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FACULTY OF NURSING SCIENCES

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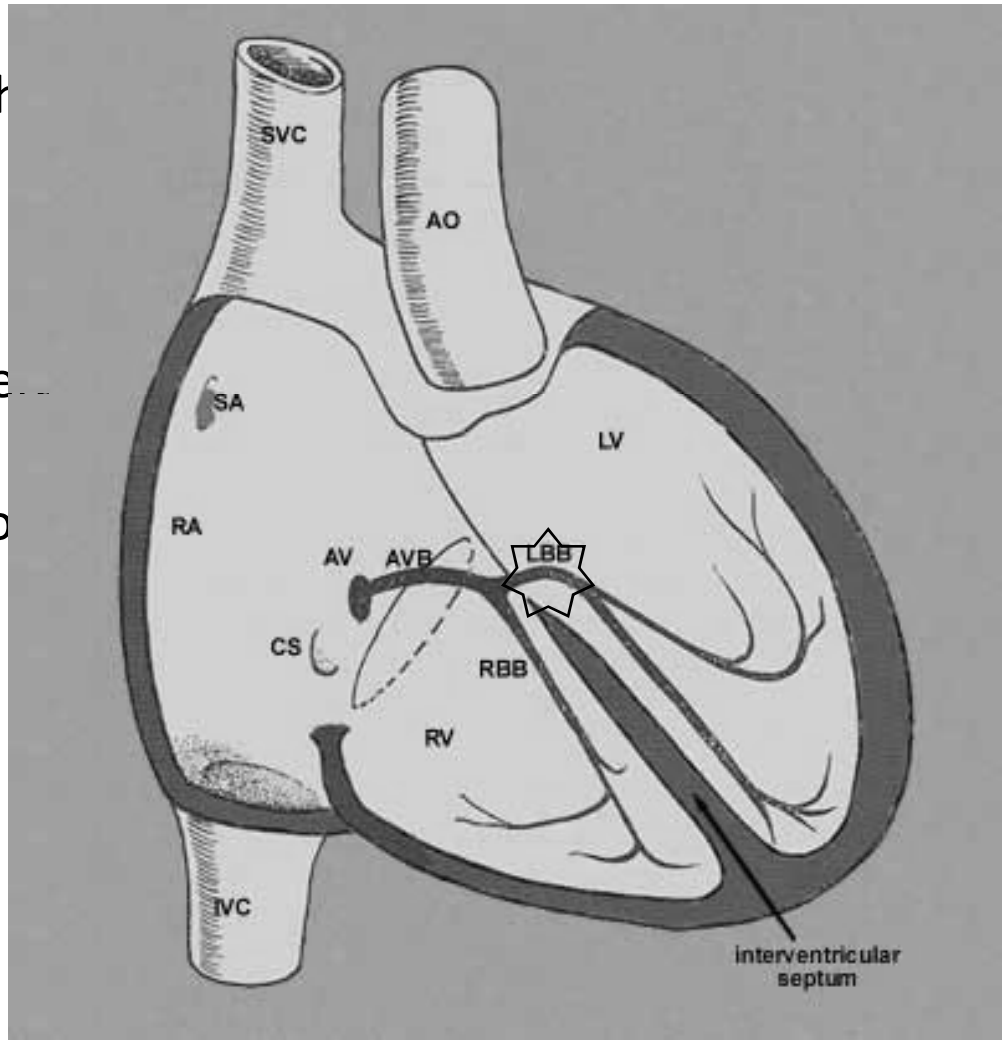
# Ventricular Conduction Disorders.

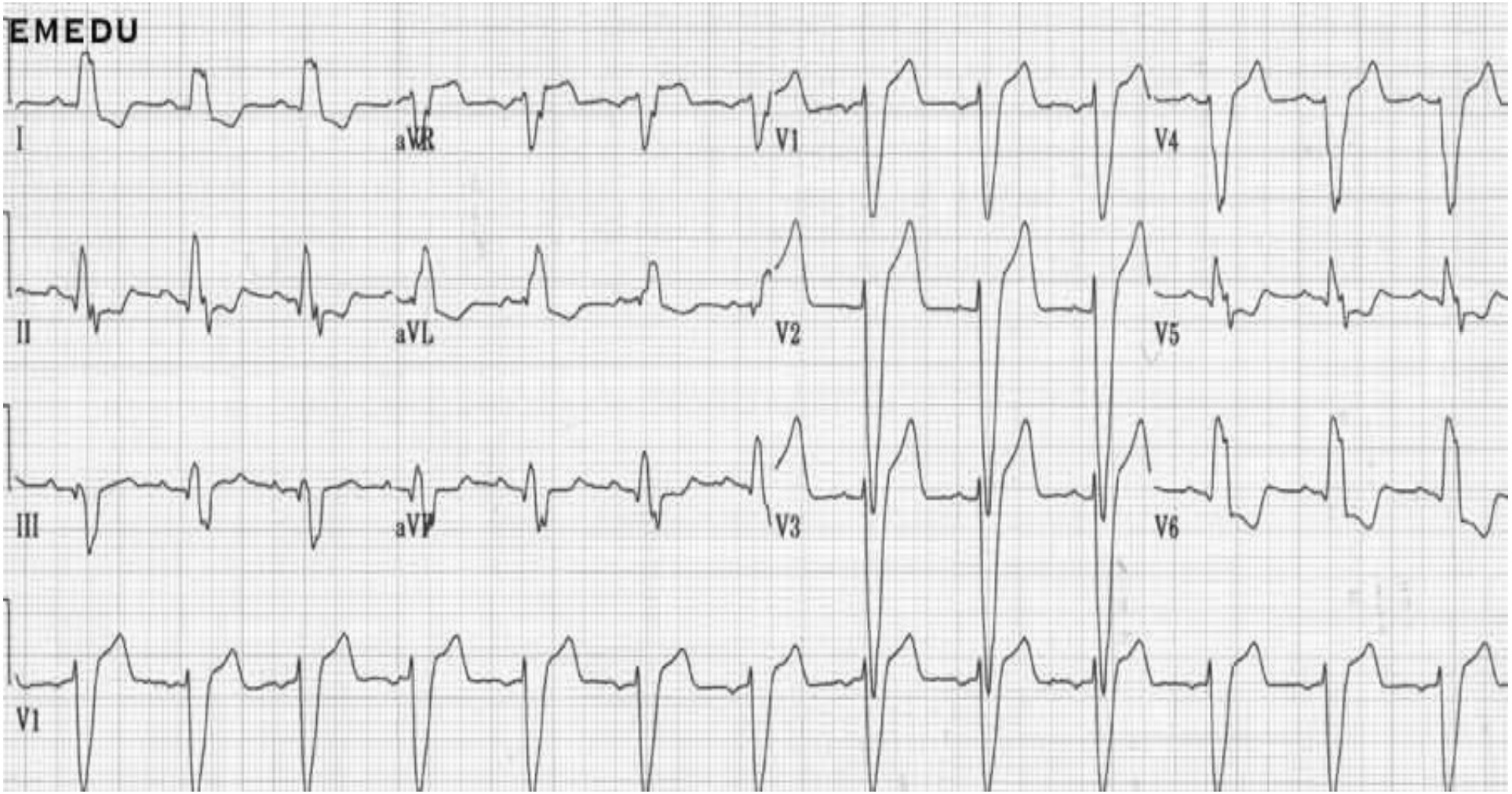
- Left Bundle Branch Block.
- Right Bundle Branch Block.
- Other related blocks.

