

Name: TMFS

Sex: F

Age: 70yo.

Race: Caucasian

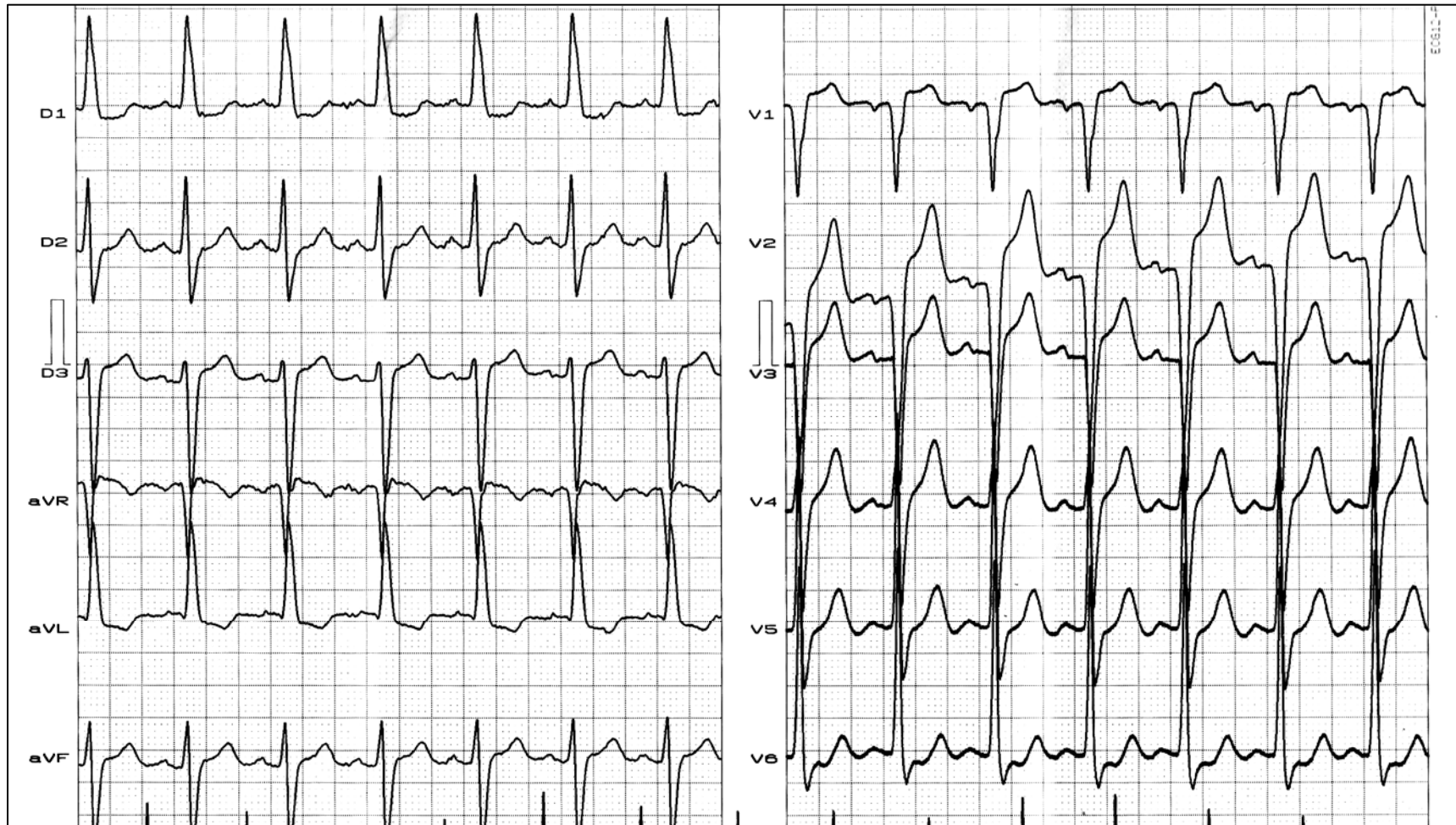
Weight: 60Kg

Height: 1,59m

Biotype: Normoline

Date: 16/09/2008

Medications in use: Sinvastatina 20mg, Atenolol 50mg, Anlodipina 5mg, Hidroclorotiazida

