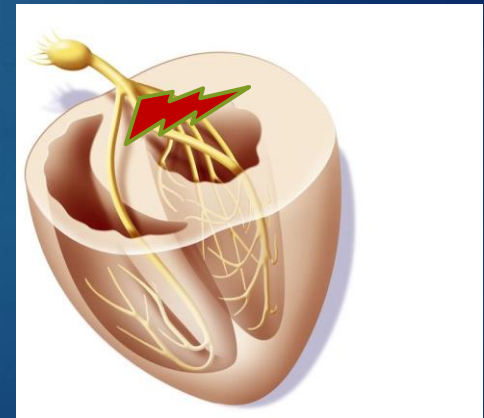


LBBB. Διάγνωση, πρόγνωση και θεραπεία

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ΛΗΨΗ ΚΛΙΝΙΚΩΝ ΑΠΟΦΑΣΕΩΝ ΣΤΙΣ ΚΑΡΔΙΑΓΓΕΙΑΚΕΣ
ΠΑΘΗΣΕΙΣ

11/11/2016

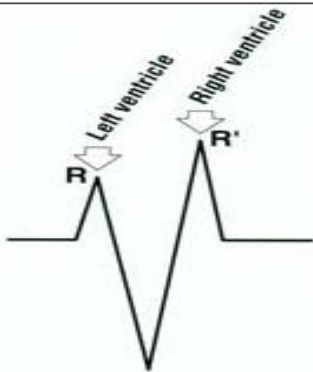
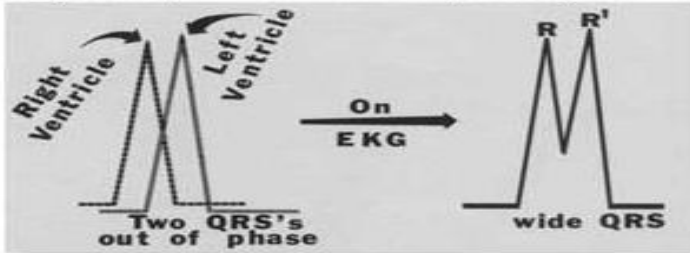


Conflicts of interest

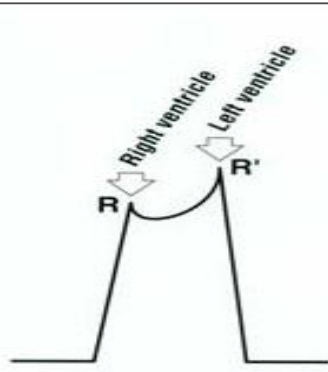
- ▶ Nothing to declare

What happens to Right and Left ventricular depolarization if one bundle branch is blocked?

What do you suspect the QRS complex may look like?

