HISTO-ANATOMICO-PHYSIOLOGICAL CONCEPTS ON THE RIGHT HIS SYSTEM (RHS)

The **RHS** is constituted by:

a) Right His bundle:

1) Right **penetrating** portion.

2) Branching portion.

b) Right branch of the bundle:

3) Proximal or membranous

4) Middle, intramyocardial or mimetic

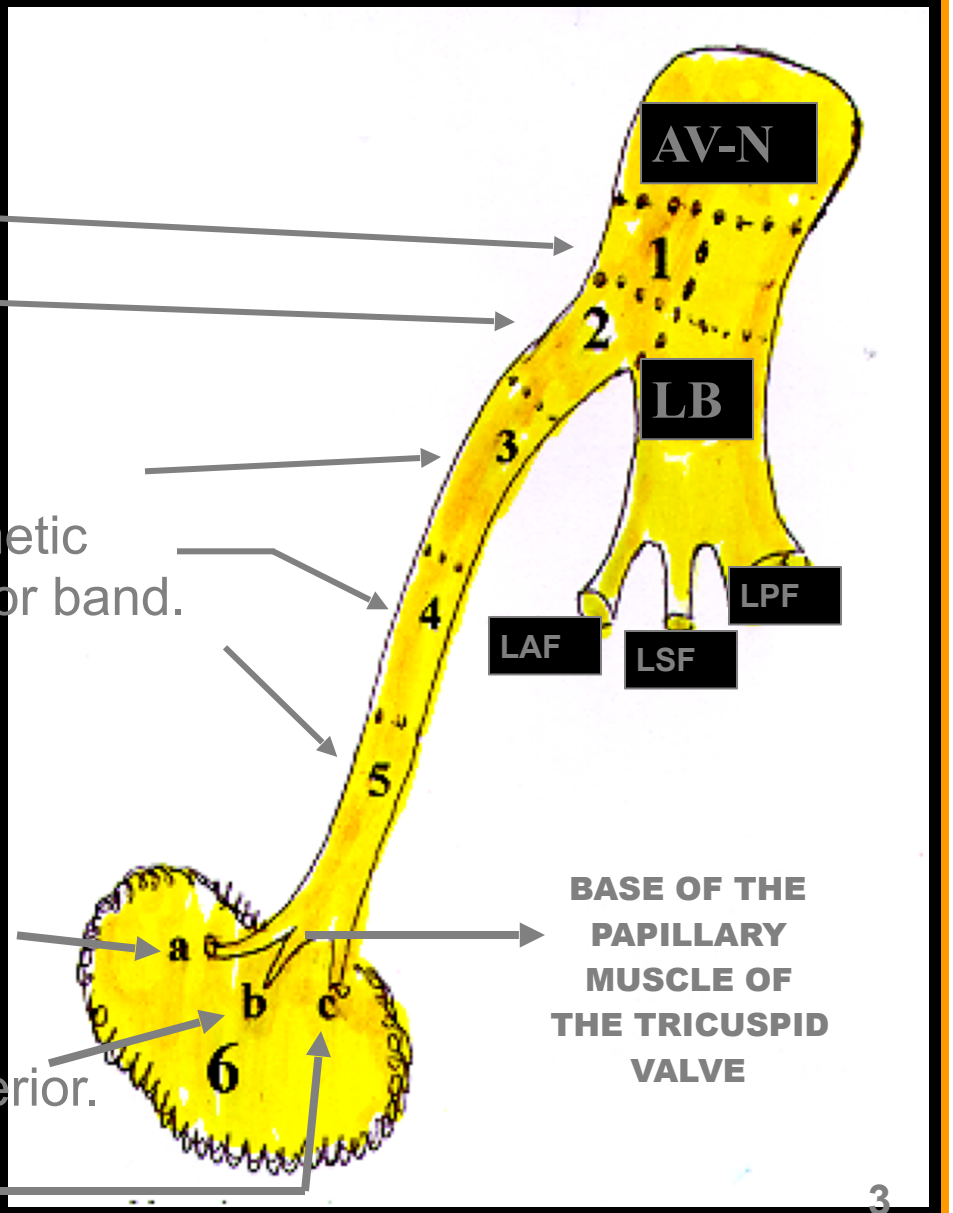
5) Inferior, distal or intra-moderator band.

c) Branch fascicles: 6

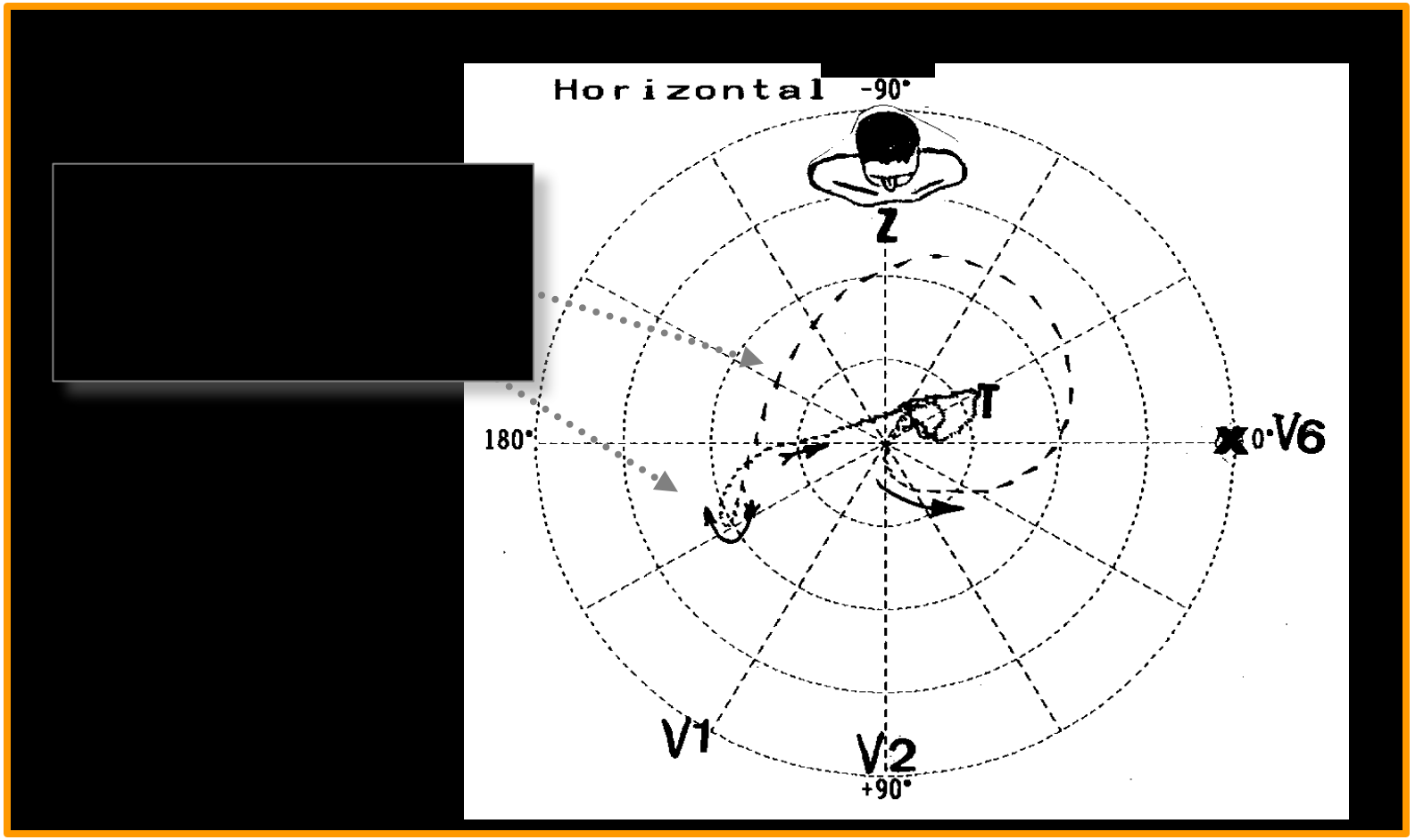
a) Superior, antero-superior or subpulmonary division;

m) Middle, septal or antero-inferior;

p) Inferior, posterior or postero-inferior.