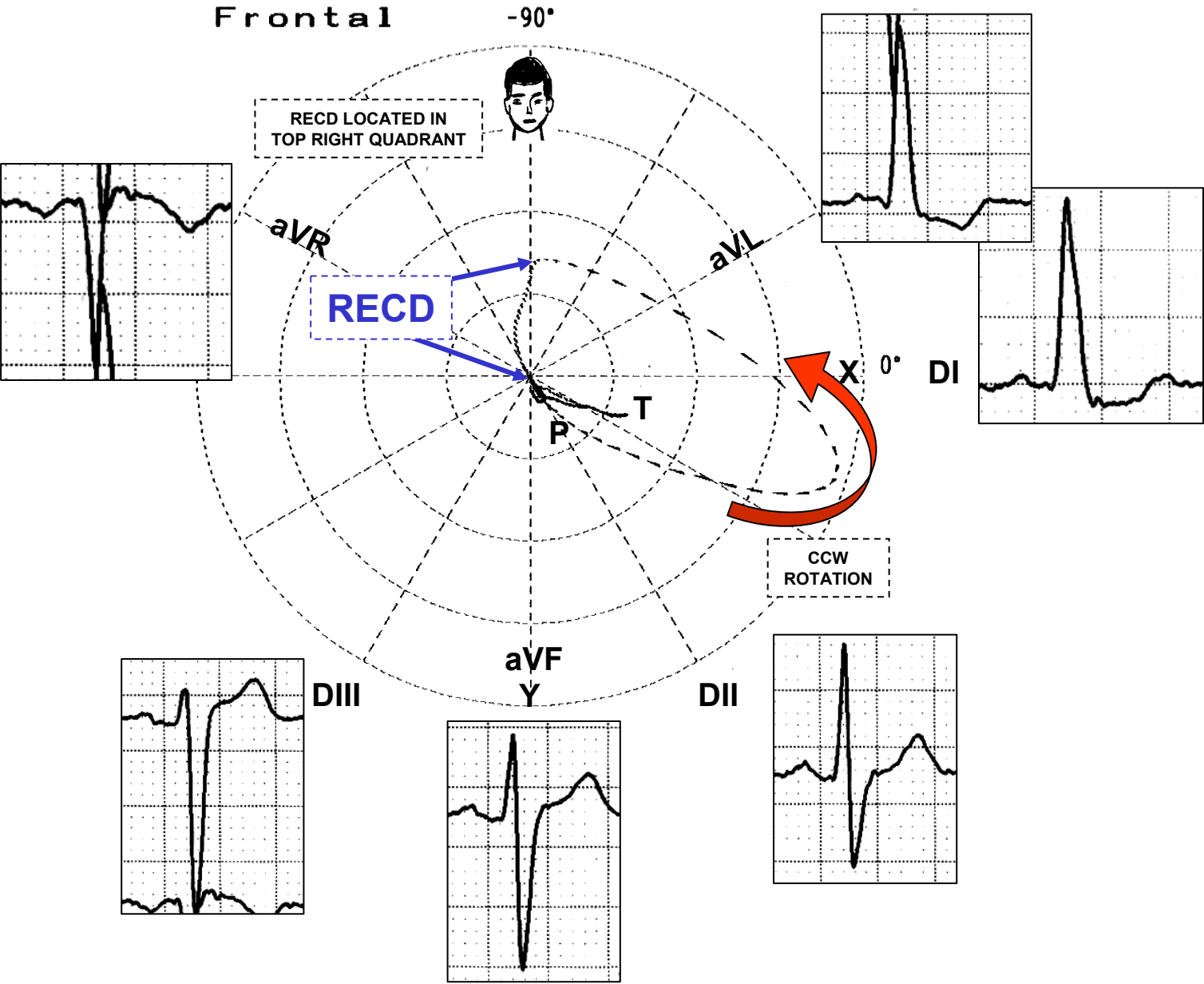


Clinical Diagnosis: coronary insufficiency (multivessel disease), CABG surgery (1996), hypertension, Type 2 DM, Calcification of Aortic Valve with moderate stenosis and minimal insufficiency.