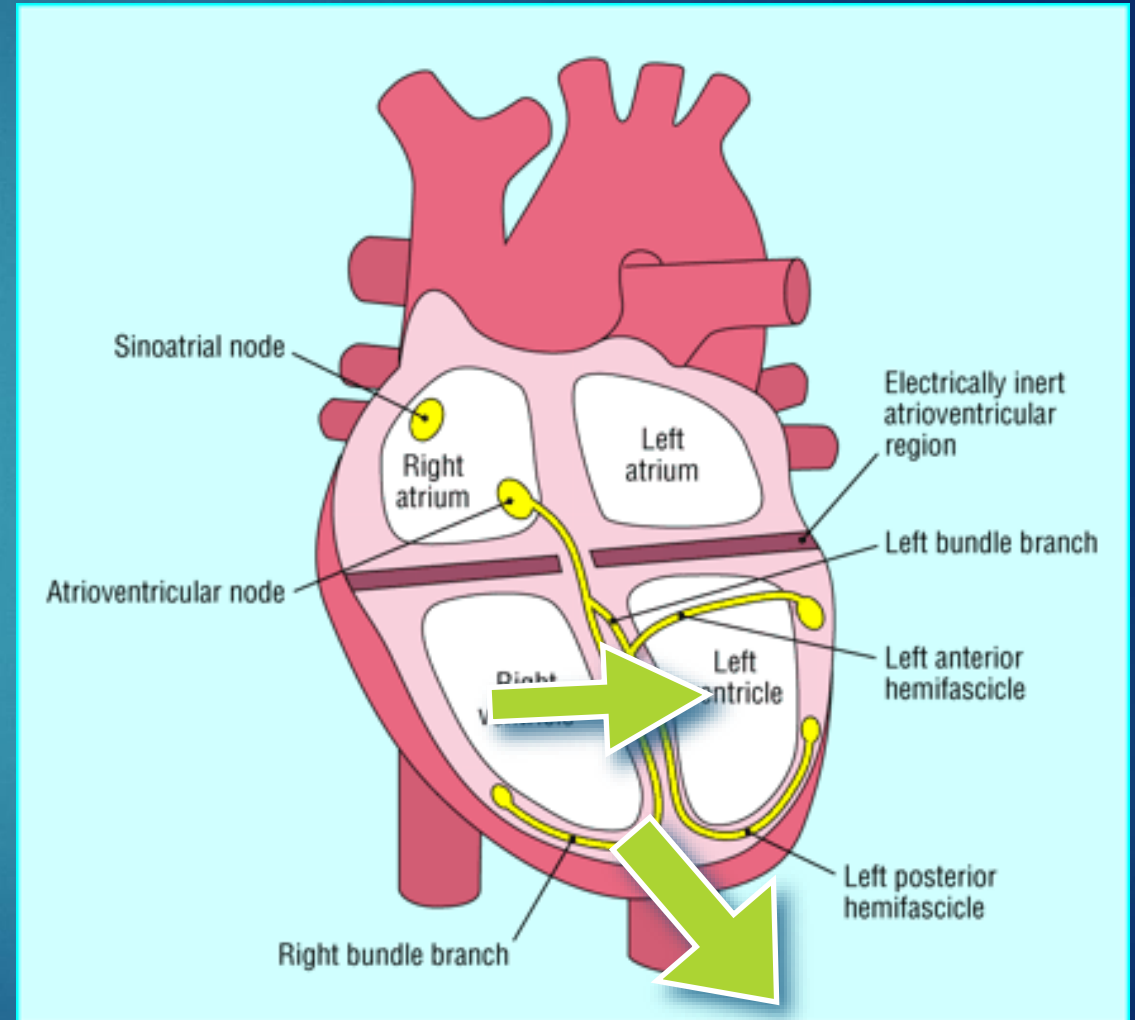


Right BBB



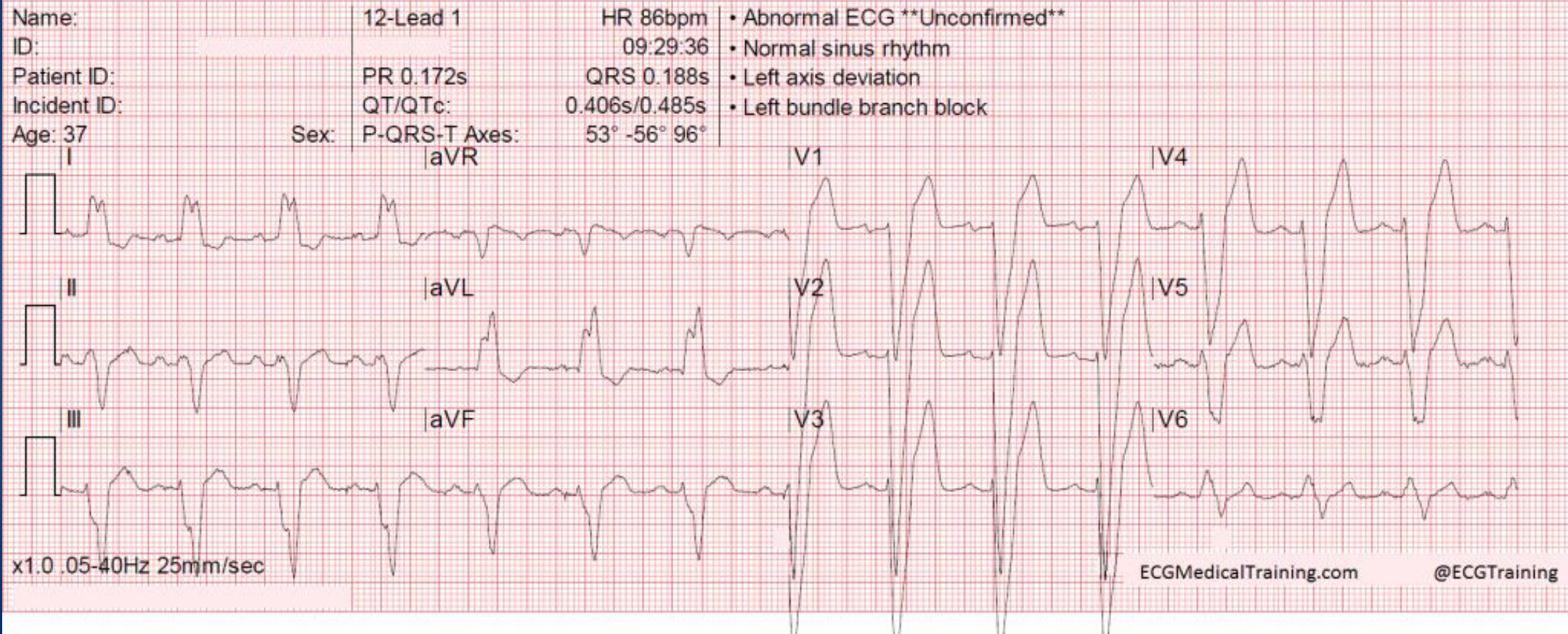
Left BBB

R and R' in Right and Left BBB often look like above



presence of a different trans-mural repolarization sequence within the ventricular wall where the epicardium recovers before the endocardium