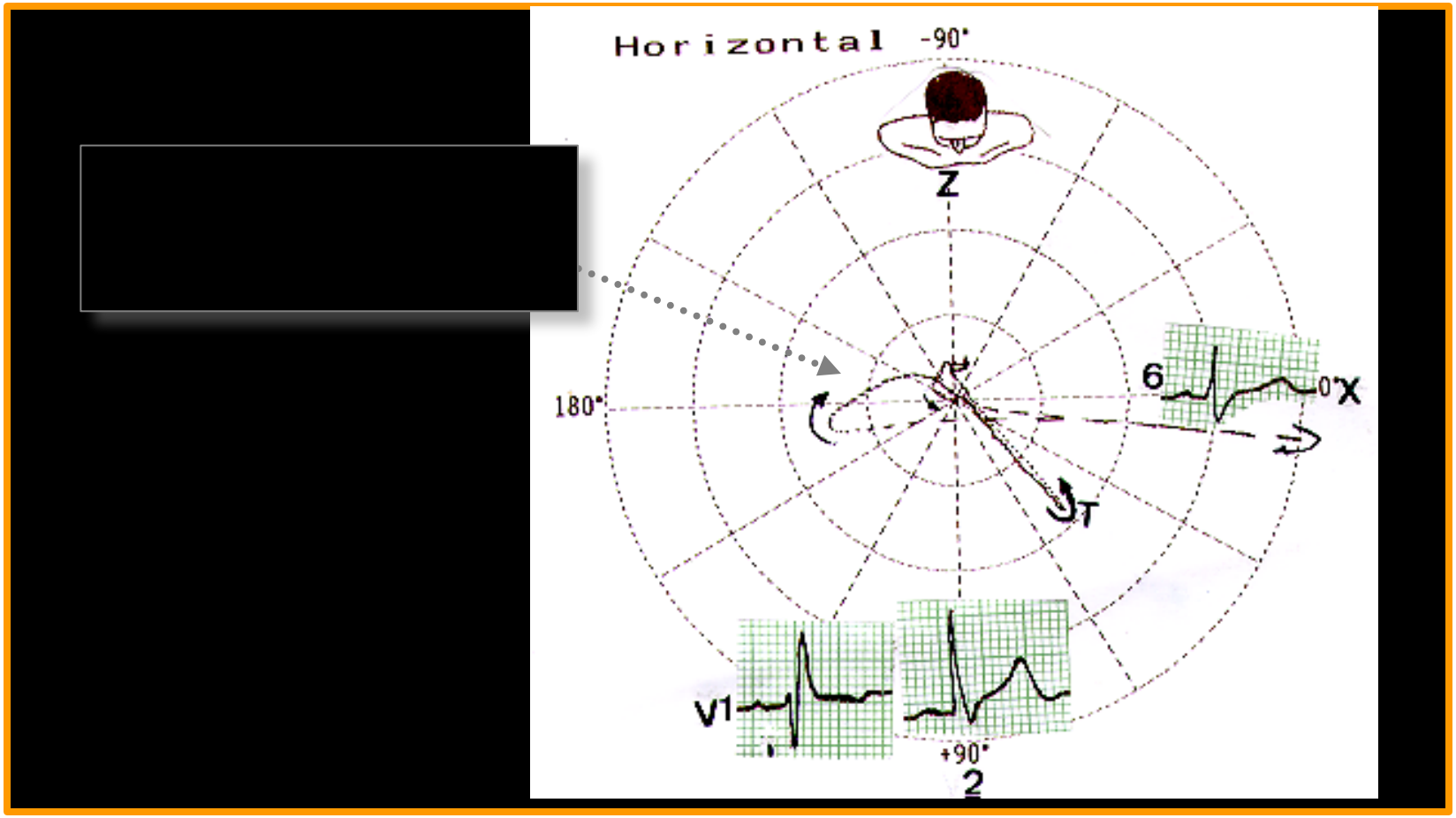


A2) CRBBB TYPE IB OF KENNEDY OR GRISHMAN



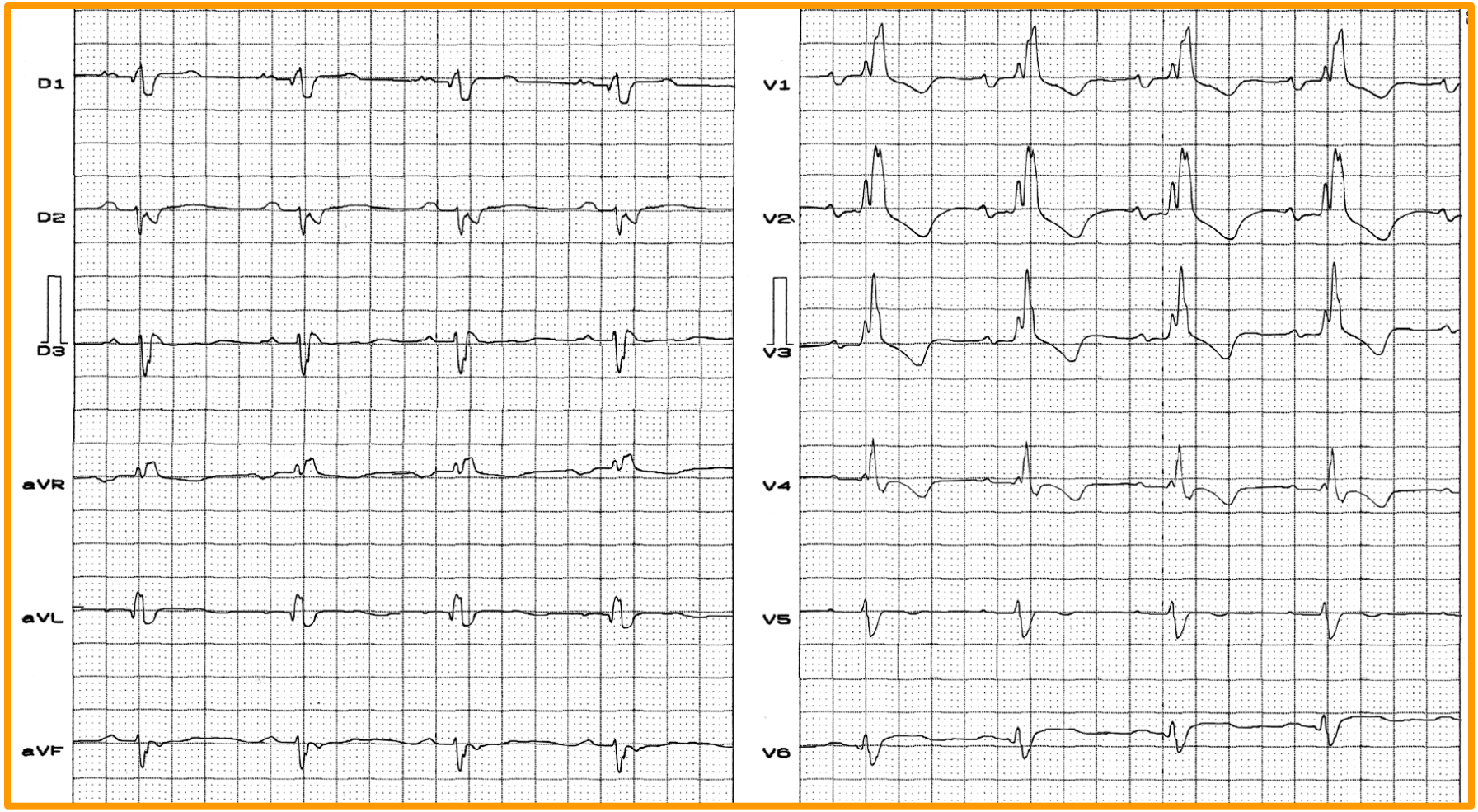
Type I is found more frequently in patients without overt heart disease, in chronic Chagas disease, in orovalvular lesions, high blood pressure and aortic stenosis.

