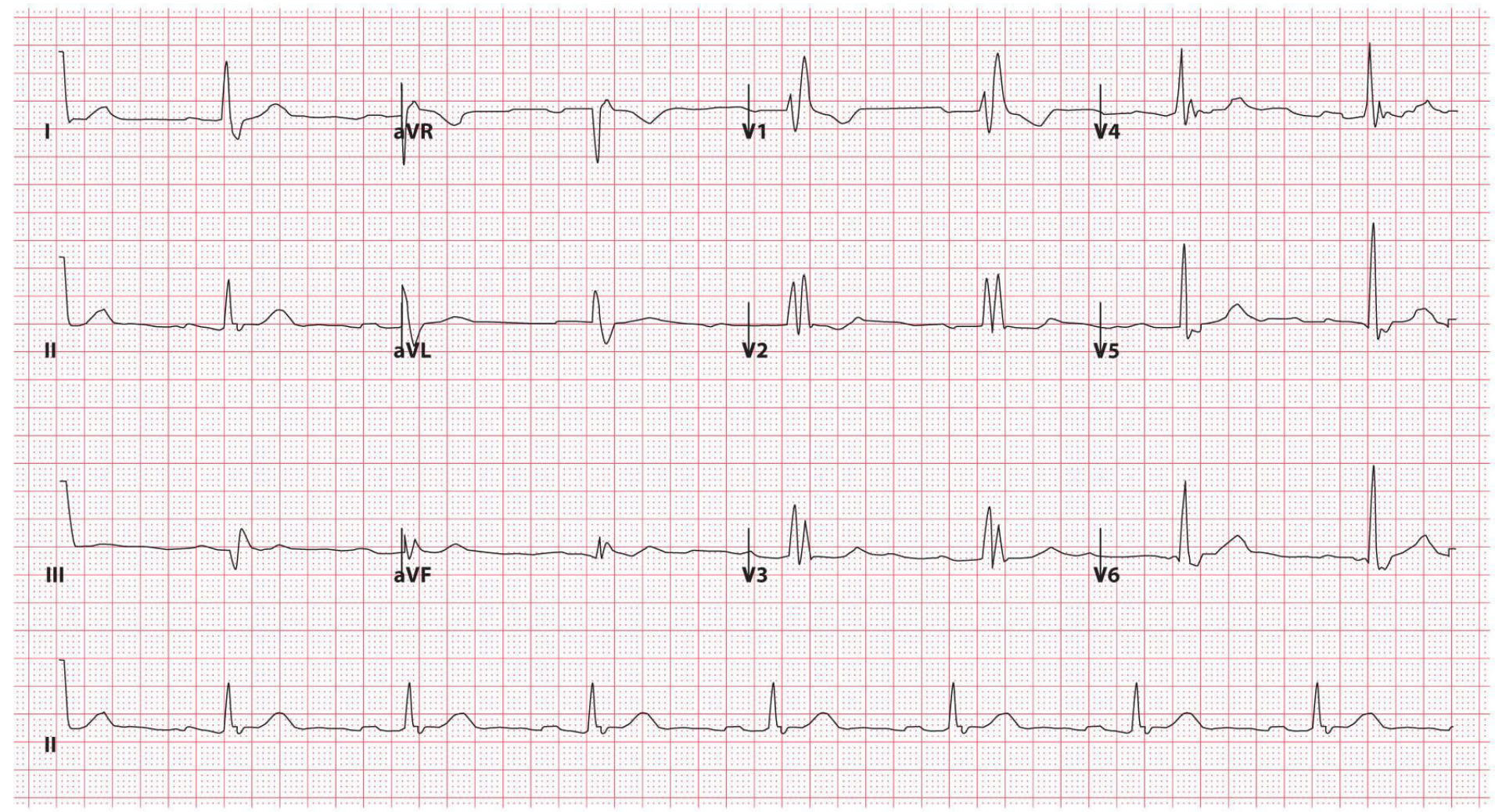
LBBB

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