Diagnosis LBBB



R-PPM induced LBBB

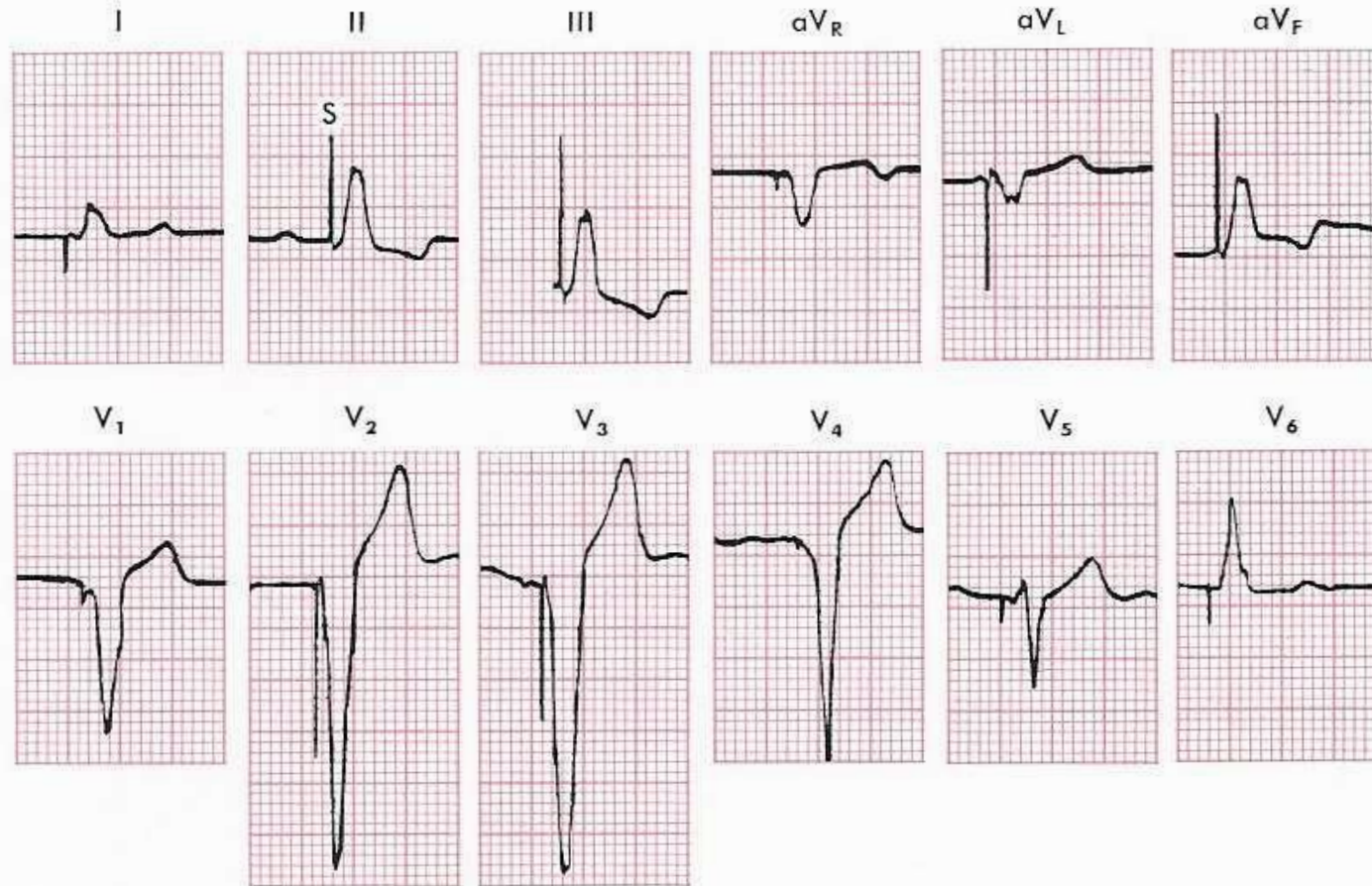
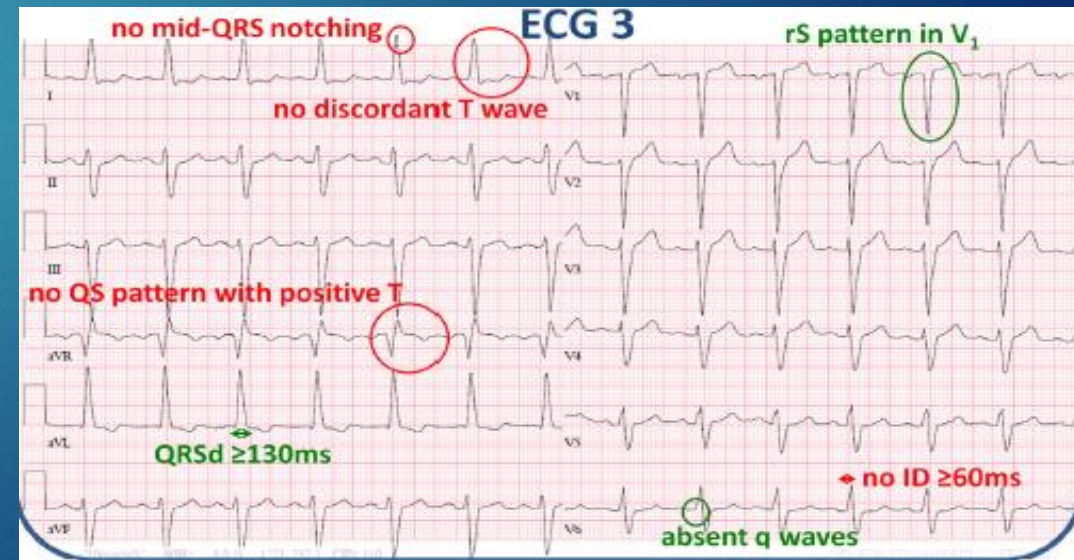