# Left Bundle Branch Block.

- Block of the left bundle or both fasicles of the left bundle.
- Electrical potential must travel down RBB.
- De-polarisation from right to le… via cell transmission.
- Cell transmission longer due to … LV mass.



# Left Bundle Branch Block (LBBB).



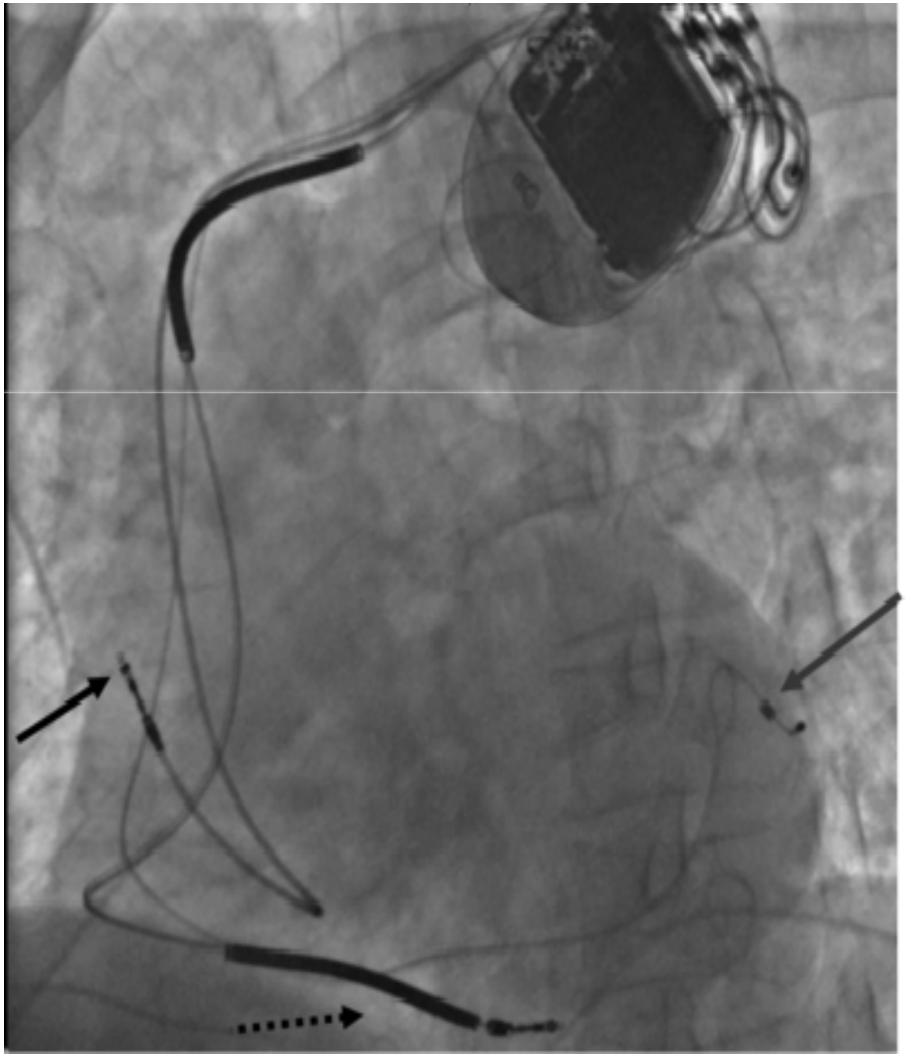
# ECG Criteria for LBBB.

- QRS Duration >0.12secs.
- Broad, mono-morphic R wave leads I and V6.
- Broad mono-morphic S waves in V1 (can also have small 'r' wave).