B1) CRBBB KENNNEDY TYPE II OR CABRERA



Characterized by presenting the afferent branch located as facing the X line and the final appendage in eight in the right anterior quadrant.
We find type II in ASD, pulmonary stenosis (PS), in chronic obstructive pulmonary disease (COPD) and more rarely in chronic Chagas disease.

NAME: CFS SEX: MALE. AGE: 45 y. RACE: WHITE
WEIGHT: 72 Kg HEIGHT: 1.70 m BIOTYPE: ATHLETIC DATE: 12/11/2003
MEDICATION IN USE: DIGOXIN 0.25 mg, FUROSEMIDE 40 mg, SPIRONOLACTONE 25 mg, ENALAPRIL 20 mg.



Clinical diagnosis: Chronic Chagas cardiomyopathy, mixed form, dilated and dromotropic.

ANALYSIS

ECHOCARDIOGRAM: Dilated Cardiomyopathy of moderate repercussion. Diffuse hypokinesis with infero-latero-posterior predominance. Normal RV.

ECG DIAGNOSIS: Sinus rhythm; HR: 65 bpm; P wave duration of 110 ms; SAP $+70^0$ bimodal notched aspect in DI; slow final negative component in V1: LAE. The presence of LAE criteria of 1st degree AV block; QRS – SAQRS with extreme deviation in the right superior quadrant; QRS duration of 160 ms; wide S wave in left leads; morphology in "M" from V1 to V4: CRBBB; PAF; R wave of low voltage in V5 and V6.

CONCLUSION: LAE or BAE? 1st degree AV block? CRBBB, PAF, infero-latero-dorsal electrically inactive area? RVE?