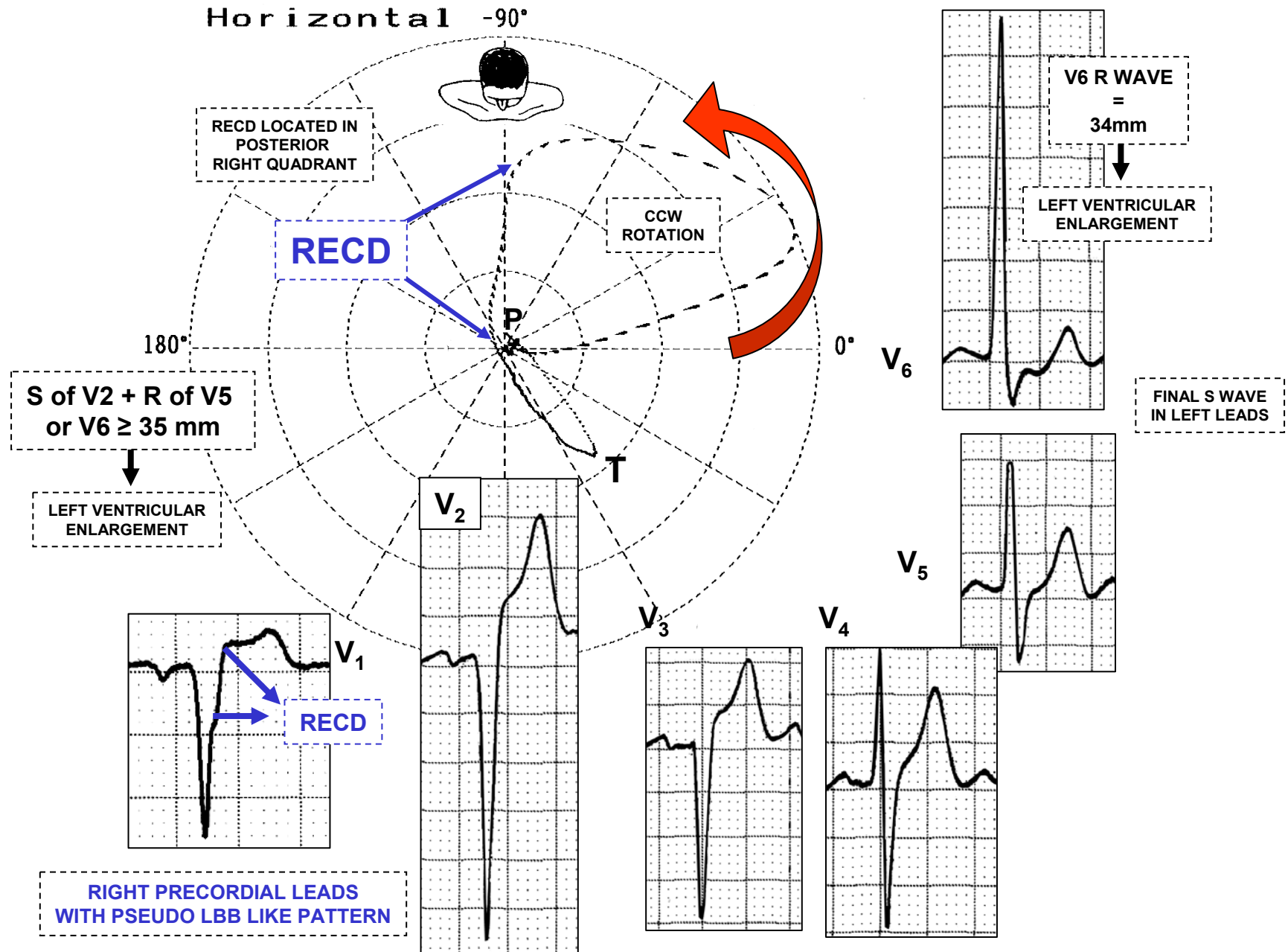
Echocardiogram: segmentar hypokinesia in inferior mediobasal wall, FE; 55%. Significant left atrial enlargement and moderate right atrial enlargement

ECG diagnosis: at the end.