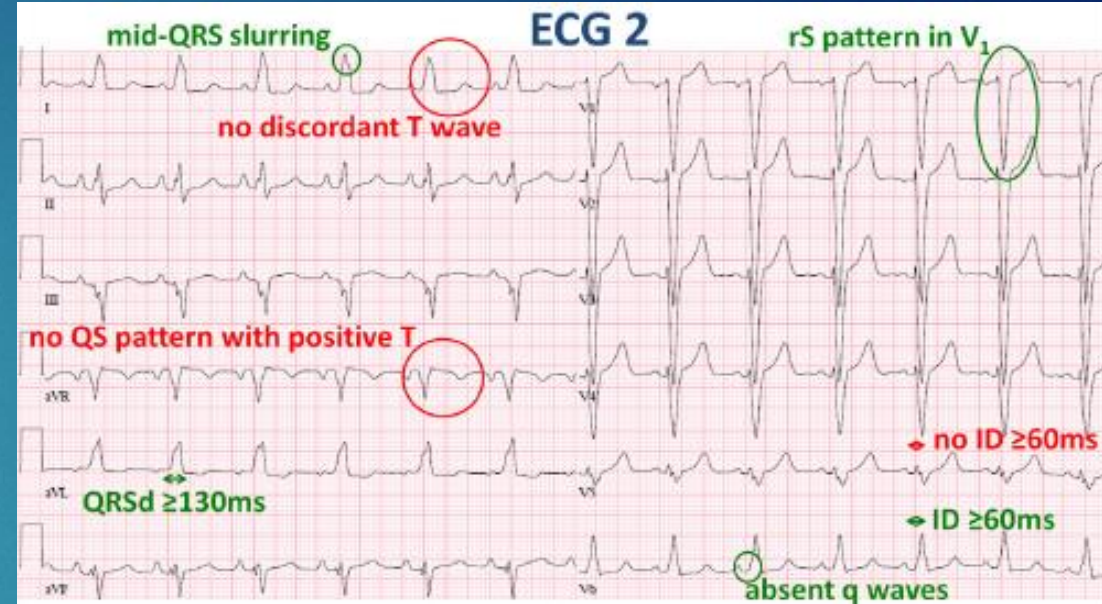
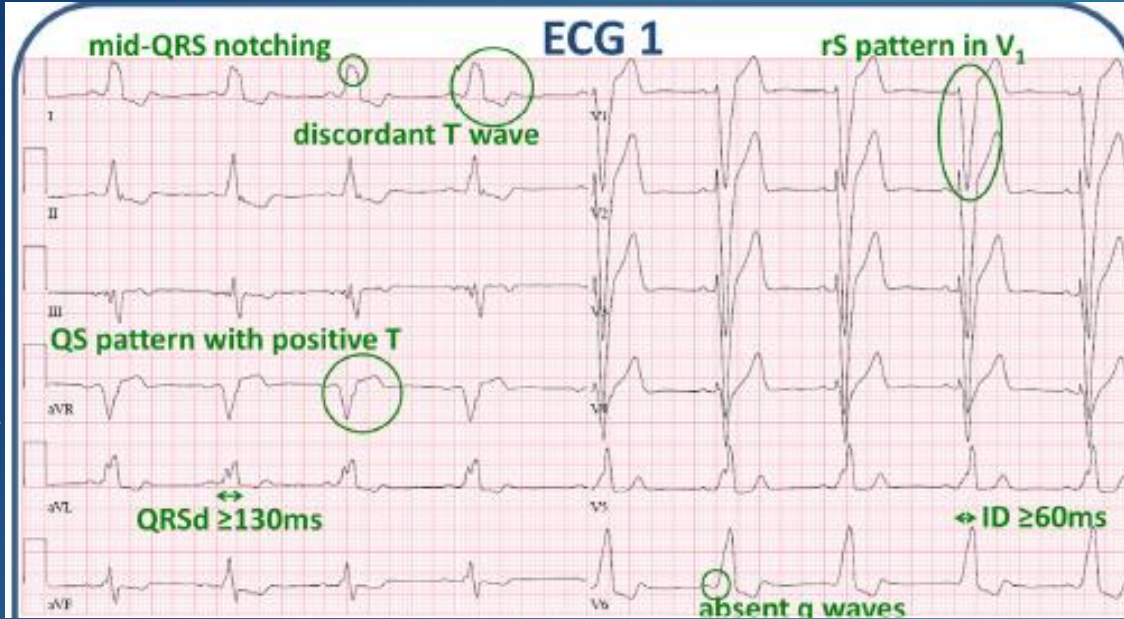