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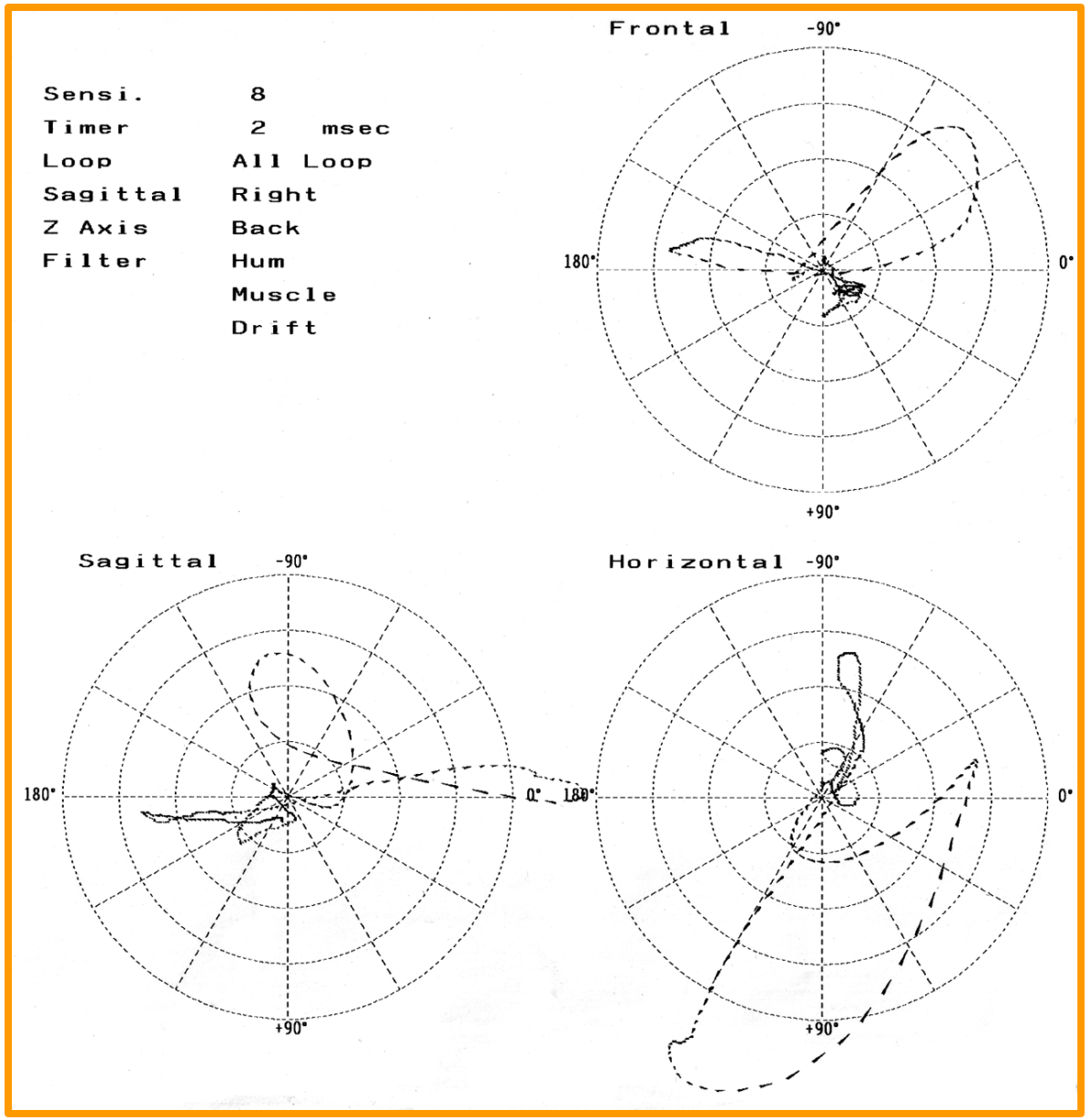
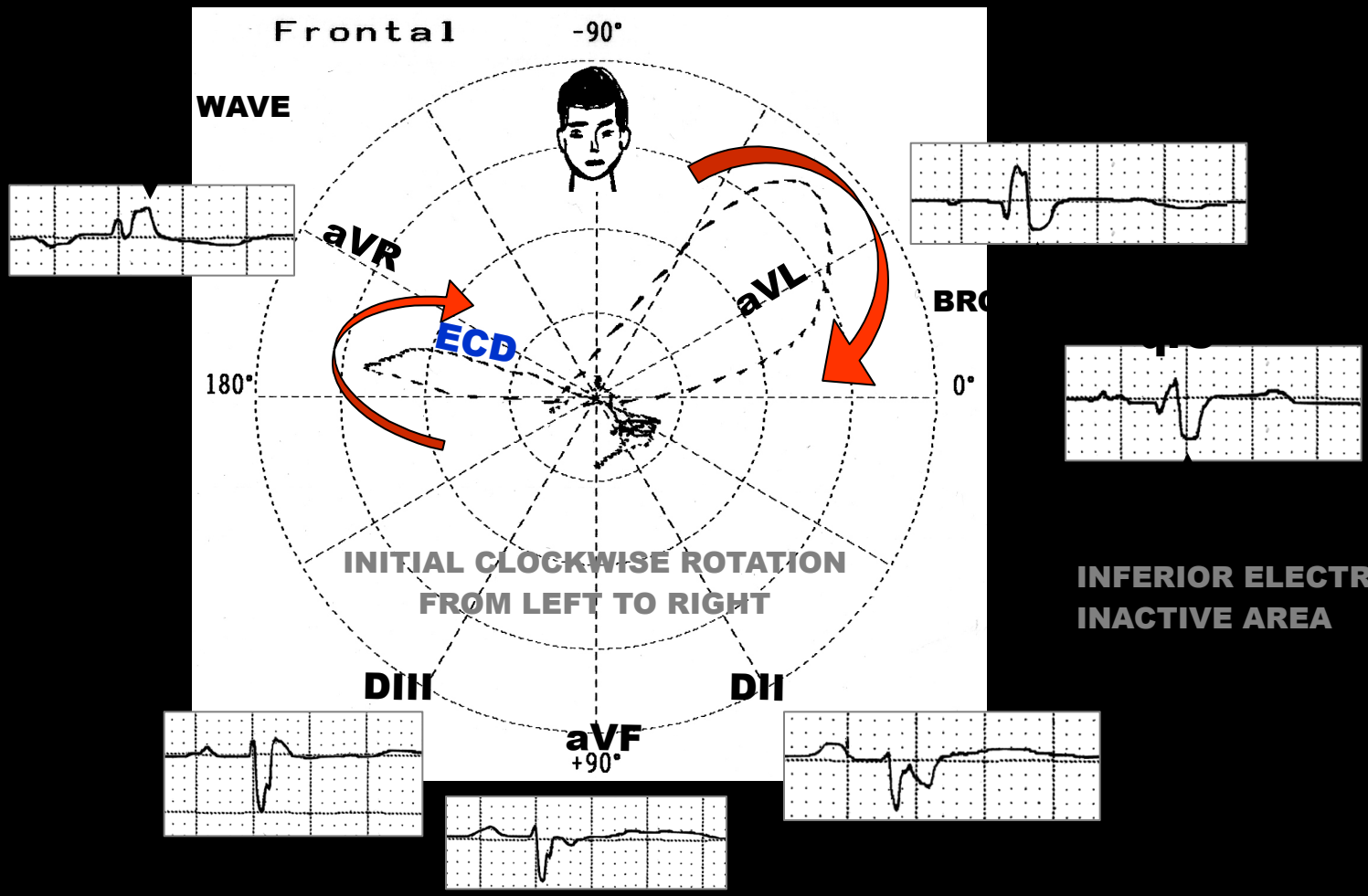
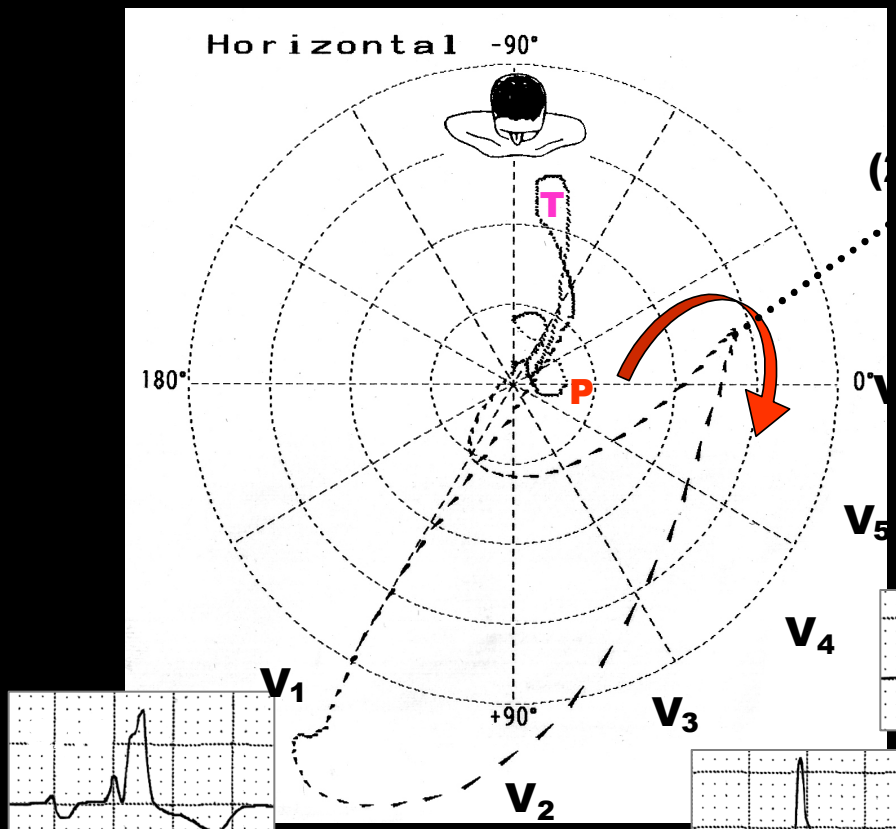