ECG/VCG FRONTAL PLANE CORRELATION



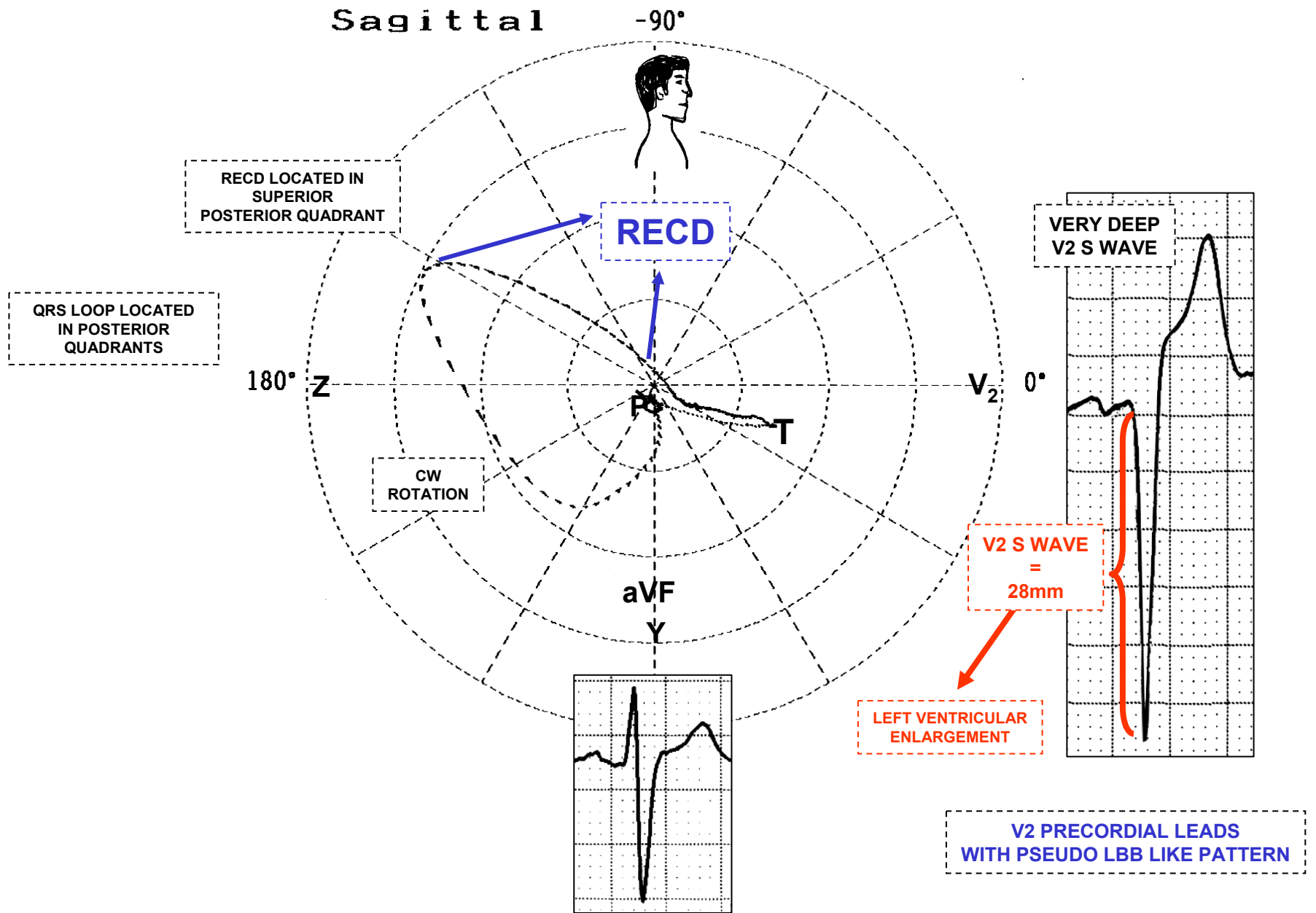
ECG/VCG HORIZONTAL PLANE CORRELATION



QRSd: 118ms

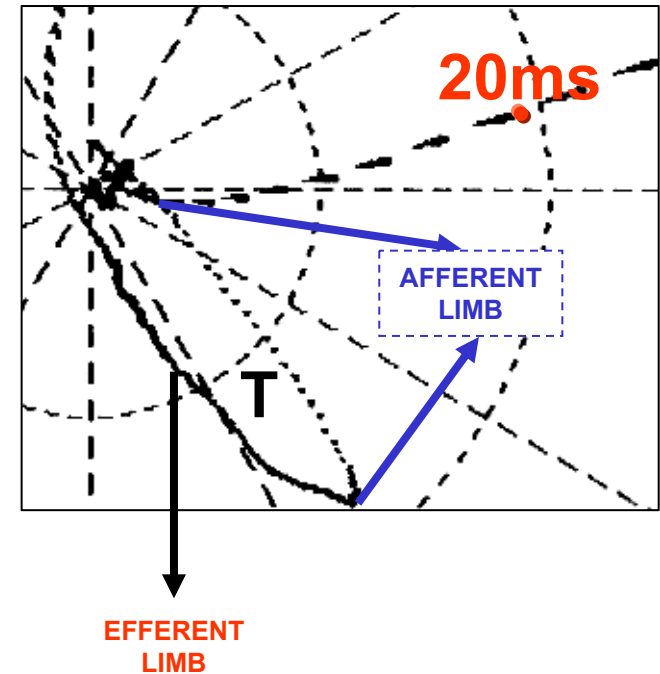


ECG/VCG RIGHT SAGITTAL PLANE CORRELATION



COMMENTARIES

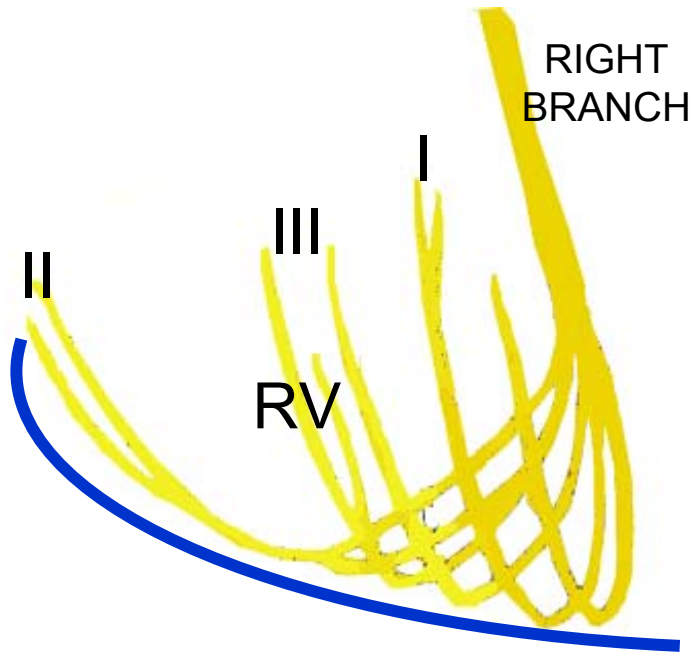
- There is a discrete initial physiological – non-pathological- delay of initial forces in the VCG loop – and QS pattern in the ECG in V_1 and V_2 . The suspicion of "fibrosis", "electrically inactive area" or "middle septal infarction" that the ECG suggests, is not confirmed in the initial 20 ms of the QRS loop in the HP (there is a minimal physiological initial delay).
- On the other hand, the repolarization (T loop) shows asymmetrical limbs as normally (first portion is slower and afferent limb faster: nonischemic T wave. Even if the infarction is old, the primary T loop usually appears with a tendency to a more rounded shape and dashes close together, both in the afferent limb and in the efferent one (primary T).