# LBBB consequence.

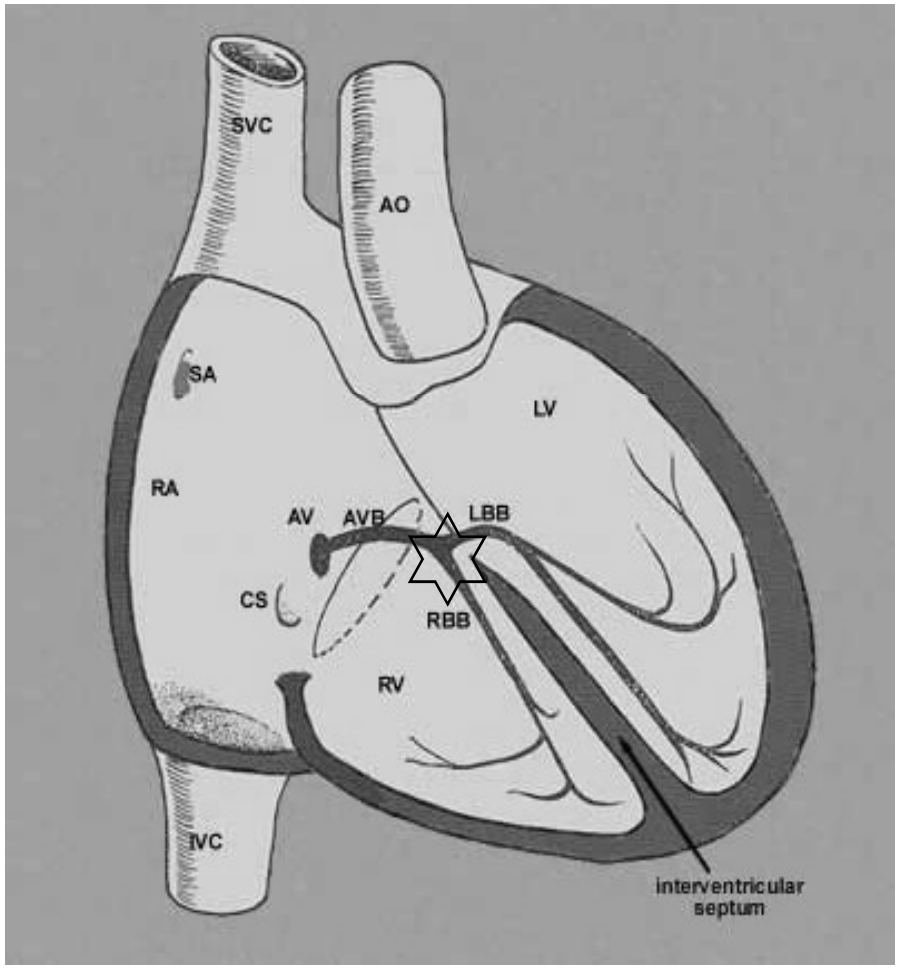
- Mostly abnormal ECG finding - indicates heart disease.
  - Coronary artery disease (indication for thrombolysis - if associated with chest pain and raised Troponin).
  - Valvular heart disease.
  - Hypertension.
  - Cardiomegaly.
  - Heart failure.
  - Impacts on prognosis - QRS duration.
  - Use of Bi-Ventricular Pacemakers.

# Extra note on BVP.



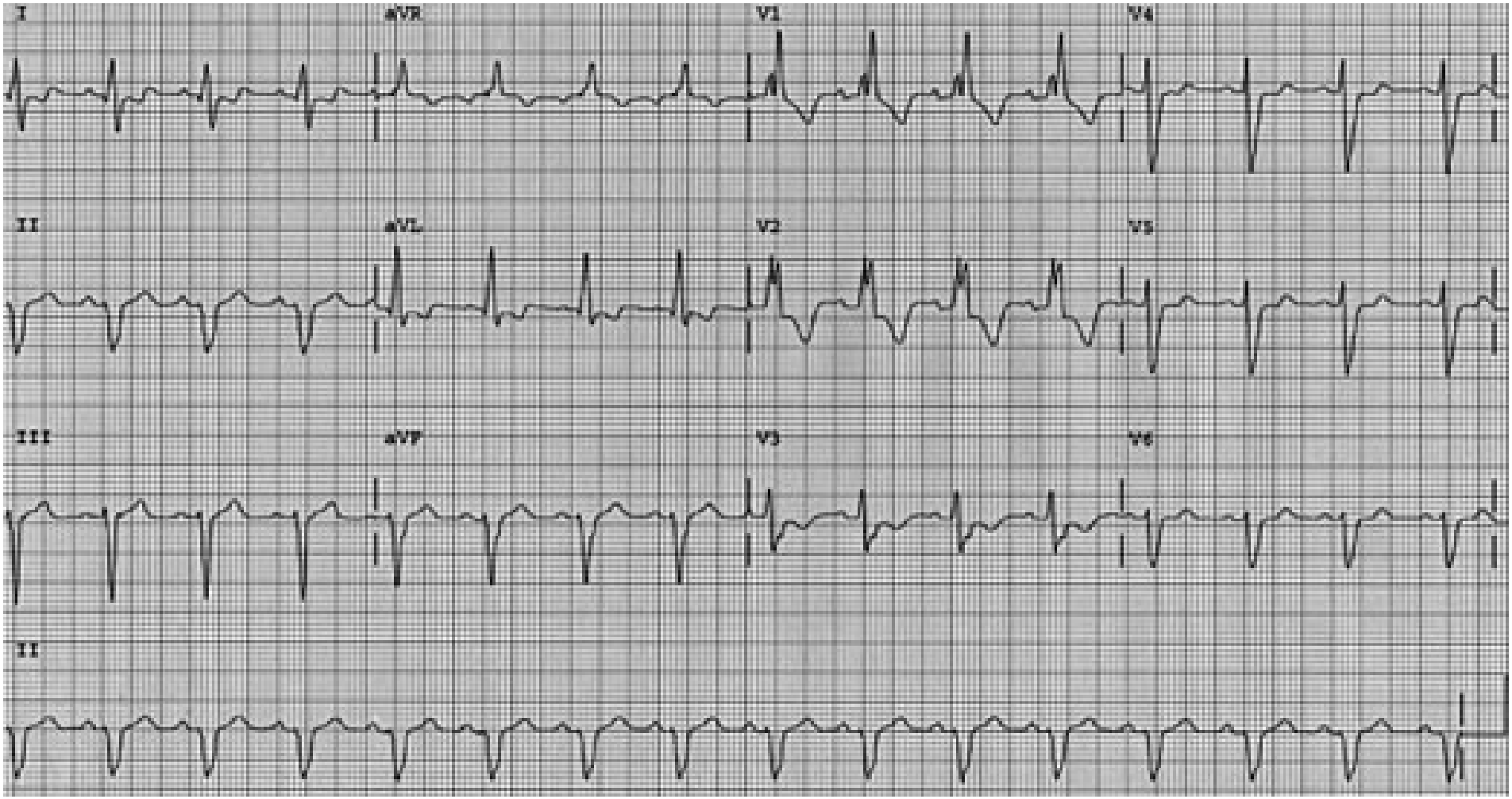
- Red arrow - coronary sinus lead.
- Black arrow - right atrium.
- Dotted arrow - right ventricle.
- Synchronise ventricular contraction.
- Only works in selected patients (echocardiography role).
- Often also defibrillators (note thick RV wire).