FIGURE 7-8 A pacemaker inserted in the right ventricle generally produces a pattern resembling that of left bundle branch block, with a wide QS in lead V₁ and a wide R wave in lead V₆. This pattern is caused by delayed depolarization of the left ventricle. Notice the pacemaker spike in each lead preceding the QRS complex. In some leads (e.g., II), the spike (S) is positive; in others (V₁ to V₆), it is negative.

LBBB?

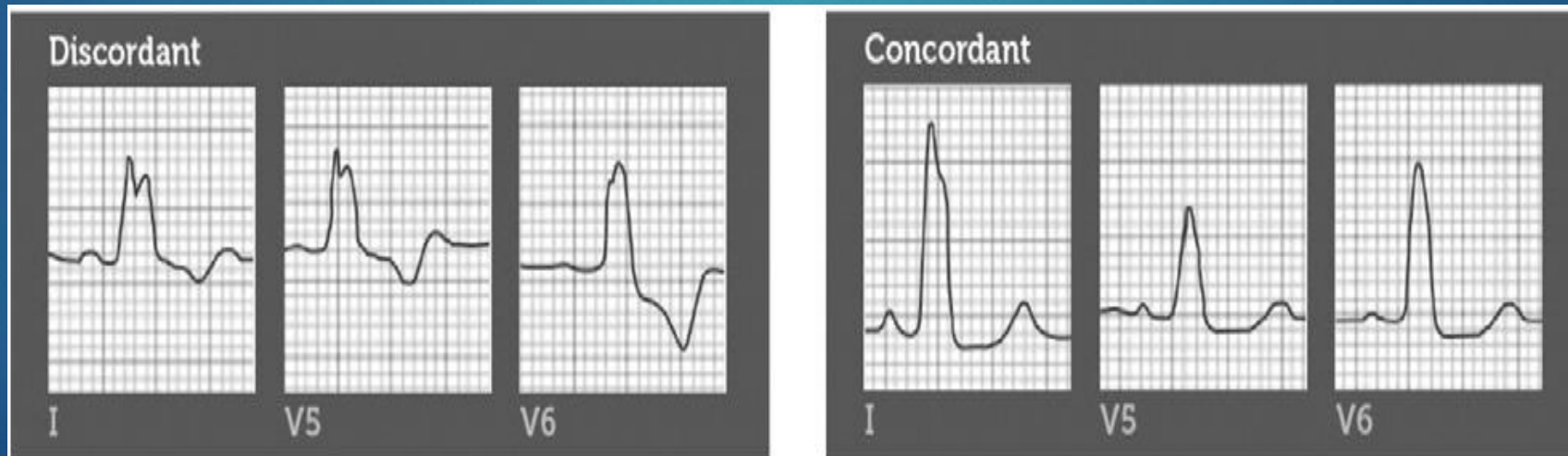


Recently, Strauss et al. has suggested changes in the criteria for definition of LBBB. He considers that about 1/3 of patients diagnosed by current criteria, based on the duration of the QRS interval ≥ 120 ms, do not really have full LBBB

LBBB subtypes

Discordant vs. concordant left bundle branch block: A potential clinical significance

- ▶ LBBB was further subdivided into two subtypes:
- ▶ Concordant LBBB (LBBBC) where the ECGs have their T-wave orientation concordant with QRS complex in leads I, V5 and V6 and
- ▶ Discordant LBBB (LBBBD) where the ECGs have their T-wave orientation discordant with the QRS complex in leads I, V5, and V6



Incidental finding of LBBB

- ▶ Up to 1.5% of healthy adults
- ▶ Among patients with chest pain and suspect of MI, LBBB ranges between **1% and 9%**; LBBB mostly obscures acute MI diagnosis in the ECG criteria, masking the elevation of the S-T segment.
- ▶ LBBB also has a close relation with HF, associated with approximately **25%** of the cases, and it is known as a worsen factor of the left ventricular fraction ejection.

Activation sequence of ventricles

An LBBB electrocardiogram type may be caused by either a block in the left branch of the ventricular conduction system or by uncoupling in the working myocardium.

Uncoupling in the working myocardium can mimic left-sided block in the ventricular conduction system and can explain an LBBB ECG pattern with relatively low amplitude.

Biventricular pacing improves ventricular activation in true LBBB with or without uncoupling but not in case of 50% uncoupling alone.

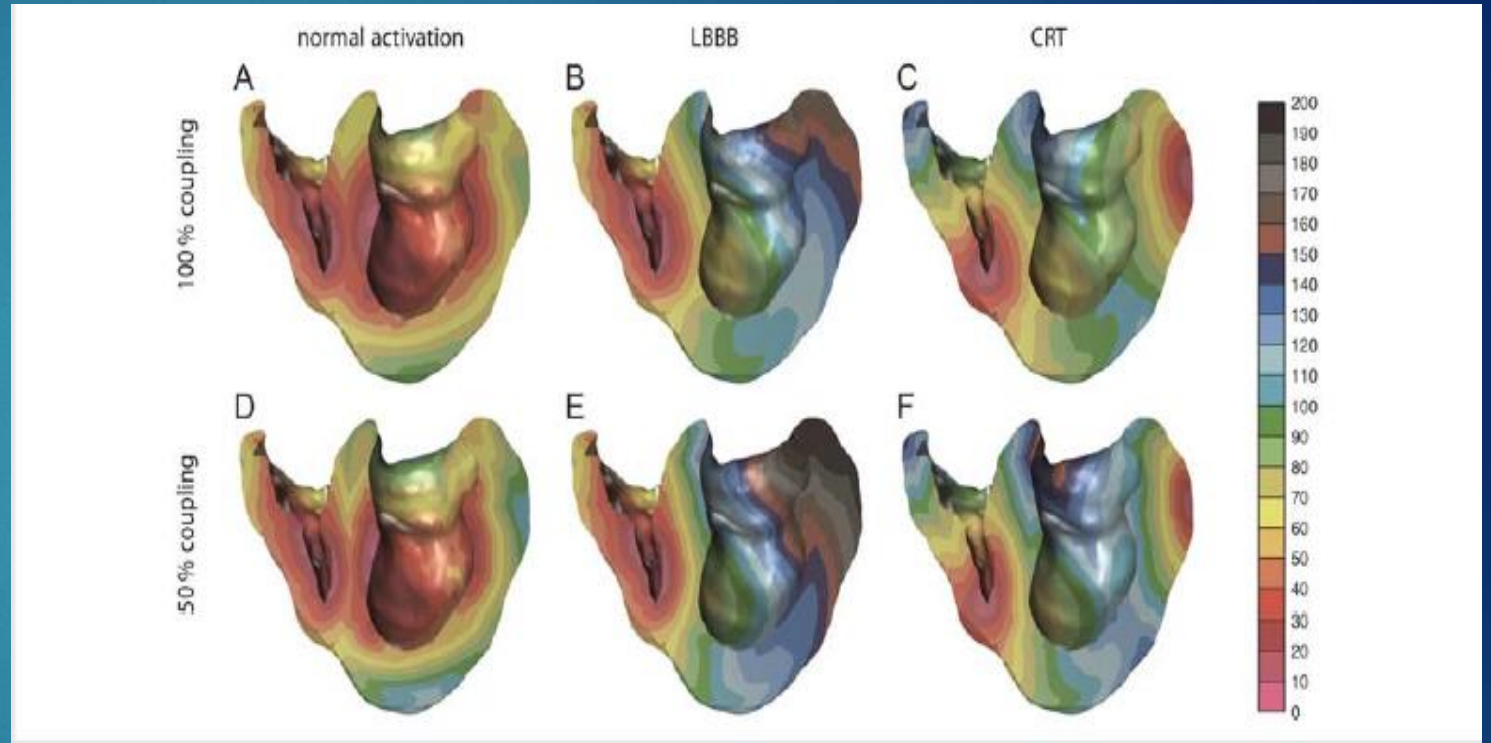


Figure 1 Activation sequence in the ventricles for normal activation (A), left bundle-branch block (B), cardiac resynchronization therapy (C), 50% uncoupling (D), left bundle-branch block with 50% uncoupling (E), and cardiac resynchronization therapy with 50% uncoupling (F). The colour scale ranges from 0 to 200 ms with 10 ms intervals.