ECG/VCG CORRELATION FRONTAL PLANE



ECG/VCG CORRELATION HORIZONTAL PLANE

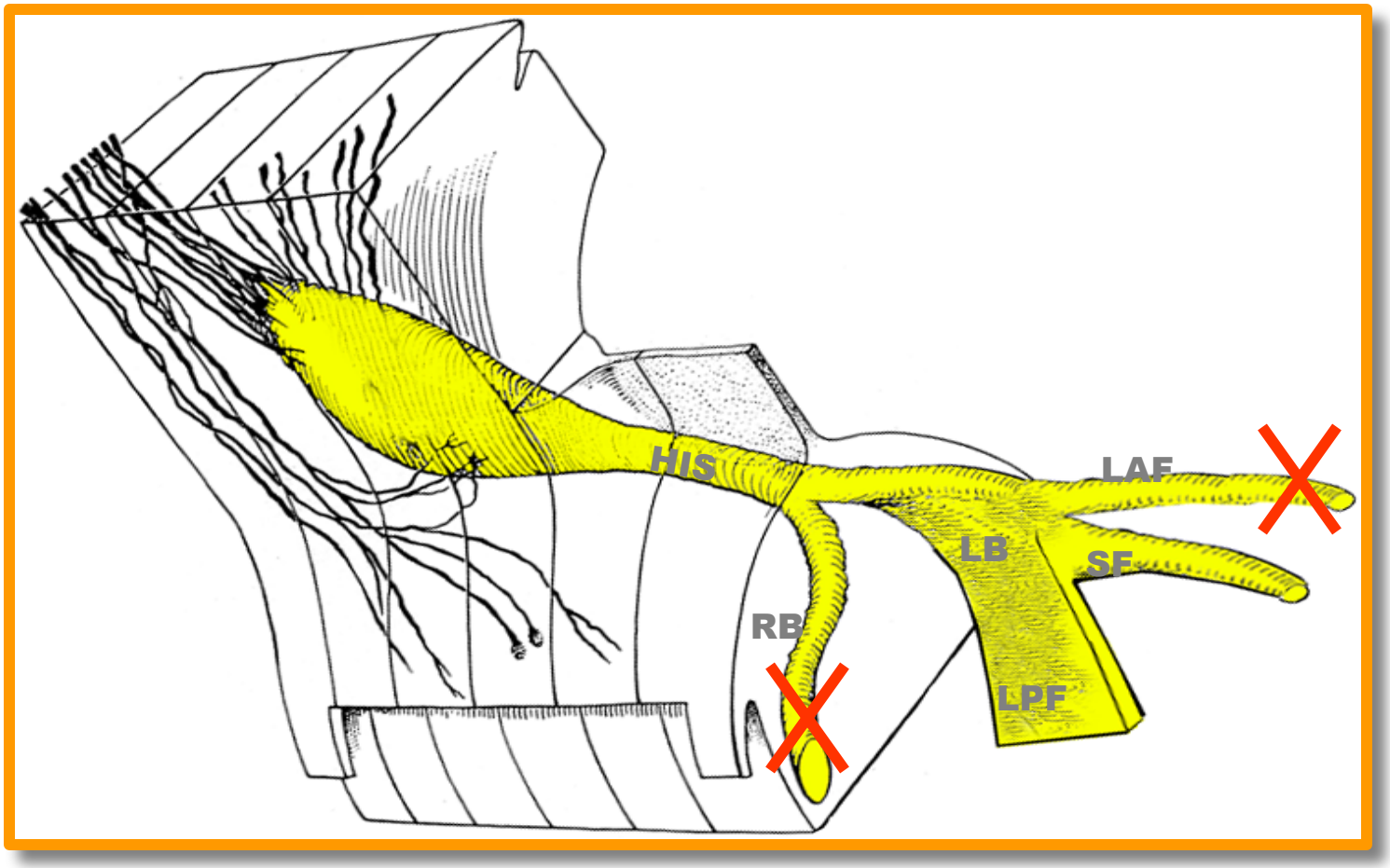


LATERAL ELECTRICALLY INACTIVE AREA?

CRBBB AND DORSAL ELECTRICALLY INACTIVE AREA MODIFY THE FINAL PART OF QRS AFTER 50 ms

Prominent Anterior Forces: DORSAL ELECTRICALLY INACTIVE AREA

COMPLETE RIGHT BUNDLE BRANCH BLOCK ASSOCIATED TO LAFB



CRBBB ASSOCIATED TO LAFB

It constitutes the most frequent type of bifascicular block. In the first world it was estimated in 1.4% of all ECGs.

In patients that developed complete AV block and had to have a pacemaker implanted, this association was found previously in 35% of the cases.

CRBBB ASSOCIATED TO LAFB

ETIOLOGY

1) CHRONIC CHAGASIC CARDIOMYOPATHY: it constitutes the most frequent association in Latin America, where chronic chagasic cardiomyopathy exists from the Argentinean Patagonia up to the frontier with USA. In the CRBBB of chronic chagasic cardiomyopathy, the high association with LAFB stands out: 70% of the cases.

In patients younger than 40 years old, from the endemic area, with ECG that shows association of CRBBB and LAFB, there is a high suspicion of chronic chagasic cardiomyopathy, and even more with the additional presence of polymorphic ventricular extrasystole and primary alterations of ventricular repolarization.

CRBBB ASSOCIATED TO LAFB

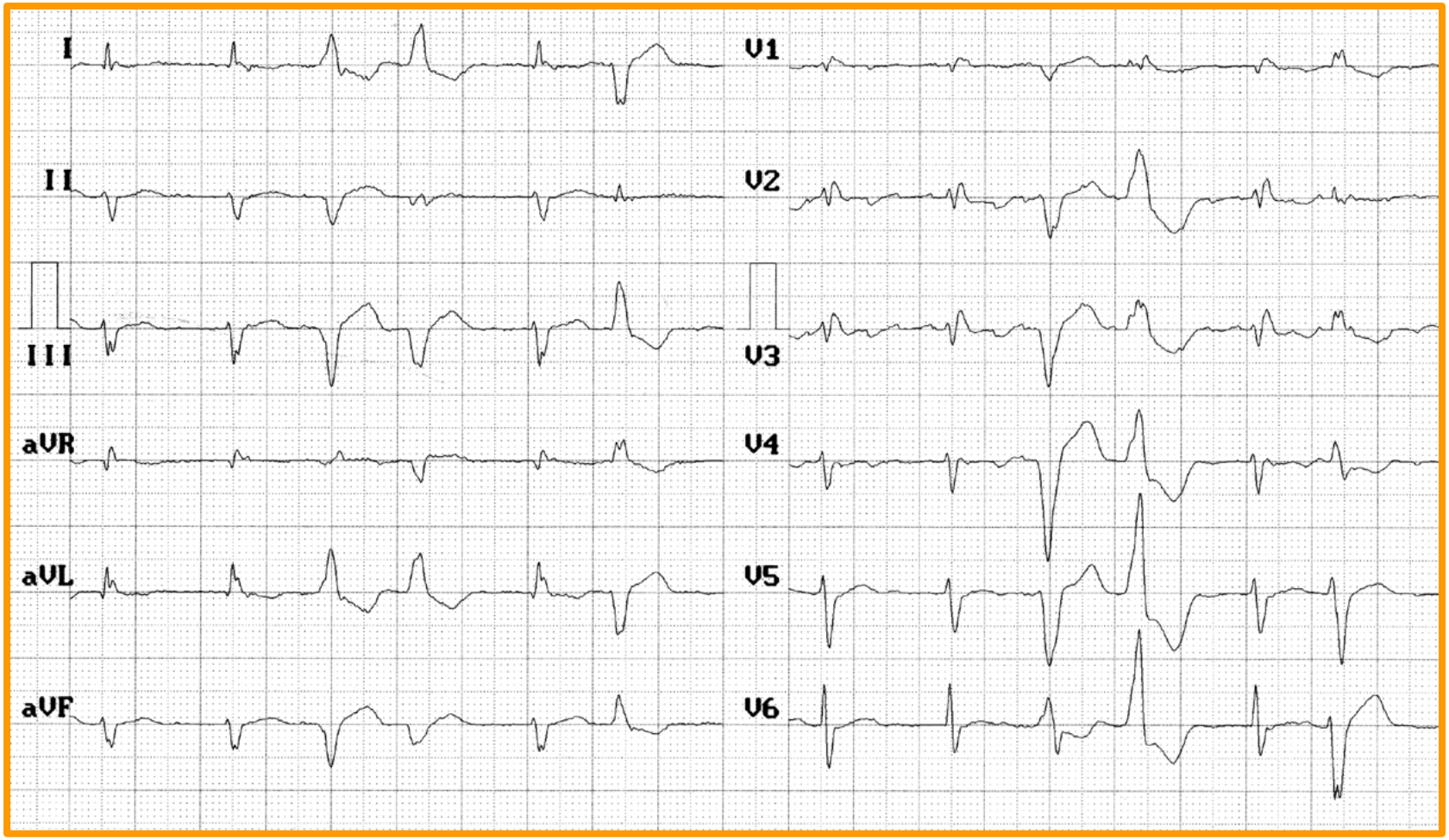
ETIOLOGY

1) CHRONIC CHAGASIC CARDIOMYOPATHY:

The association considered typical and most frequent, is complete right bundle branch block (CRBBB) of the His bundle and left anterior fascicular block (LAFB).
A longitudinal study of 5,710 infected patients, showed that the presence of CRBBB associated to primary alterations of repolarization and electrically inactive areas, indicates high risk of death.