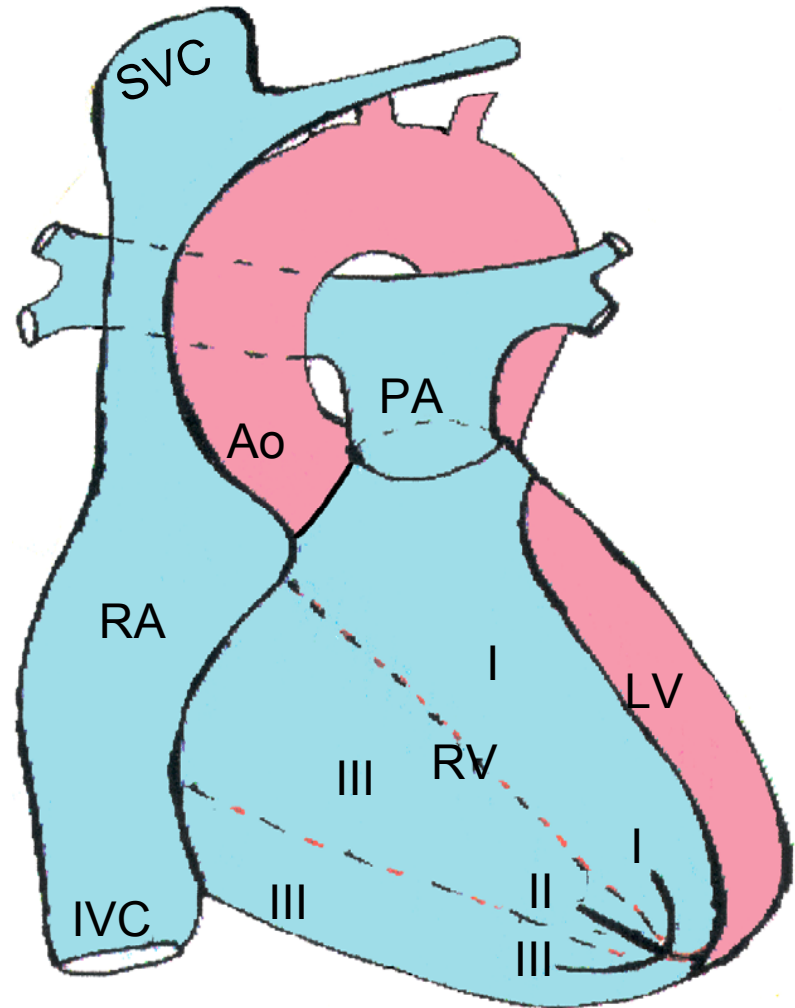
COMMENTARIES

- The QRS loop in the HP has an egg-shaped morphology in its aspect, and its rotation is counterclockwise; mainly located in the left posterior quadrant as normally, without the typical LBBB morphology (in this one, the QRS loop is sharper with the limbs closer).
- Additionally, the delay is exclusively at the end, and not **middle-final** as it would correspond to a true LBBB.
- This end delay is located in the right posterior quadrant in the HP, in the right superior quadrant in the FP, and in the posterior-superior quadrant in the RSP, thus confirming the diagnosis of superior fascicle block or subpulmonary block of the right branch at the RVOT, type 1A in my classification (at the RVOT) (it could simulate a LAFB), but in this case, the electrical axis does not show extreme leftward shift (see next 3 slides).