LBBB is not just an ECG finding, it is a really big deal

- ▶ Alters cardiac function
- ▶ Decreases exercise capacity

- 1) Abnormal movement of the interventricular septum early in cardiac contraction (systole) ie in the pre-ejection phase the septum moves to the left. (In most cases the septum moves to the left while lateral left ventricular wall relaxes. The septal movement is observed with cardiac echo and termed as "septal beaking")
- 2) delayed contraction of the left ventricular wall reduced ejection fraction (EF)
- 4) Impaired filling of the left ventricle (diastolic dysfunction)
- 5) More time wasted with the heart valves closed (Technically measured as prolonged IVCT and IVRT) and measured by the MPI or myocardial performance index
- 6) **Mitral regurgitation** due to asymmetrical contraction of the papillary muscles
- 7) increased left ventricular end-diastolic pressure
- 8) Increased pulmonary artery pressure during exercise in some patients with normal resting echo
- 9) impairment of the normal ventricular twisting motion

Asymptomatic Left Bundle Branch Block Predicts New-Onset Congestive Heart Failure and Death From Cardiovascular Diseases

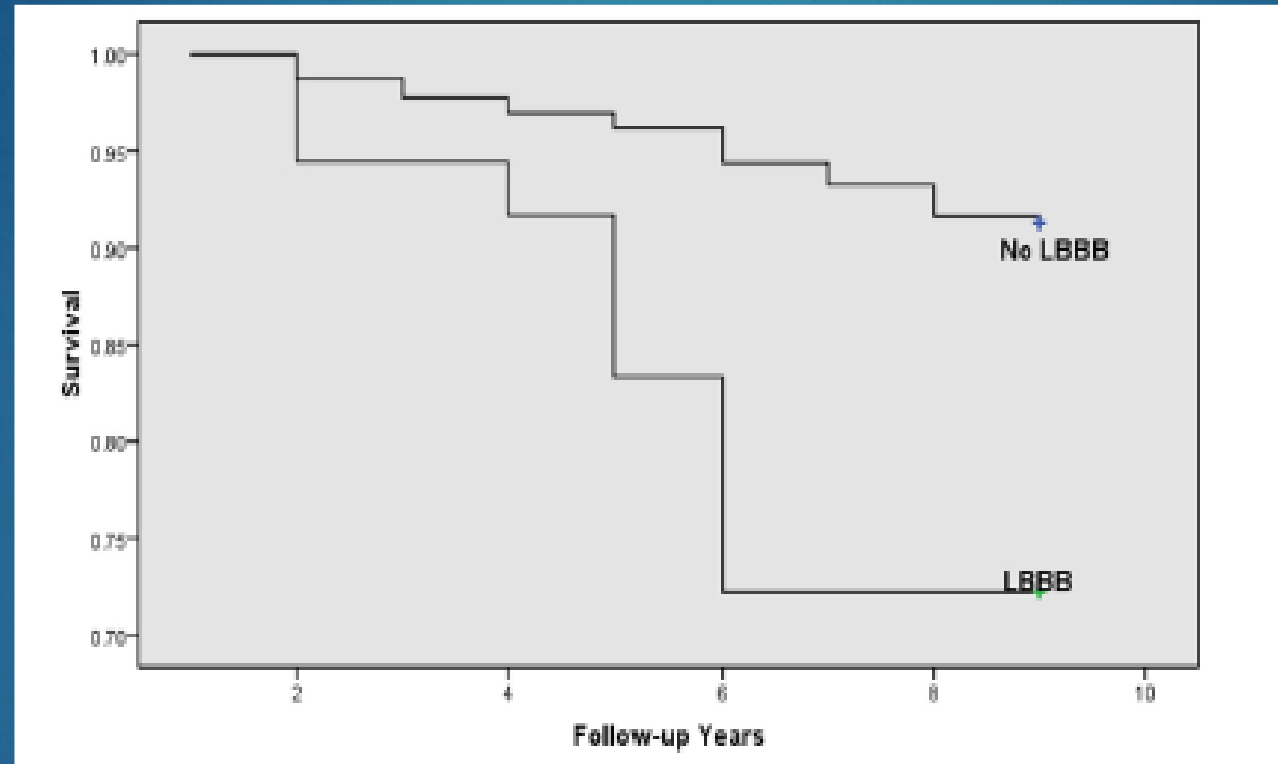
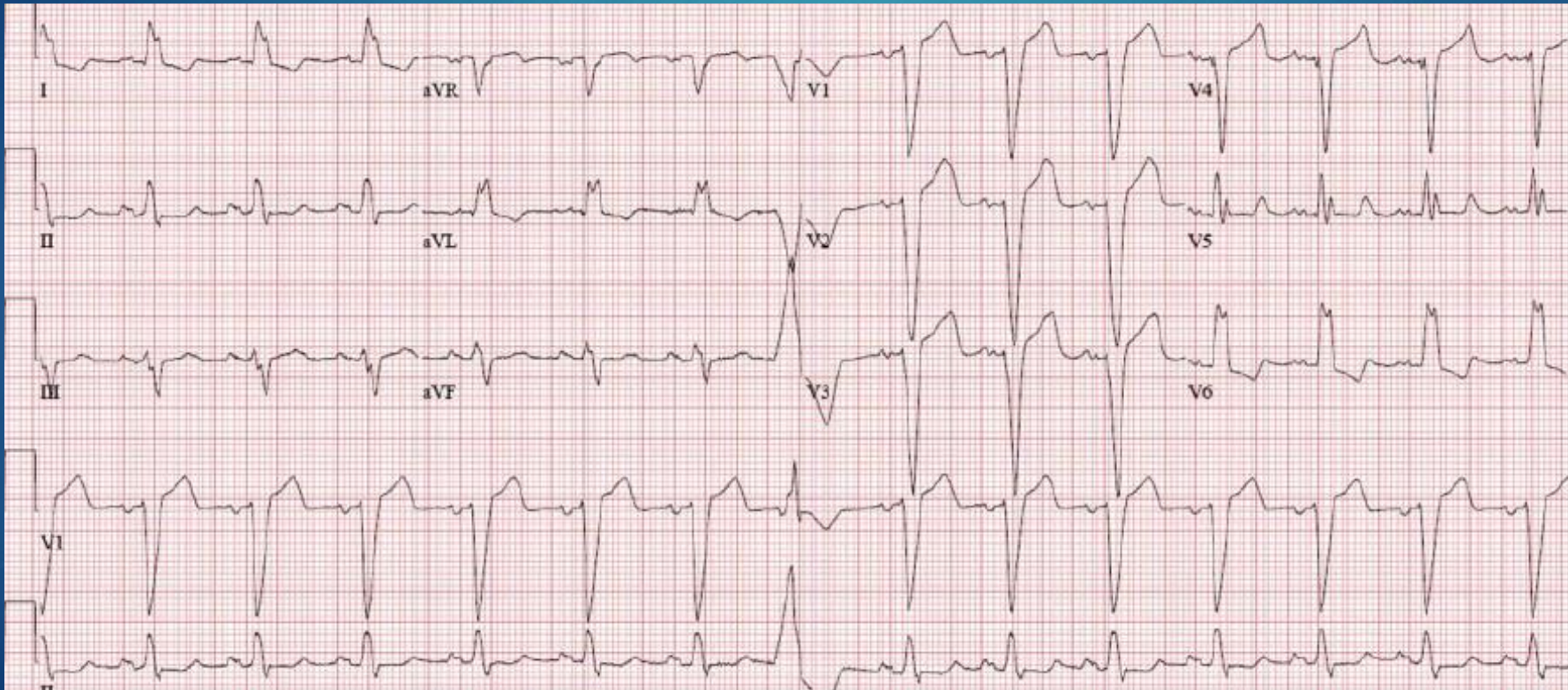