# Right Bundle Branch Block.



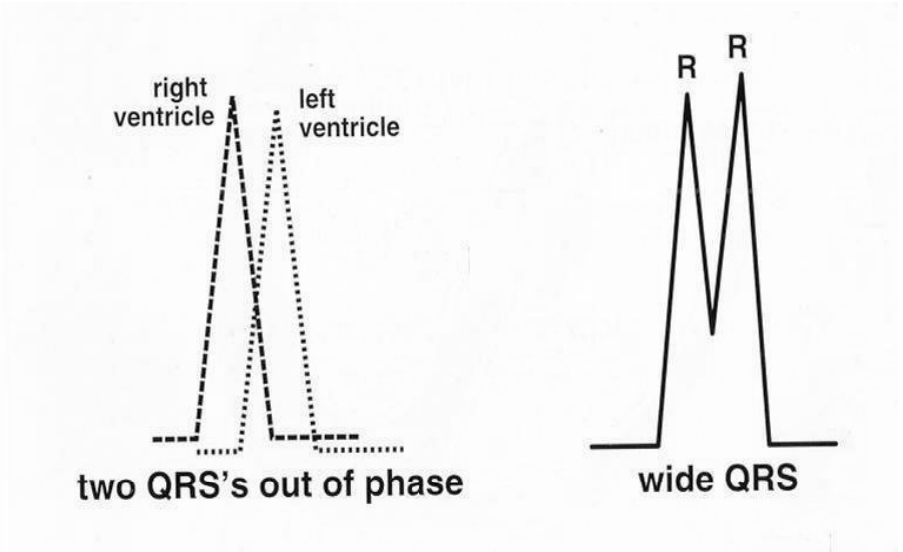

- Impulse transmitted normally by left bundle.
- Blocked right bundle results in cell depolarisation to spread impulse (slower).
- Impulse to IV septum and RV delayed.
- Results in an additional vector.

# Right Bundle Branch Block (RBBB).



# ECG Criteria RBBB.

- QRS duration >0.12 secs.
- Slurred 'S' wave in leads I and V6.
- RSR' pattern in V1 - bunny ears!!




# Additional Info RBBB.

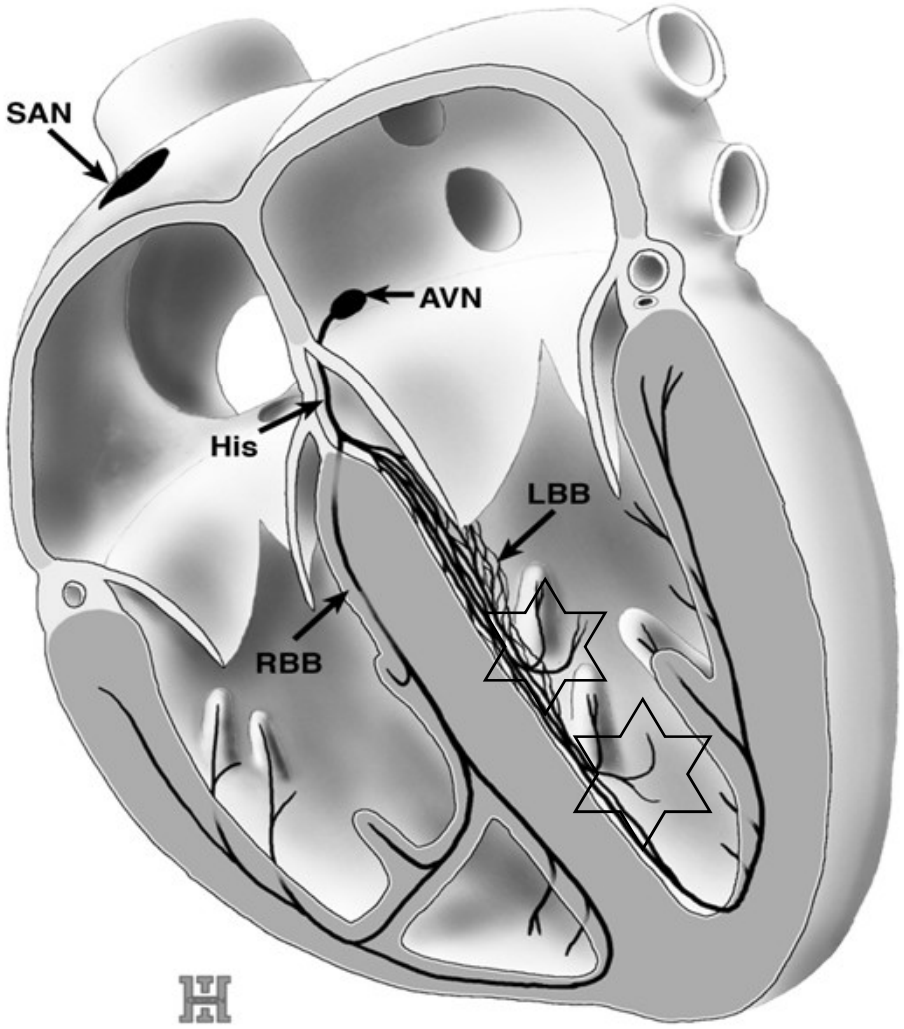
- Can be normal.
- Sometimes related to asthma or other airway conditions.
- Possibly due to RVH in young individuals.
- Usually due to CAD in older persons.
- Often related to congenital heart disease (particularly ASD).
- Often apparent following cardiac surgery.

# IT'S NEVER THAT EASY!!!

Welcome to Hemi-blocks / Fascicular Blocks.