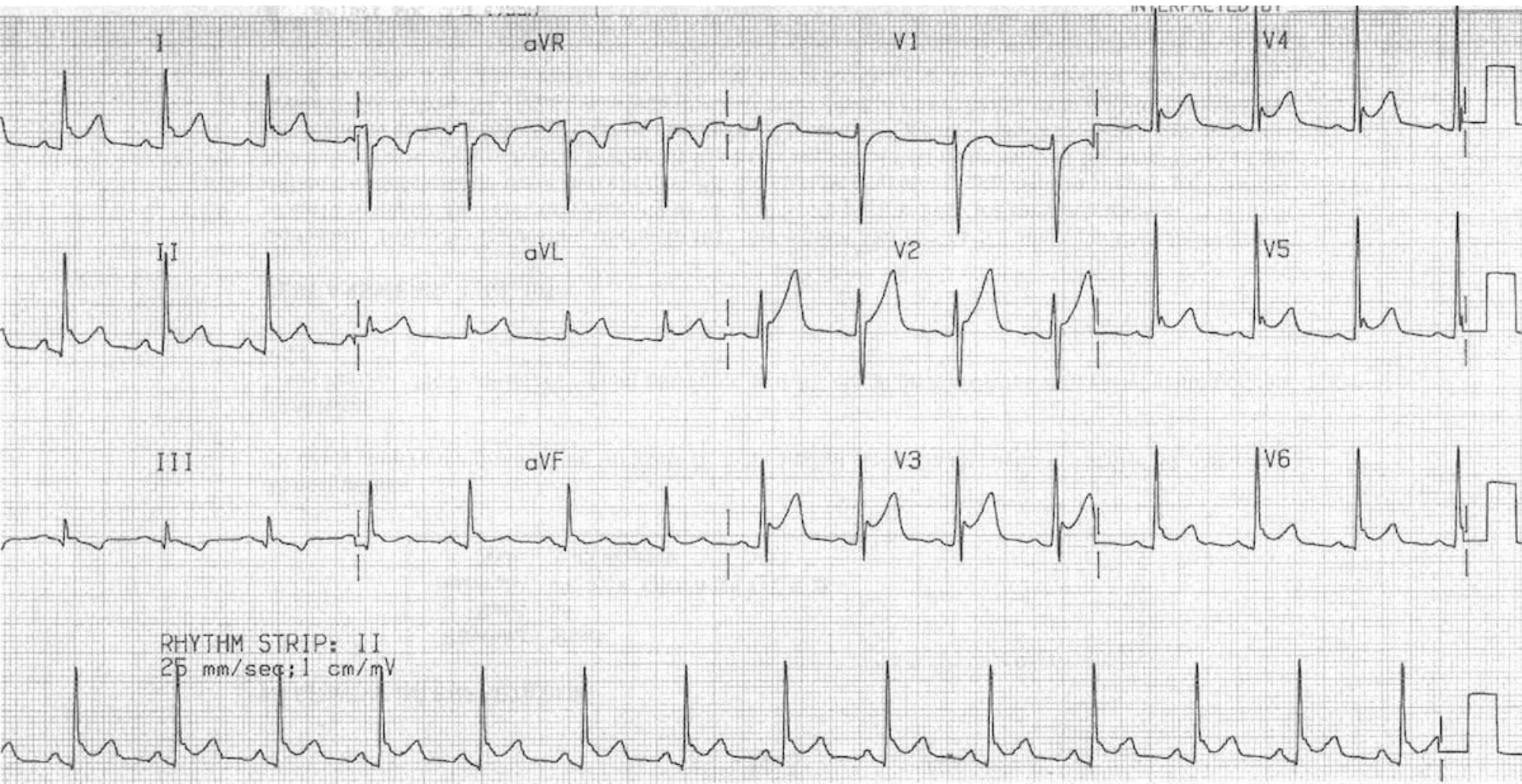
RBBB

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