Autopsy studies conducted by Andrade, revealed that most of the patients with chronic chagasic heart disease present a significant involvement of the excito-conductor system at the level of the N-H portion of the AV node, right penetrating and branching portion of the His bundle, proximal portion of the right branch and the antero-superior division of the left branch. We conclude that CRBBB of chronic chagasic heart disease is of the proximal type.

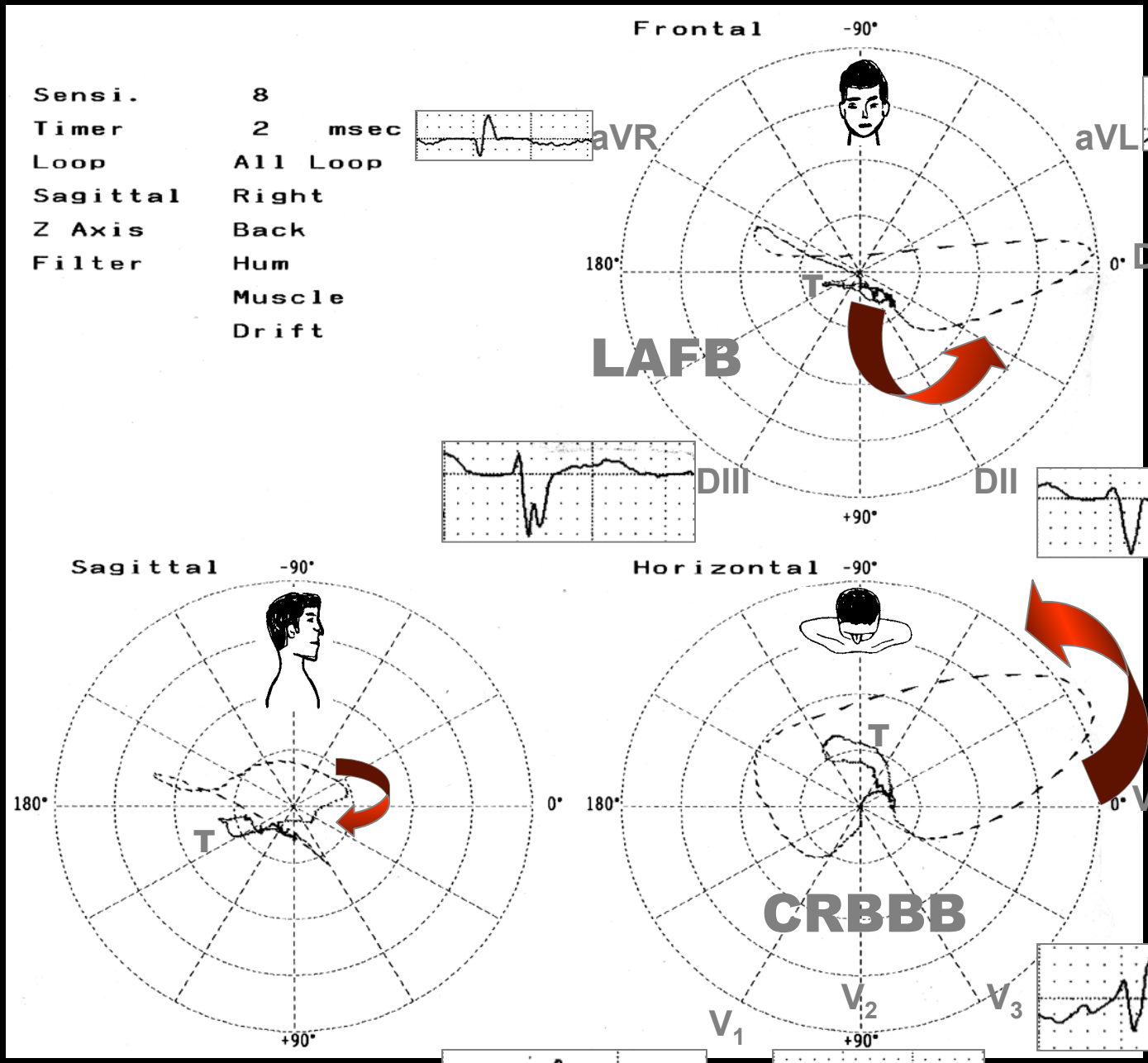
TYPICAL ECG OF CHRONIC CHAGASIC HEART DISEASE



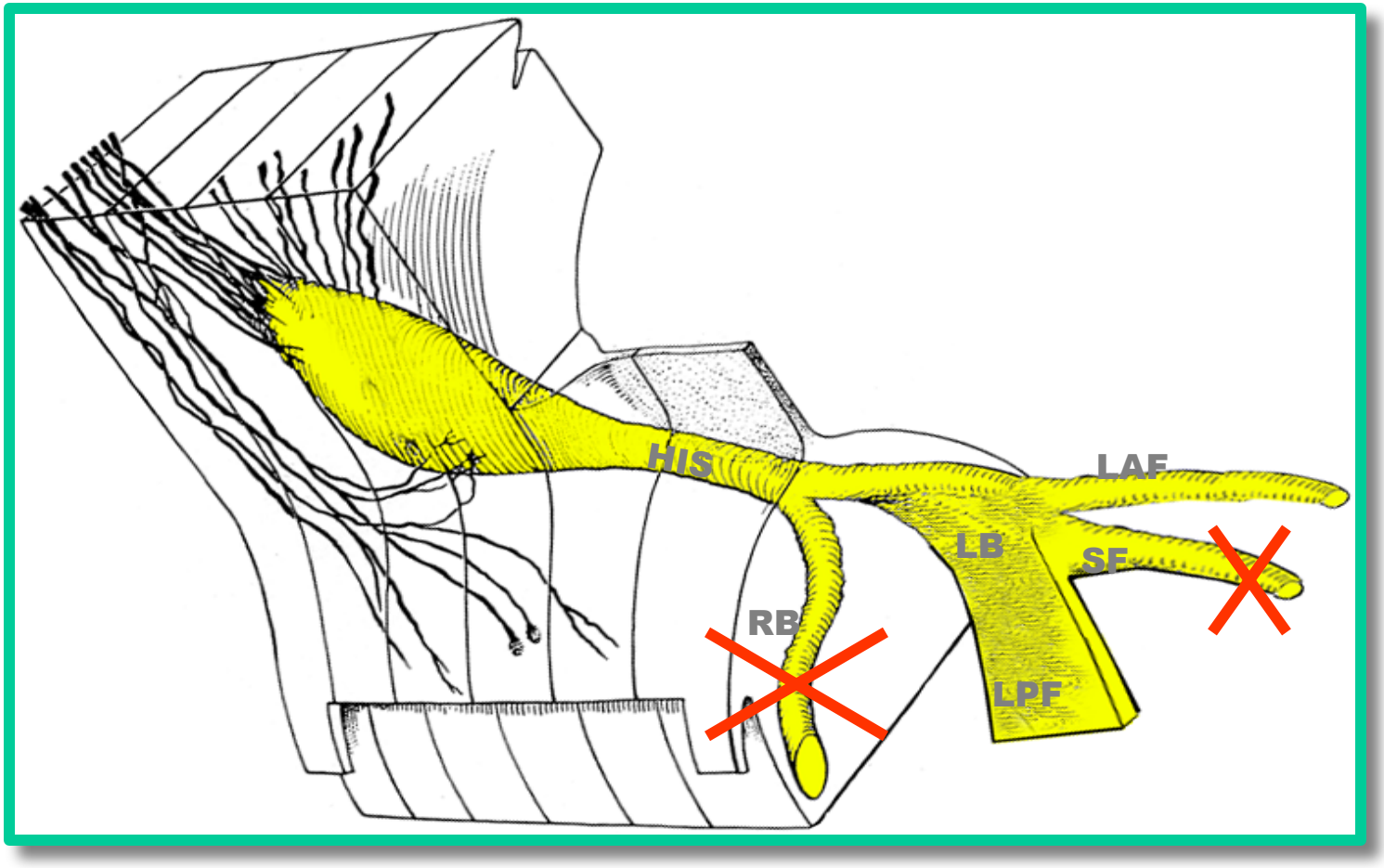
P wave of difficult visualization, indicating intense fibrosis of atrial tissue.
LAFB: extreme deviation of AQRS in the left superior quadrant, around -75^0, qR in DI and aVL, rS in inferior leads with S in V_5 and V_6