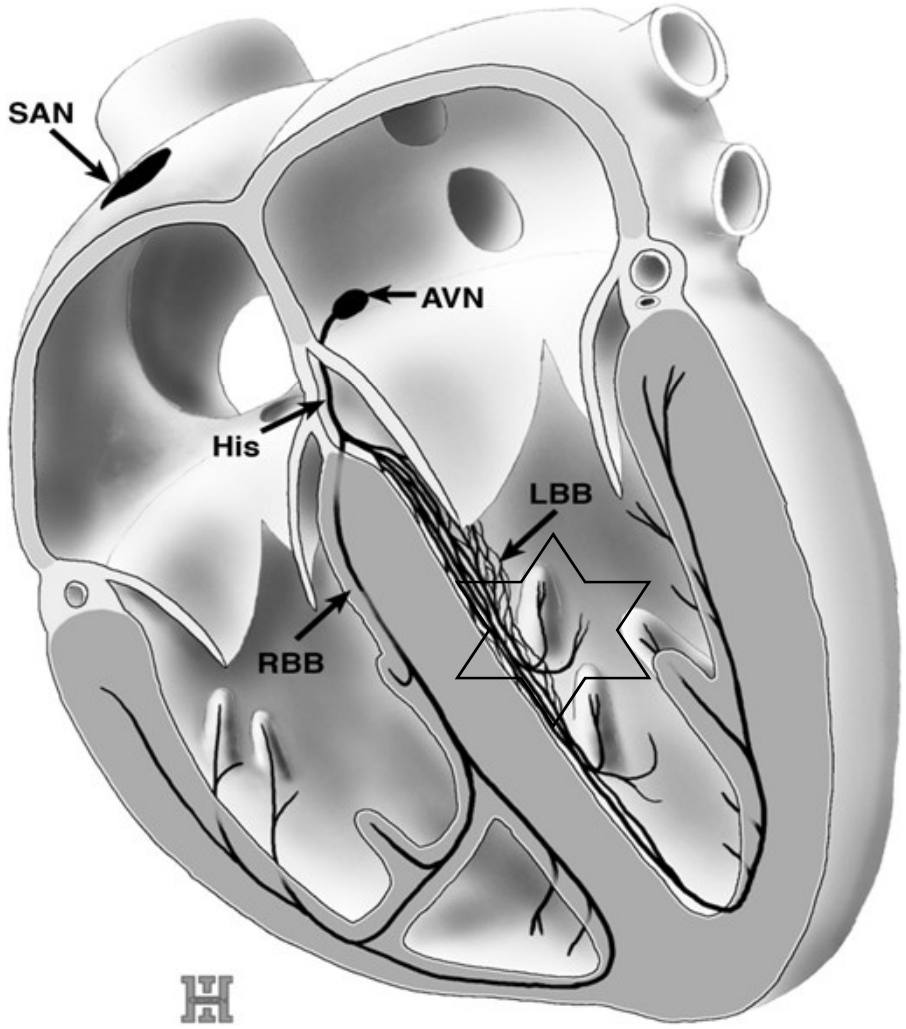
# Hemi-blocks.

- Block of an entire fascicle of the left bundle branch.
- Anterior fascicle - left anterior hemi-block.
- Posterior - left posterior hemi-block.
- Asynchronous and aberrant ventricular innervations.
- Altered vectors and ECG appearance.