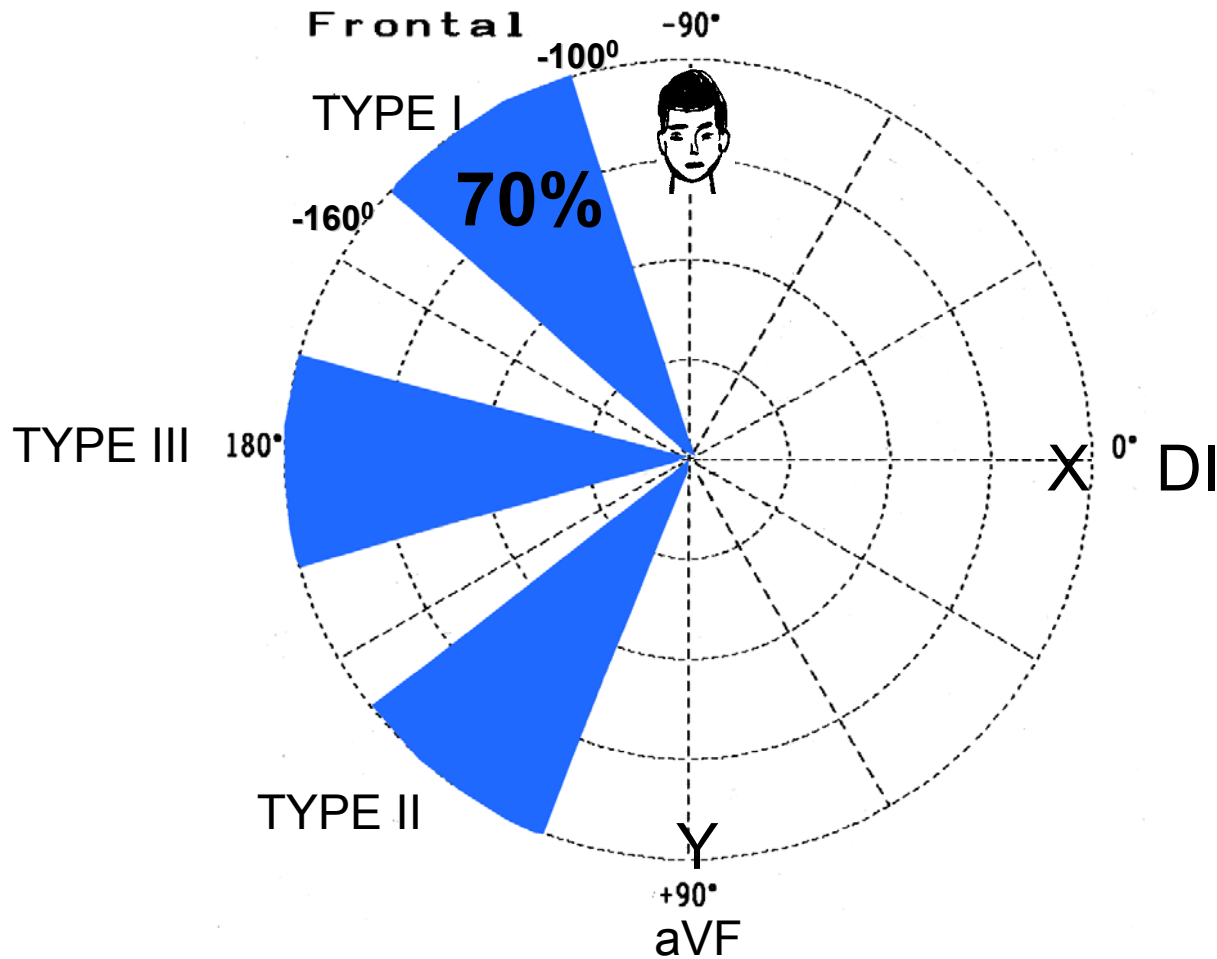
DISTRIBUTION OF THE THREE FASCICLES OF THE RIGHT BRANCH OF THE HIS BUNDLE IN THE RV FREE WALL