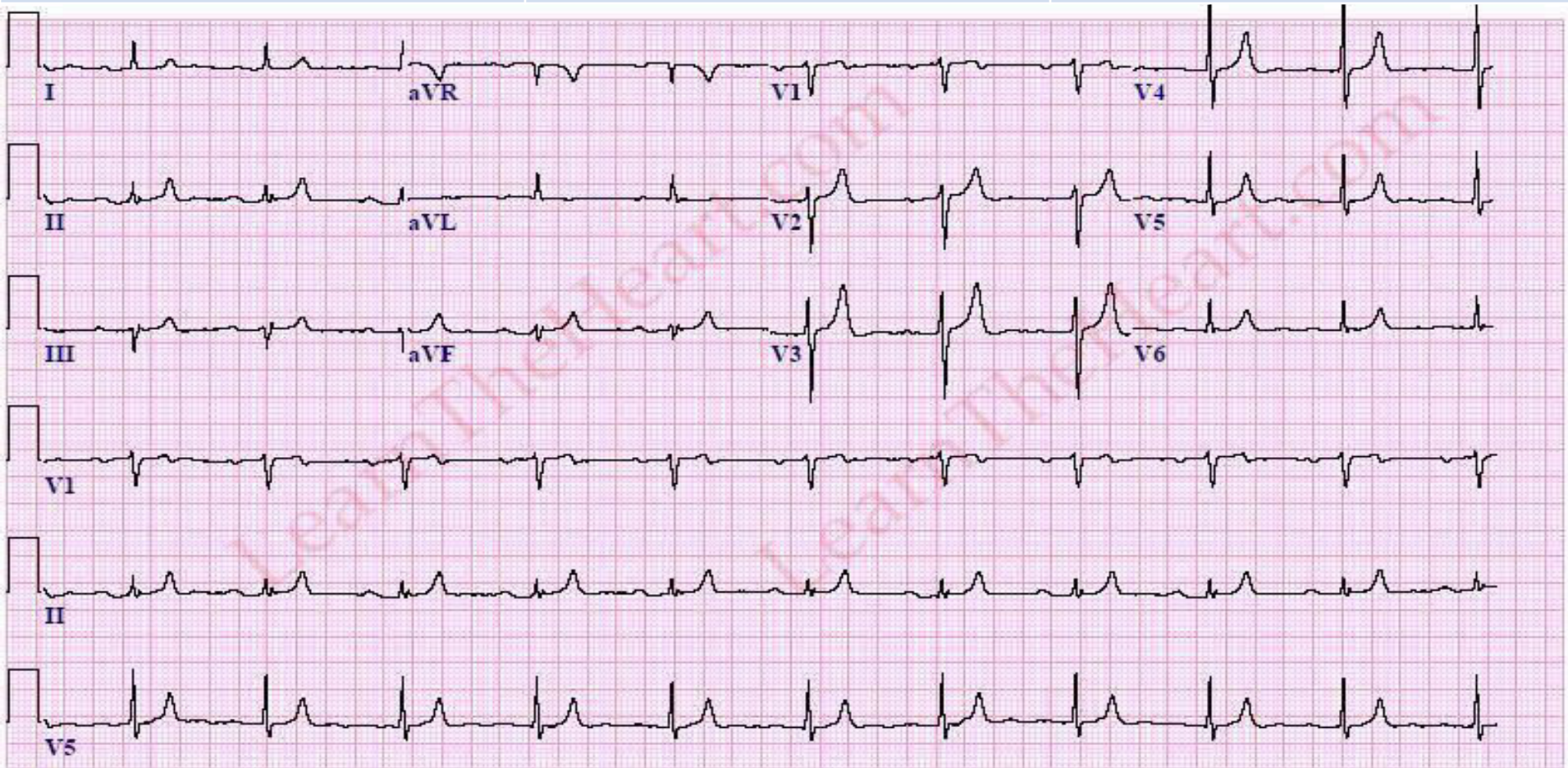
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