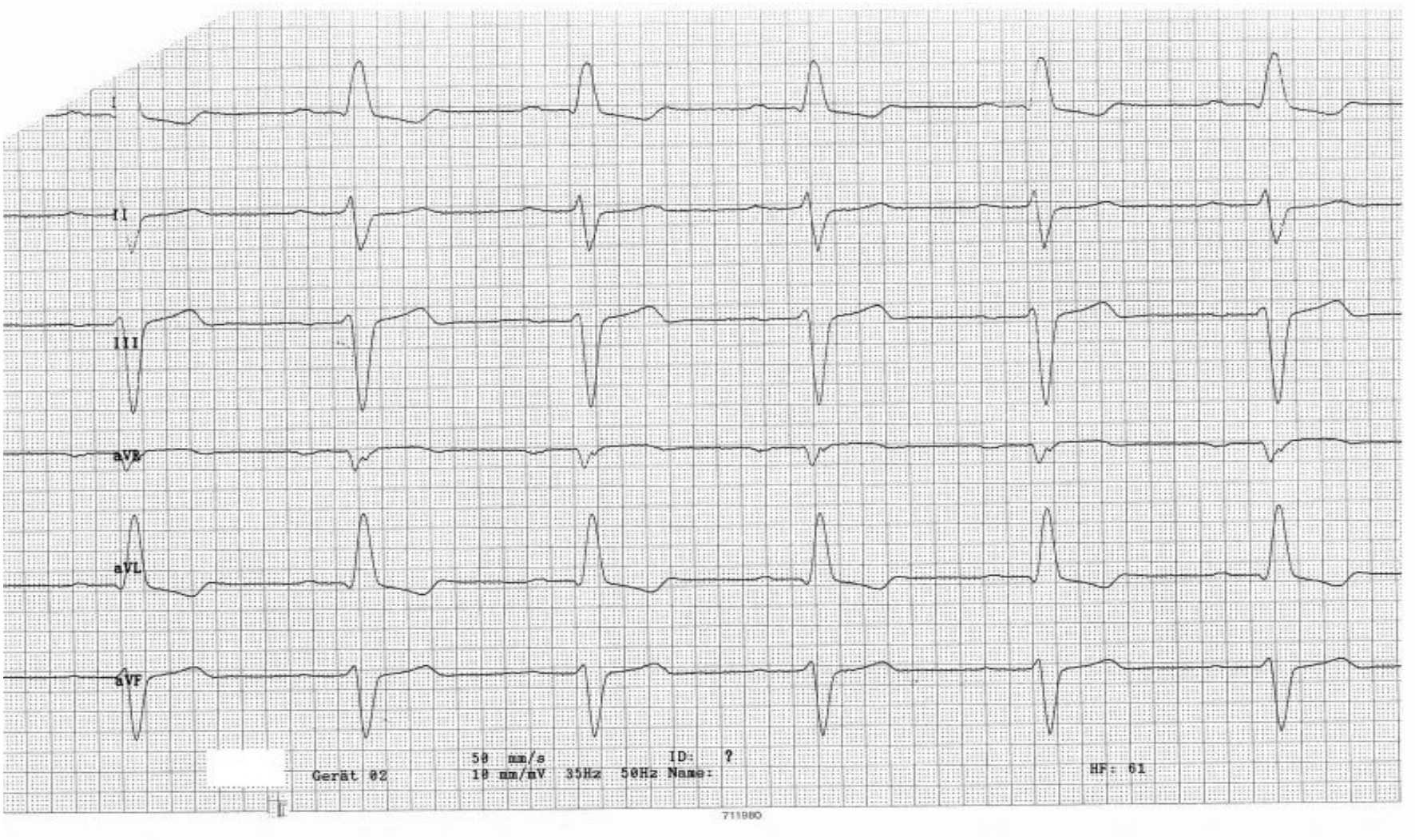


# Left Anterior Hemi-block.

- LV depolarisation progresses from the IV septum, inferior wall and posterior wall towards anterior and lateral walls.
- Unopposed vector pointed superiorly and leftward.
- Produces left axis deviation.