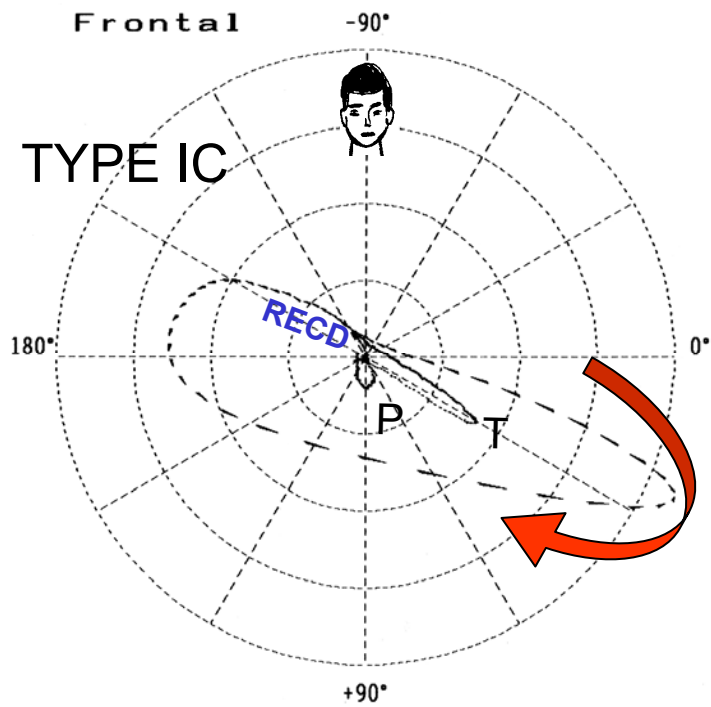
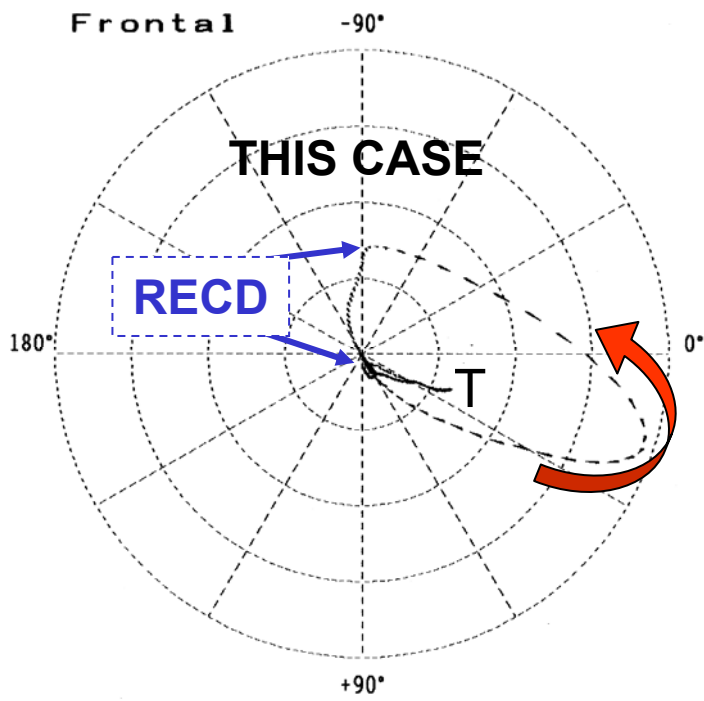
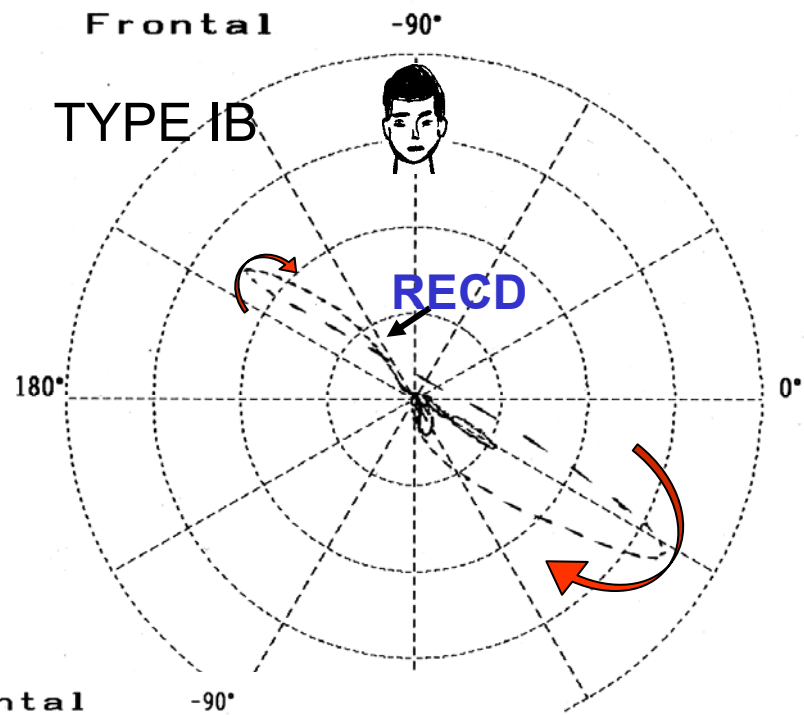
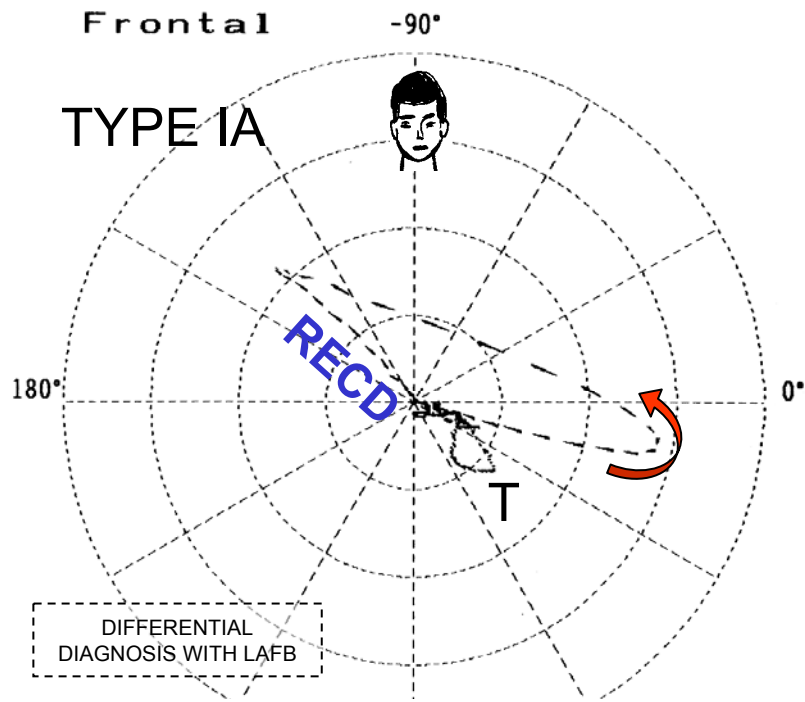


- I - TERRITORY OF SUPERIOR OR SUBPULMONARY FASCICLE
- II - TERRITORY OF INFERIOR OR POSTERO-INFERIOR FASCICLE
- III - TERRITORY OF MIDDLE FASCICLE