CRBBB: triphasic complex of the rsr' type of V_1 to V_3, wide r of aVR and S in V_5 and V_6

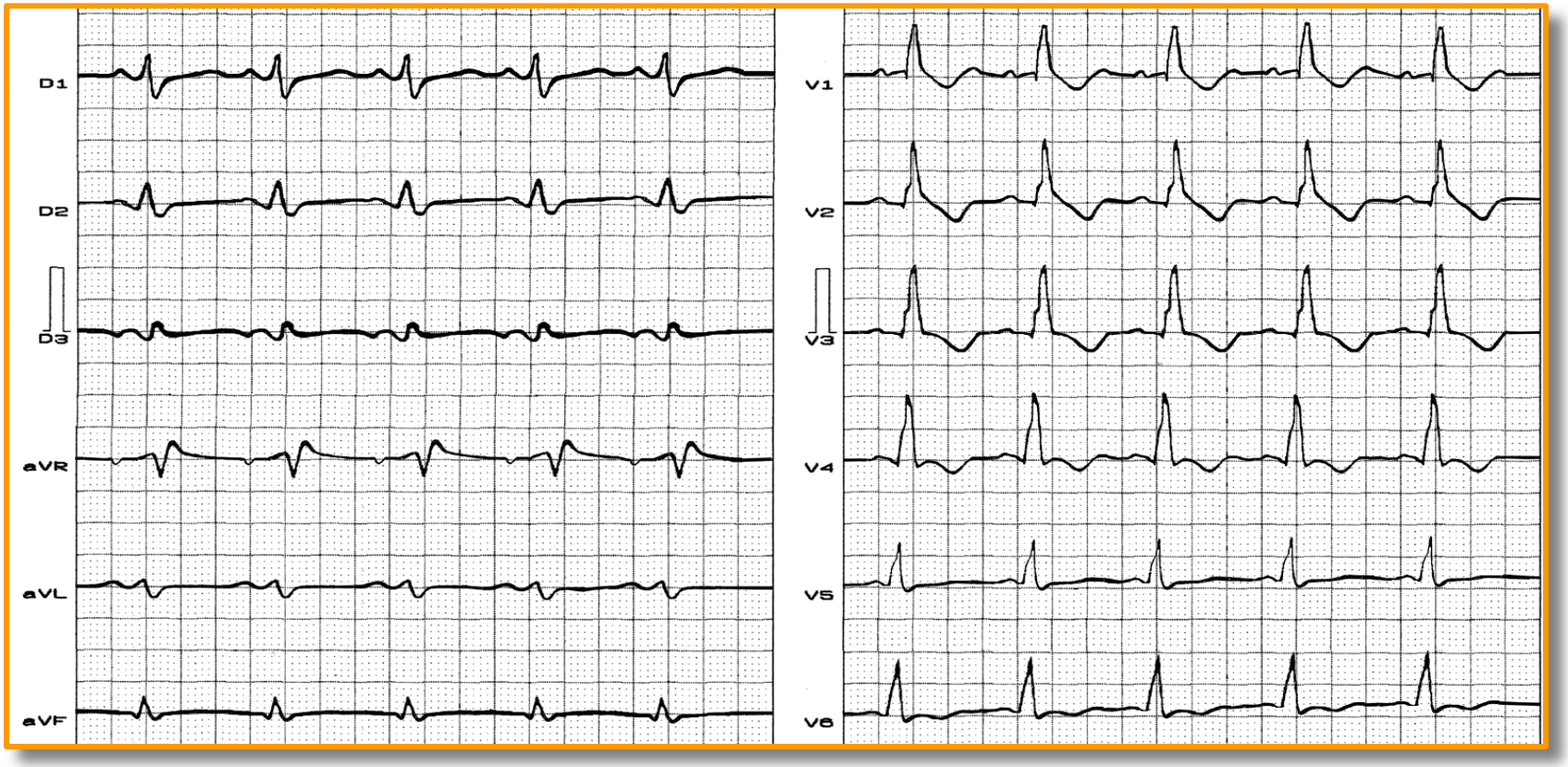
Coupled polymorphic extrasystoles.
CLASSICAL TRIAD: CRBBB+LAFB+POLYMORPHIC VENTRICULAR EXTRASYSTOLES


Sensi. 8
Timer 2 msec
Loop All Loop
Sagittal Right
Z Axis Back
Filter Hum
Muscle
Drift
Frontal
-90°
+90°
180°
0°
aVR
aVL
DI
DII
DIII
T
LAFB
Sagittal
T
Horizontal
T
V6
CRBBB
V1
V2
V3

CRBBB ASSOCIATED TO SFB



NAME: A. B. **DATE:** 07/10/1988 **AGE:** 45 A.
SEX: M. **RACE:** W. **WEIGHT:** 70 Kg . **HEIGHT:** 1.70 m. **BIOTYPE:** ATHLETIC
MEDICATION IN USE: NOTHING STATED.

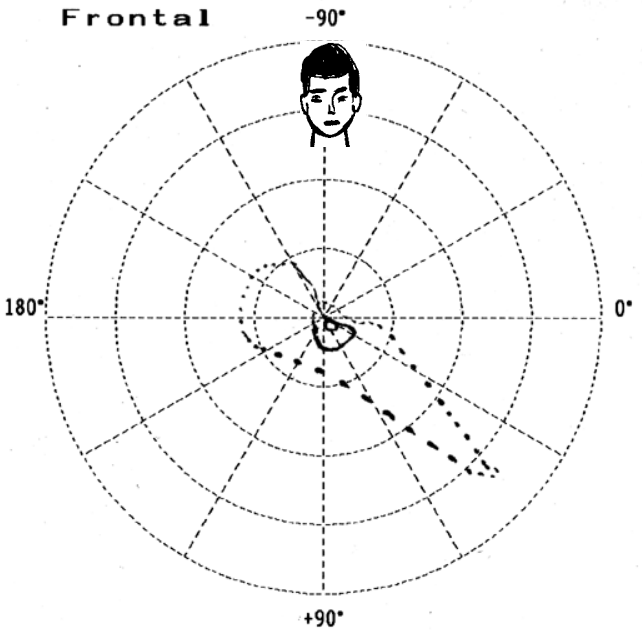


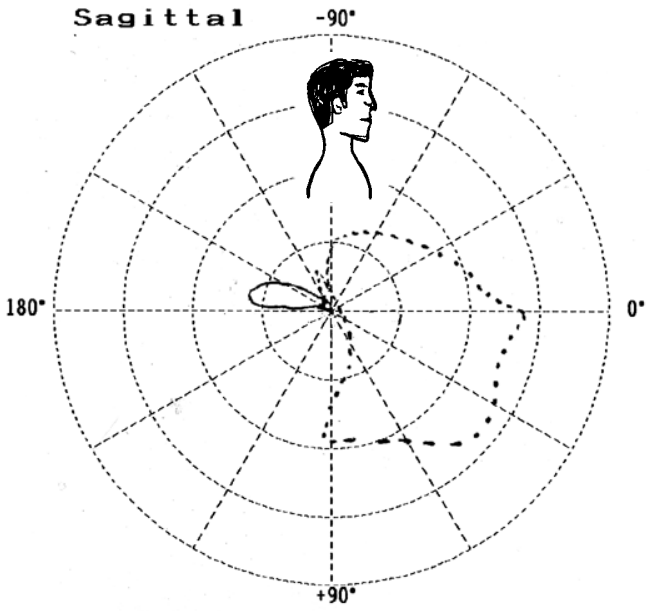
CLINICAL DIAGNOSIS: CHRONIC CHAGASIC CARDIOMYOPATHY, DROMOTROPIC FORM.