# Left Anterior Hemi-block Appearance.

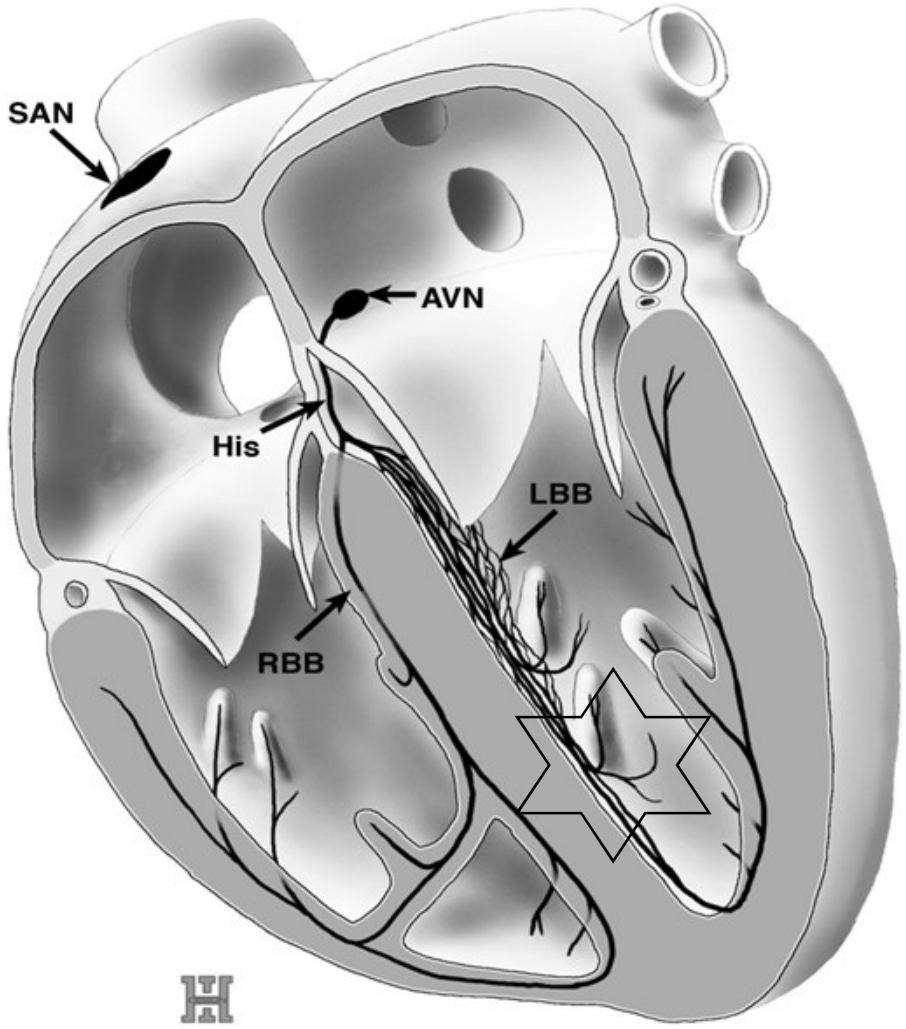


# ECG Features of Left Anterior Hemi-block.

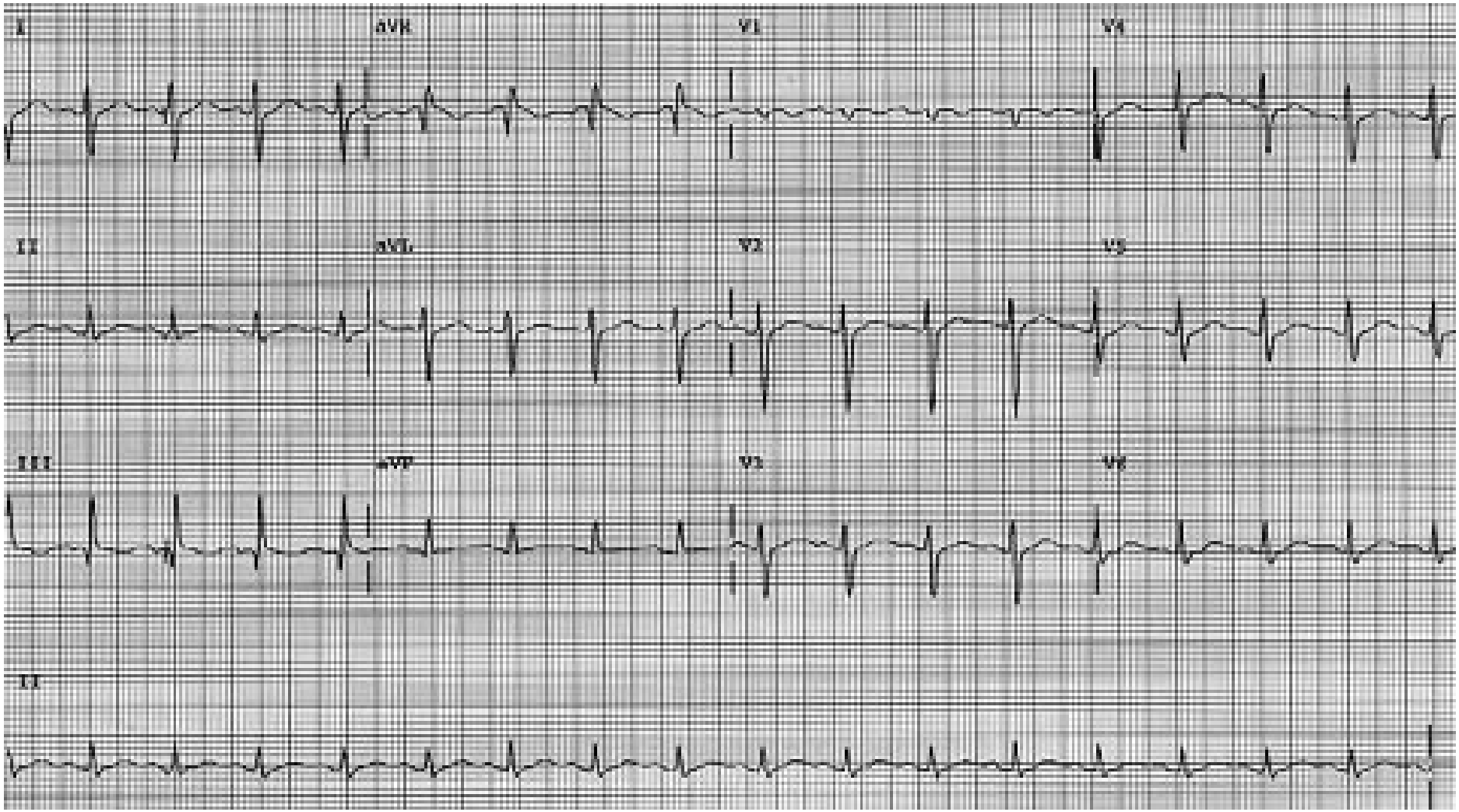
- Abnormal left axis deviation (between -30 and $-90^0$).
- Either a qR complex or an R wave in lead I.
- rS complex in lead III (possibly also II and aVF).
- Extremely common and un-diagnosed ECG feature.
- NOT ALWAYS ASSOCIATED WITH BBB.

# Left Posterior Hemi-block.

- Quite rare - fibres spread over large area of LV tissue (infero-posterior walls - large lesion needed).
- Difficult to diagnose.
- Delayed infero-posterior depolarisation.
- Unopposed inferior and rightward vector.
- Results in rightward axis deflection.
- IVS and anterior vectors also unopposed.



# Left Posterior Hemi-block.



# ECG Features Left Posterior Hemi-block.

- Axis of 90 - 180$^{o}$ - (right axis).
- An s wave in lead I and a q wave in lead III.
- Exclusion of RAE or RVH.

- REMEMBER - most common cause of right axis is RVH so this must be excluded before you diagnose LPH.

# STILL NOT THAT SIMPLE!!!

Welcome to Bi-Fascicular Blocks.

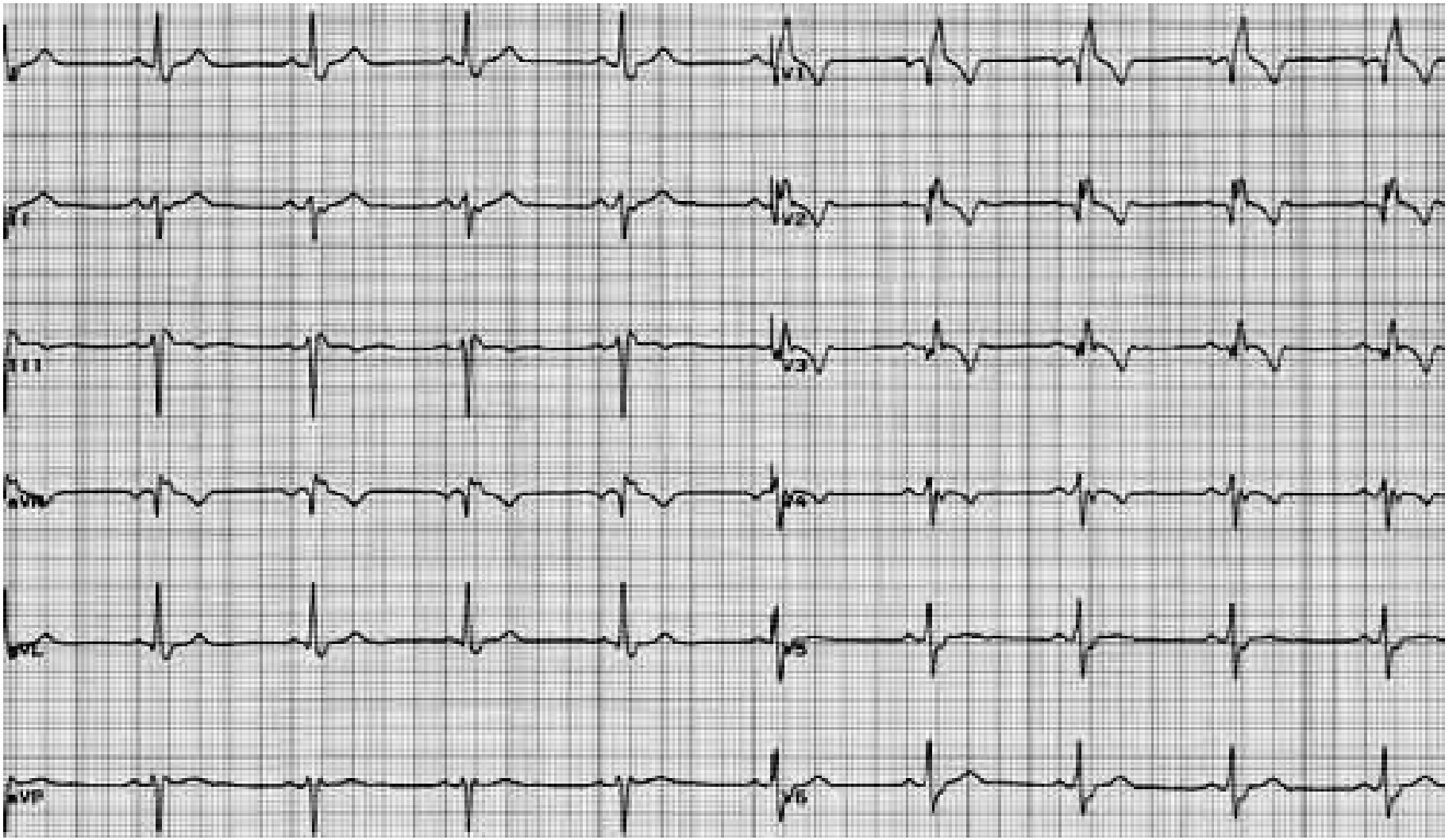
# What are they?