Figure 2. Kaplan-Meier survival curve showing the effects of left bundle branch block on cardiovascular mortality by age ($P < 0.05$).

LBBB in athletes

- ▶ LBBB is extremely rare and not attributable in sport practice



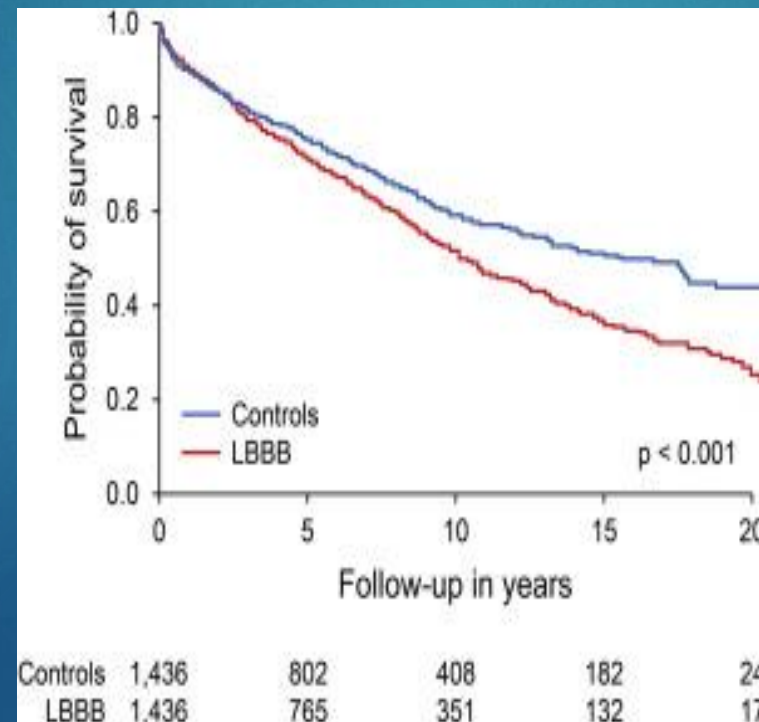
Most common causes of LBBB

- ▶ Coronary artery disease,
- ▶ Hypertension, and
- ▶ Cardiomyopathy.
- ▶ LBBB also can be seen during cardiac pacing.

As opposed to RBBB, LBBB has been associated with organic heart

Outcomes With Left Bundle Branch Block and Mildly to Moderately Reduced Left Ventricular Function.