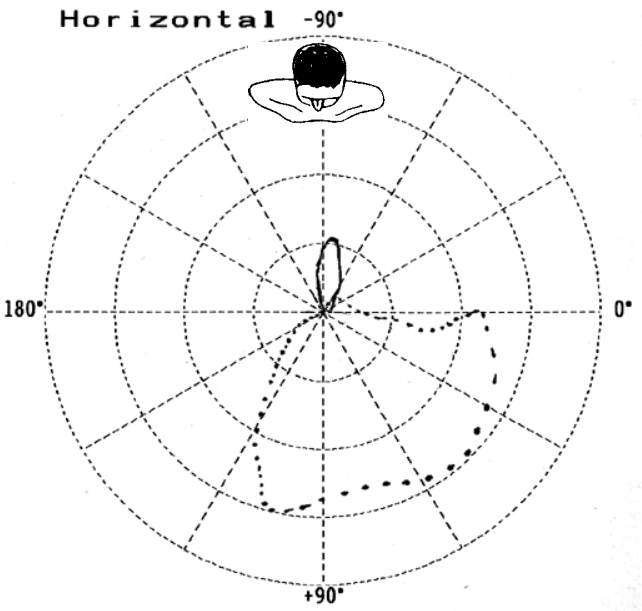
ECG DIAGNOSIS: CRBBB + SFB = BIFASCICULAR BLOCK. SINUS RHYTHM; HR: 79 bpm; P WAVE: SAP CLOSE TO 0^0 AND TO THE FRONT; PR: 170 ms; SAQRS: PERPENDICULAR TO THE FRONTAL PLANE, DURATION: 220 ms, MORPHOLOGY: BROAD S FROM DI AND aVL, qR FROM V_1 TO V_3 WITH PEAKED R WAVES AND WITHOUT THE PLATEAU PROPER OF CRBBB. BROAD DESCENDING BRANCH OF V_2 AND V_3. INTRINSICOID DEFLECTION IN V_2 < 50% OF TOTAL DURATION OF QRS.
Rs WAVES FROM V_4 TO V_6, VOLTAGE OF R GROWS FROM V_1 TO V_2 AND V_3 AND DECREASES FROM V_4 TO V_6, ABSENCE OF q IN V_5 AND V_6 AND s WAVE A LITTLE BROADENED AND WITH SMALL DEPTH IN THESE LEADS, AS IT WOULD BE IN CRBBB IN ISOLATION.

NAME: A. B. **DATE:** 08/10/1988 **AGE:** 45 Y.
SEX: M. **RACE:** W. **WEIGHT:** 70 Kg . **HEIGHT:** 1.70 m. **BIOTYPE:** ATHLETIC
MEDICATION IN USE: NOTHING STATED.

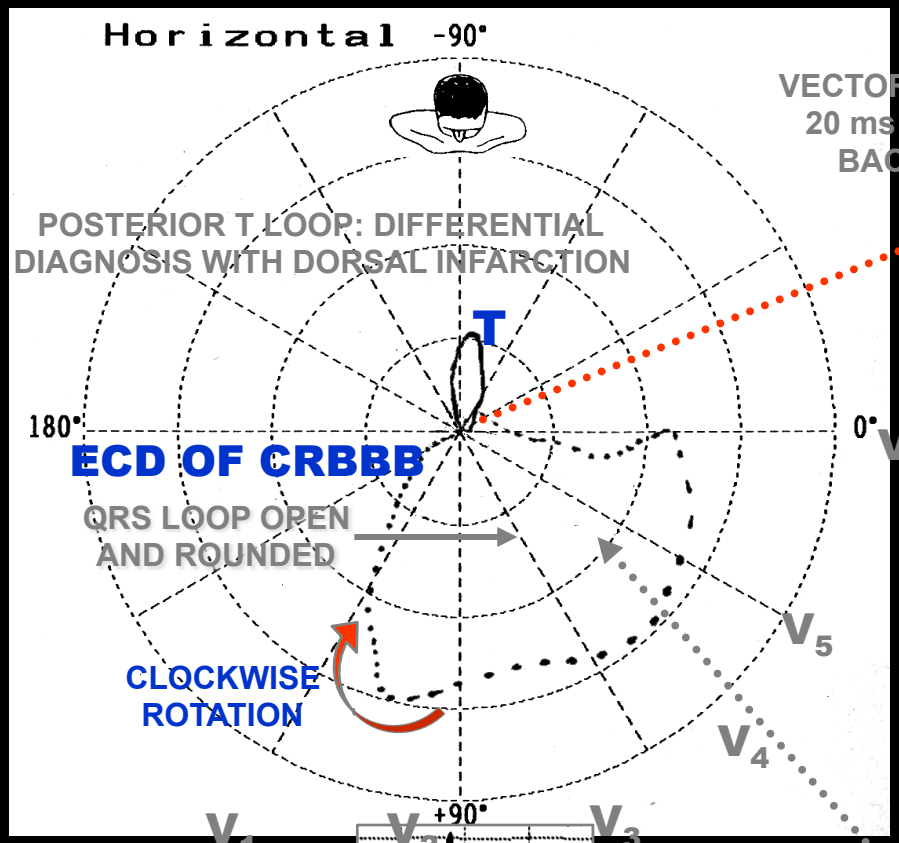
Sensi.	2
Timer	2 msec
Loop	All Loop
Sagittal	Right
Z Axis	Back
Filter	Hum
	Muscle
	Drift



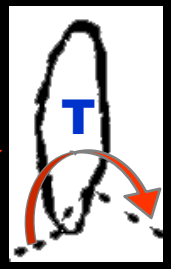




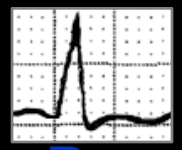
SFB+CRBBB HORIZONTAL PLANE

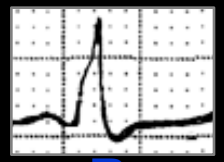


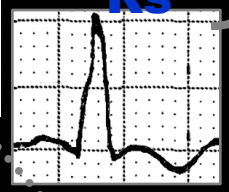
VECTOR OF INITIAL 20 ms POINTING BACKWARD



POSTERIOR T LOOP: DIFFERENTIAL DIAGNOSIS WITH DORSAL INFARCTION







ABSENCE OF q IN V_5 AND V_6

VOLTAGE OF R WAVES DECREASES IN V_4 A V_6

s WAVES A LITTLE BROADENED AND OF SMALL DEPTH

QRS LOOP PREDOMINANT LOCATION IN LEFT ANTERIOR QUADRANT

INTRINSICOID DEFLECTION IN V2 < 50% OF TOTAL DURATION OF QRS
R V2 > R V3