FRONTAL PLANE: LOCATION OF END CONDUCTION DELAY (ECD) IN THE 3 TYPES

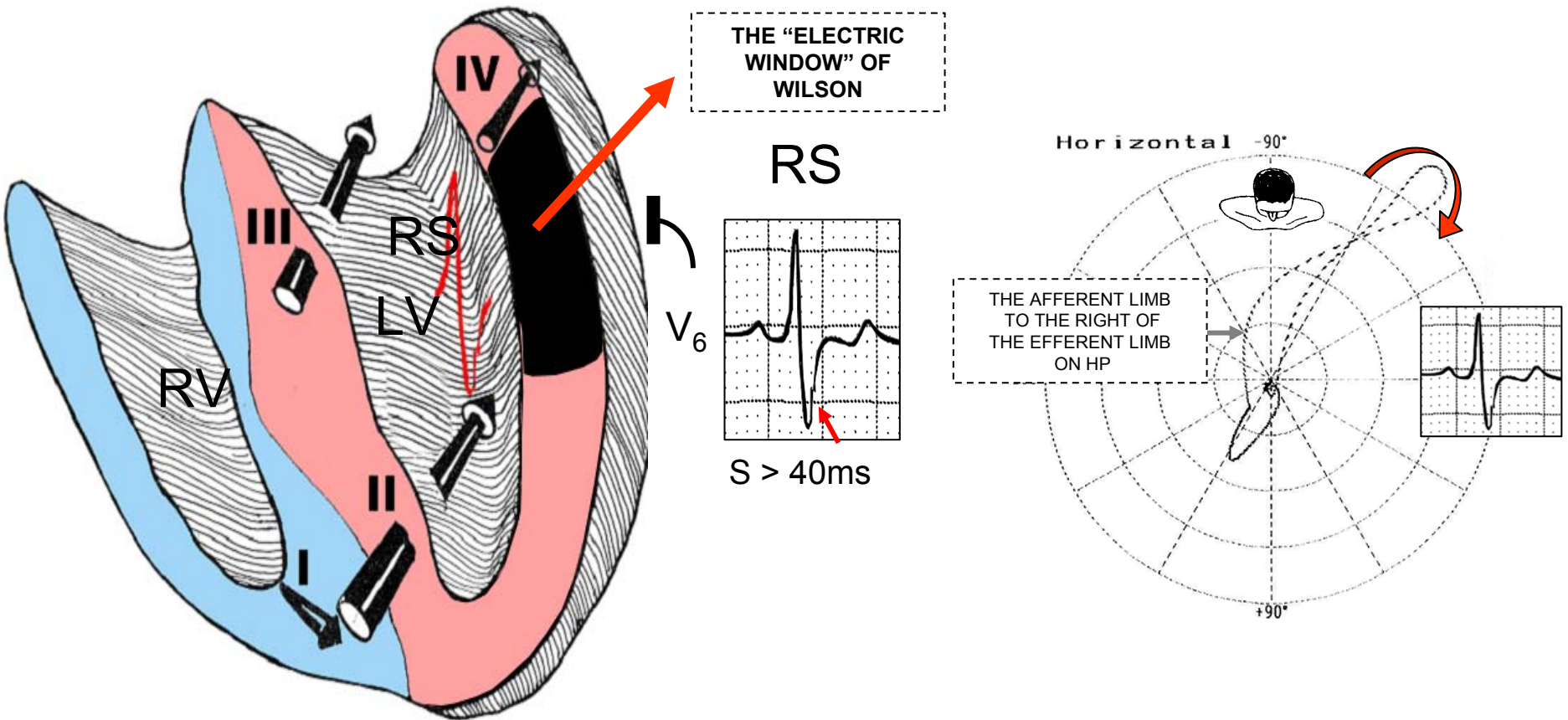




COMMENTARIES

- The reasoning that the final S in left leads would be due to LBBB + free or lateral wall infarction cannot be supported.
- Why?
 - Answer: At the beginning of the story of electrocardiography, Wilson proposed that the final S wave in V6 in the LBBB, was due to the association with lateral infarction by capture by the exploring electrode of V6 of the intracavitary potential of the LV (RS pattern) through the so-called "electric window of Wilson". The characteristic pattern is R=S, with S presenting a duration ≥ 40 ms. Today we know thanks to vectorcardiography, that the appearance of an S in V6 in the LBBB complicated with lateral infarction is due to rightward shift of the afferent limb of the QRS loop in relation to the efferent one: by positioning at the right of the orthogonal Z.

LBBB ASSOCIATED TO LV FREE WALL OR LATERAL WALL MI



When electrocardiography was starting, Wilson postulated that the S wave of V₆ in the LBBB associated to lateral infarction was due to the sensing by the exploring electrode of V₆ of intracavitary potential of the LV (RS): it is called the "electric window" of Wilson.

Today we know that the afferent limb is dislocated to right of the efferent limb.

CONCLUSIONS

- 1) Atrial enlargement?? It cannot be seen in the VCG with this quality. For the analysis of the P loop, I need the resource not shown here, of a magnification of 32. There is enlargement in the ECG; I agree that there might be some, but it is doubtful. The certainty is given by the echo.
- 2) **Left Ventricular Enlargement:** certain. By the Sokolow-Lyon criterion, positive modified S of V2 + R of V5 or V6 \geq 35 mm or 3,5 mV in adults. R wave of greater voltage + deeper S of any precordial lead $>$ 45 mm or 4,5 mV; R wave of V5 or V6 $>$ 26 mm.
- 3) **End Conduction Delay (ECD)** by the superior or subpulmonary portion of the right branch in the RV free wall: **Right End Conduction Delay**