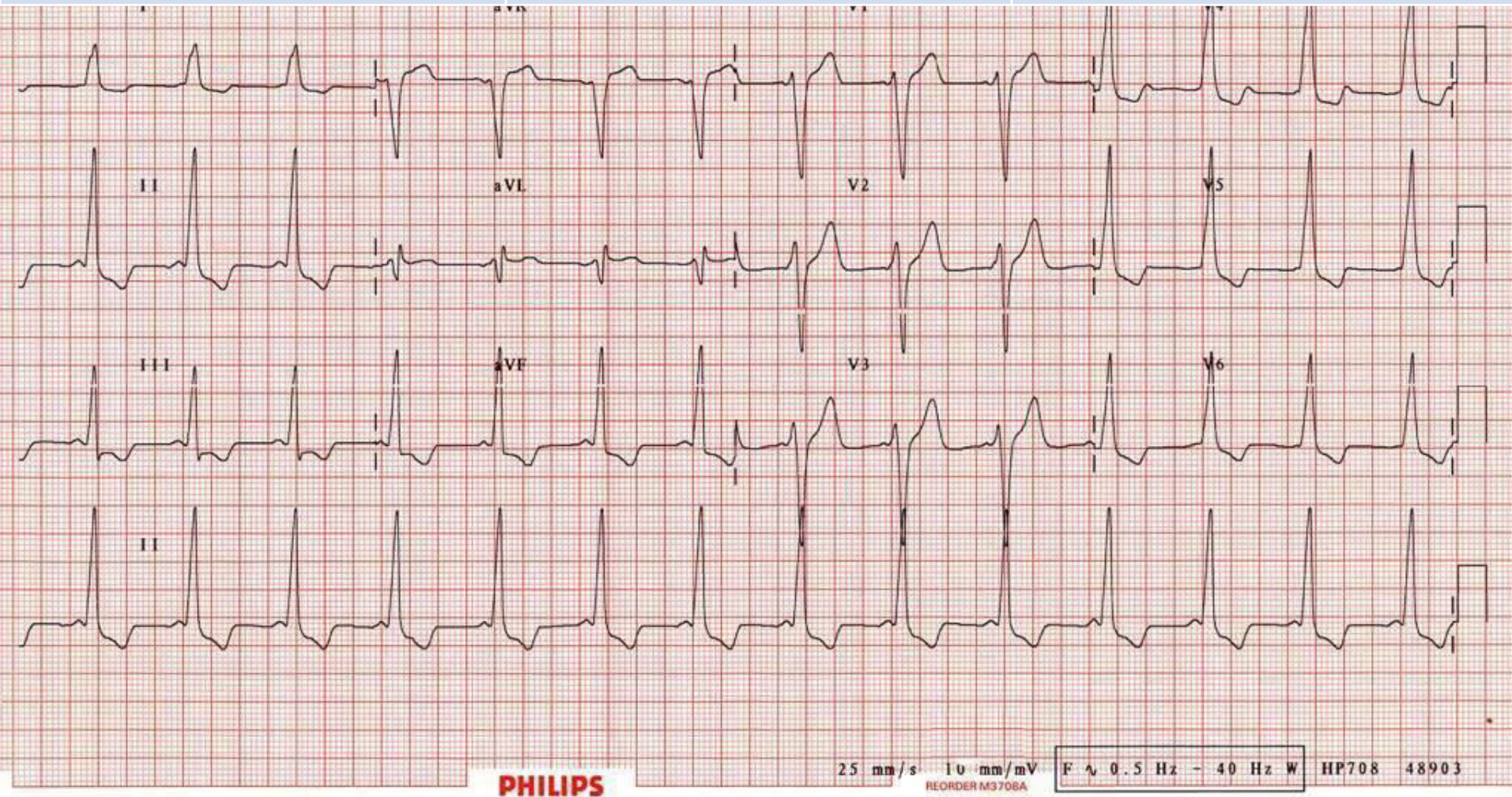
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