- Three fascicles innervating the ventricles.
- RBB
- LBB - anterior and posterior fascicles.

- *Bi-fascicular block is concurrent RBBB and either LAH or LPH.*

** NOTE: LBBB presents the same as LAH and LPH so is disregarded.

# RBBB and LAH.



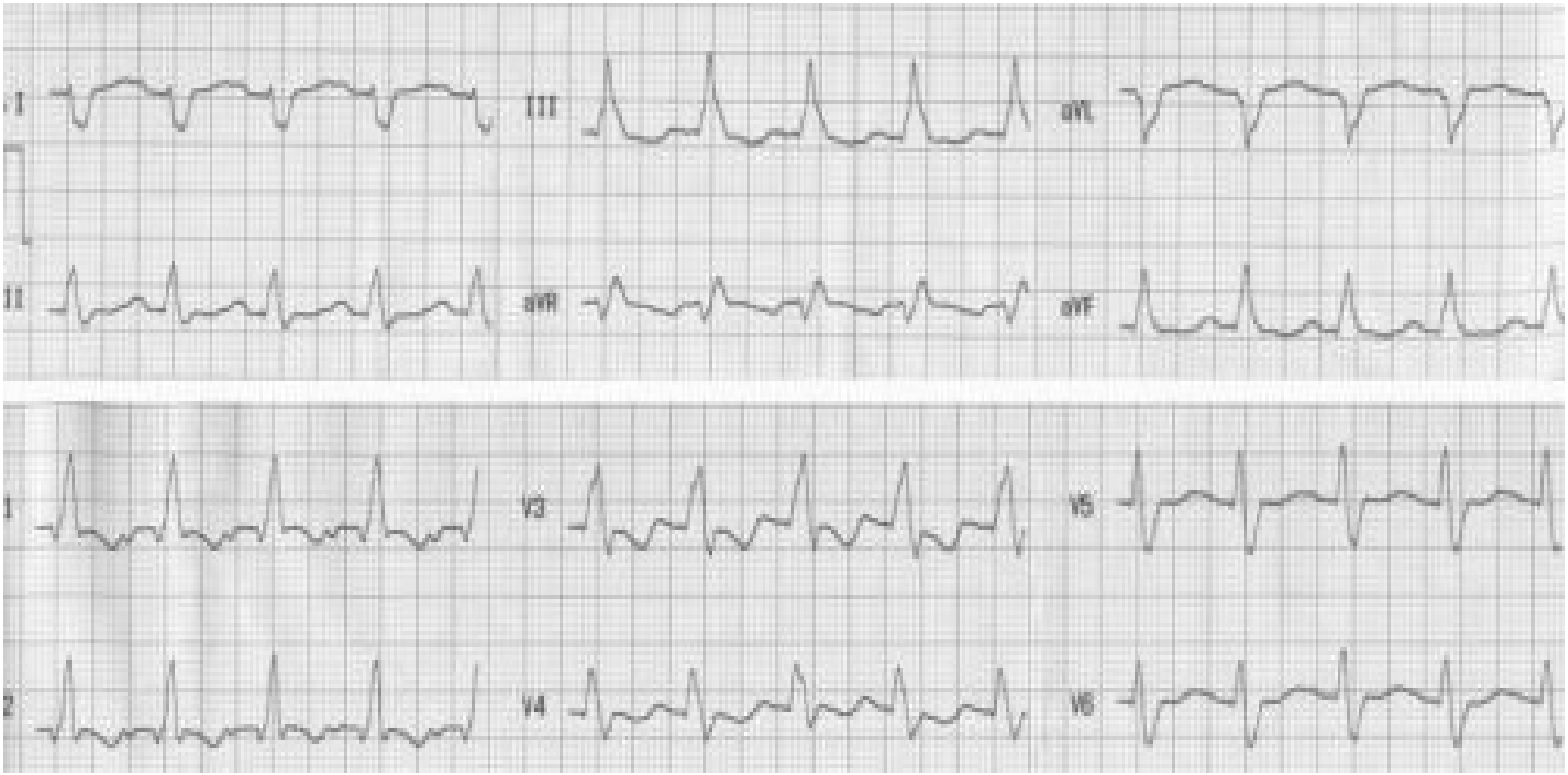
# ECG Features of RBBB and LAH.

- Slurred S wave in leads I and V6.
- 'RSR' pattern in V1 - 'bunny ears'.
- Prolonged QRS complex >0.12 secs.
- Leftward axis deviation.
- rS waves in lead III.

*Common ECG presentation and usually a stable pattern.*

*UNLESS new-onset during an ischemic episode.*

# RBBB and LPH.



# ECG Features of RBBB and LPH.

- All features of RBBB.
- Rightward axis deviation.
- Small q wave lead III.

- NB don't forget to exclude RAH or RVH.

*Not usually stable ECG pattern. Often deteriorates into CHB - especially in setting of AMI.*

# A Note about Incorrect terminology:

Tri-fascicular Block.

# Any Bi-fascicular Block with 1st Degree HB.