- ▶ The high level of mortality and adverse events seen in this group *may suggest a patient population that needs and would potentially benefit from resynchronization therapy.*



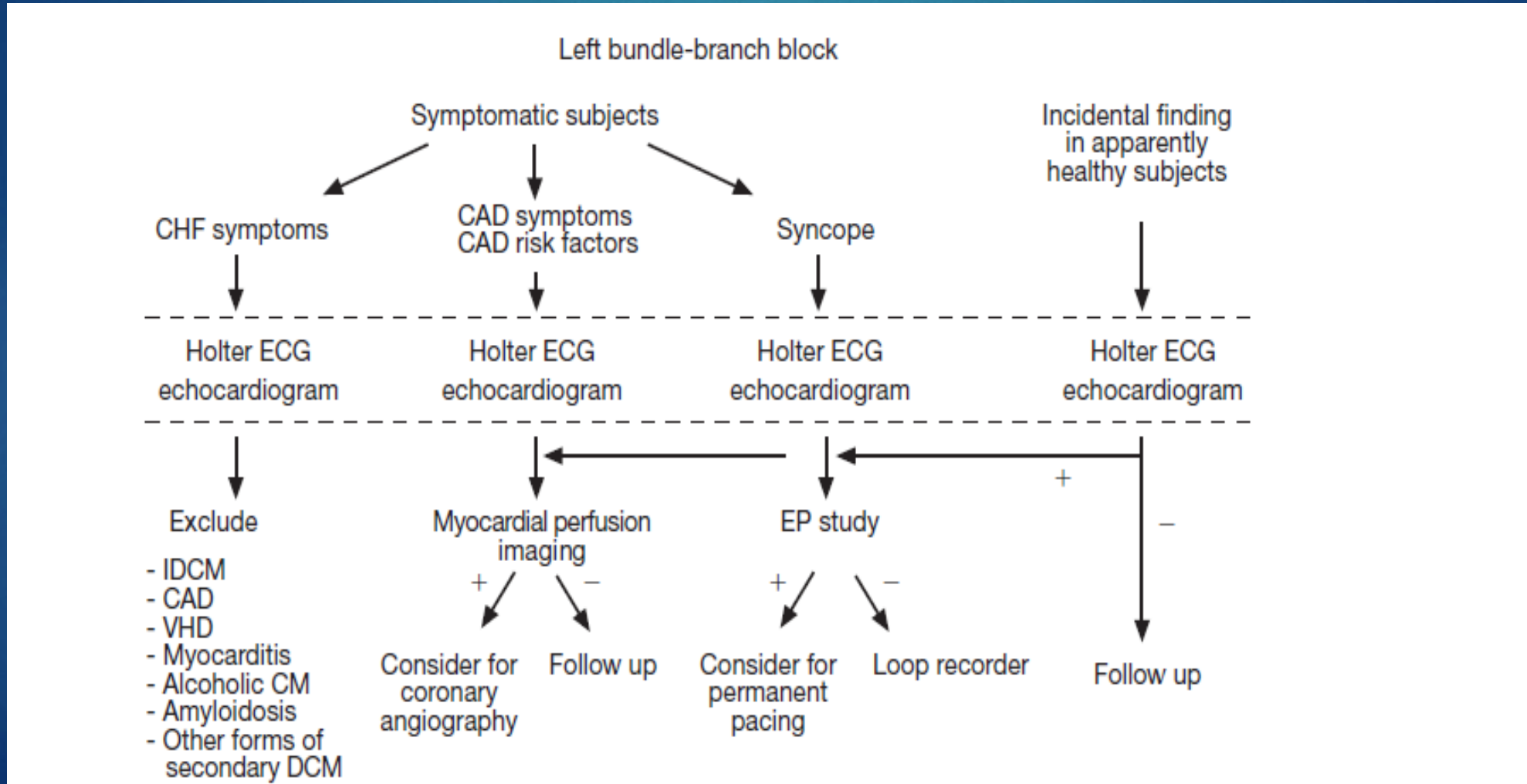
Mildly to moderately reduced LVEF (36% to 50%)

LBBB and AMI

Sgarbossa electrocardiography criteria



Flow-chart of proposed clinical approach of LBBB



Treatment and outcome of LBBB

- ▶ LBBB heralds a much more unfavourable cardiovascular prognosis than RBBB.
- ▶ Because the risk of developing heart failure was 3X higher in LBBB than in RBBB, careful examination at the time of recording of LBBB and regular follow-up visits are warranted.
- ▶ **It offers the opportunity to follow the course of the relationship between the ventricular conduction delay and the possible mechanical LV asynchrony and timely detection of the onset of systolic heart failure.**

- 
- ▶ Keep pts with MI, HF even the asymptomatic ones and LBBB under watch!!!!

MCQs 1

- ▶ Στα νέα κριτήρια ορισμού του LBBB ποιά από τα παρακάτω κριτήρια δεν είναι σωστό:
- ▶ Α. $QRS > 120\text{ms}$
- ▶ Β. $QRS > 140\text{ms}$
- ▶ Γ. Εντύπωμα στο μέσον του QRS

MCQ2

Τι είναι λάθος από τα παρακάτω:

- ▶ A. Ο LBBB είναι προγνωστικός δείκτης καρδιακής ανεπάρκειας
- ▶ B. Είναι φυσιολογική ηλεκτροκαρδιογραφική εικόνα στους αθλητές
- ▶ Γ. Όταν είναι τυχαίο εύρημα σε υγιή άτομα χρήζει περαιτέρω έρευνας
- ▶ Δ. Η εμφάνιση του επηρεάζει τη λειτουργία της μιτροειδούς βαλβίδος