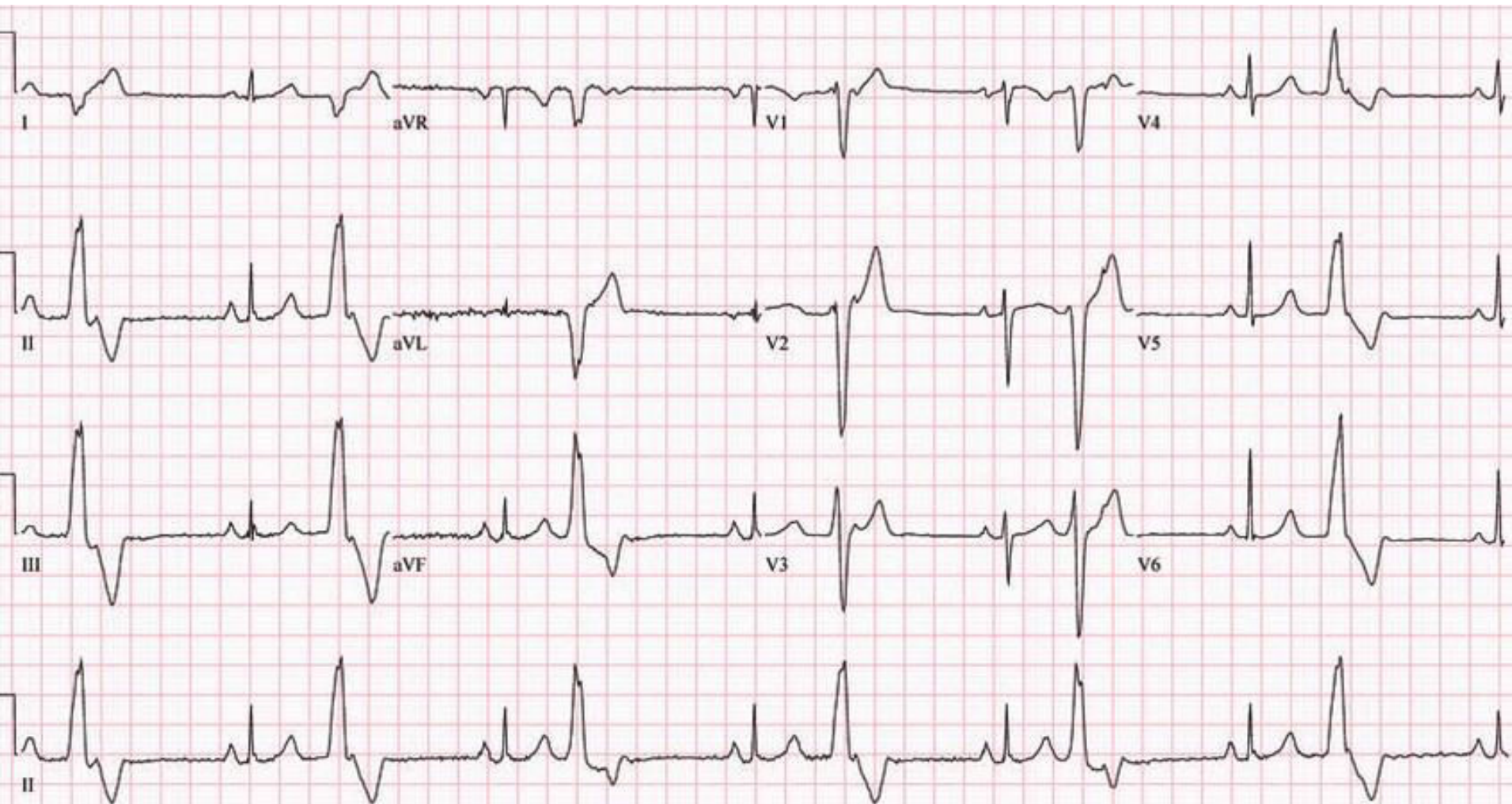
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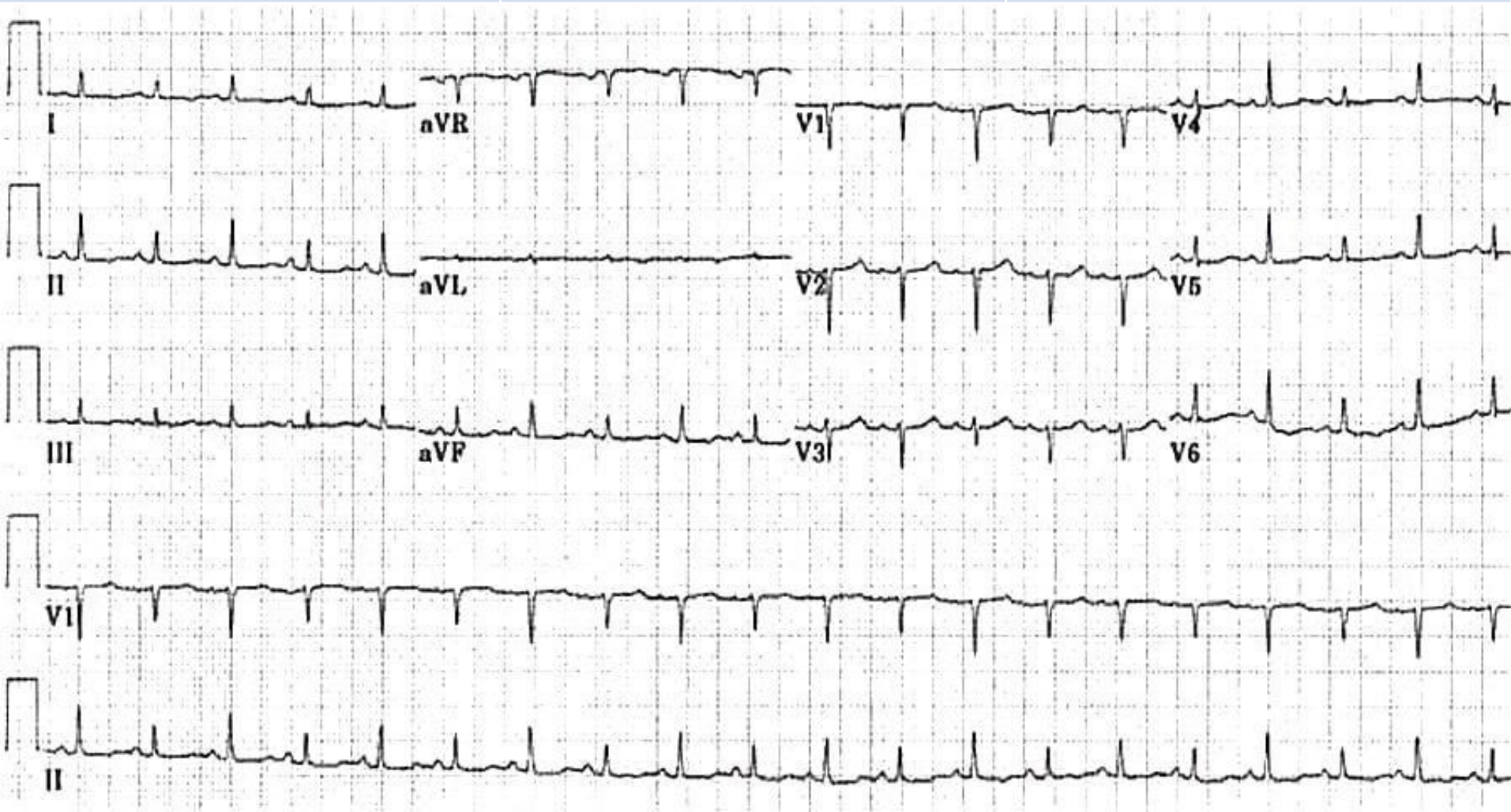
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Best of luck!