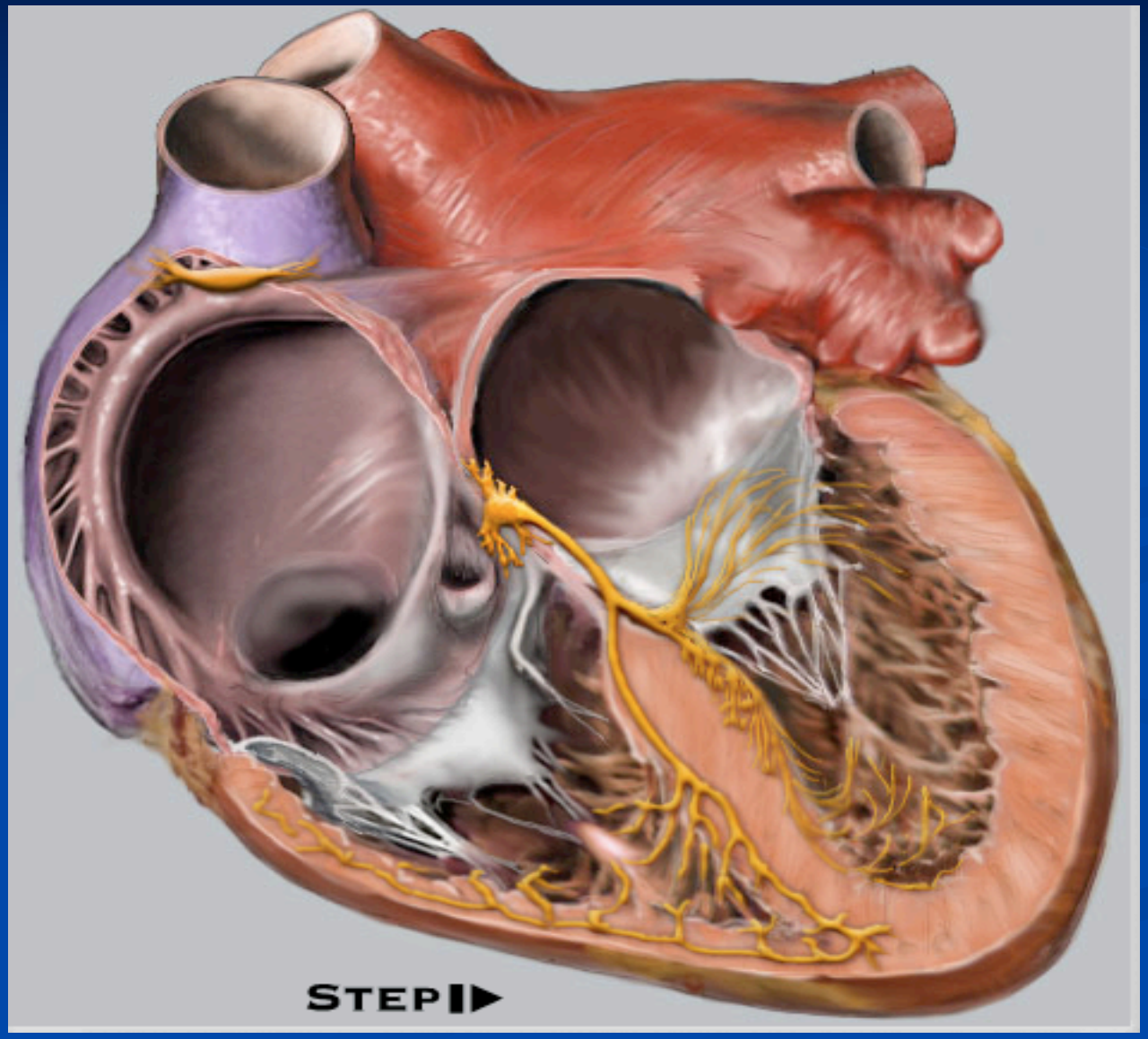
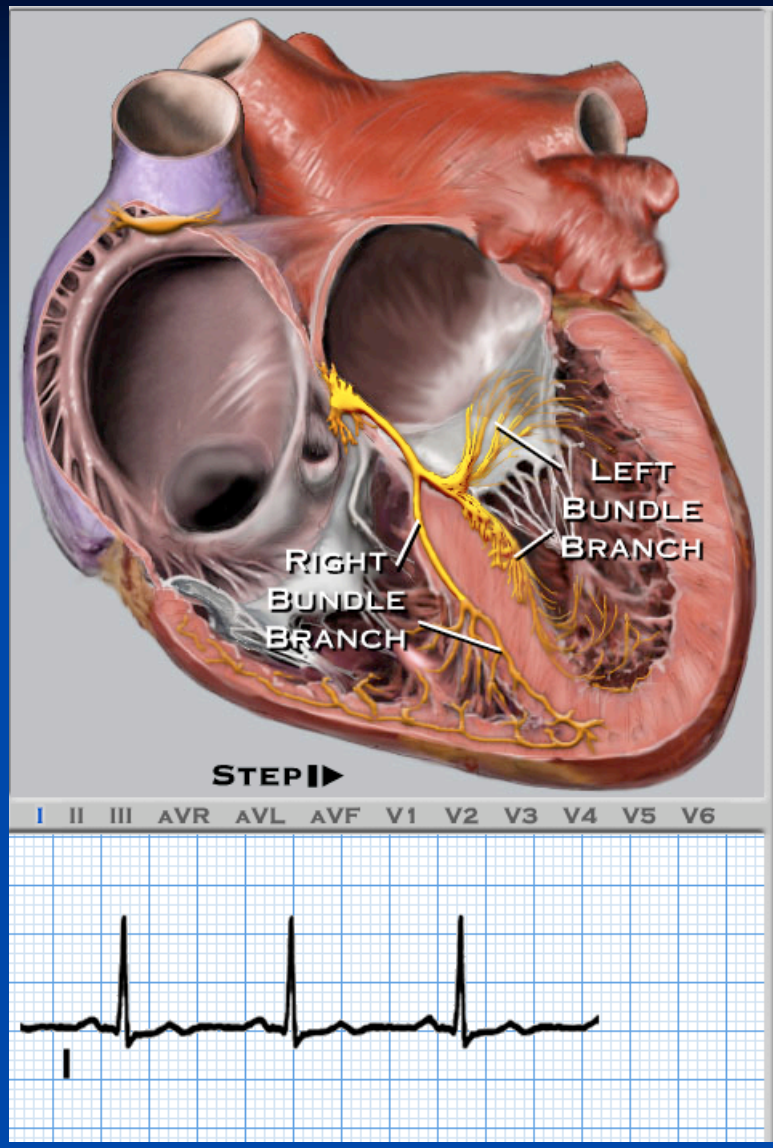
Arritmias

Ritmo Normal



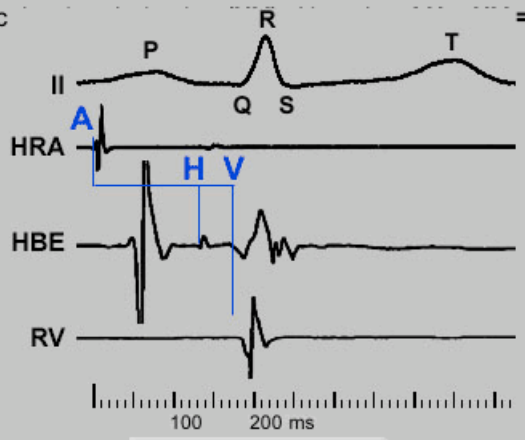


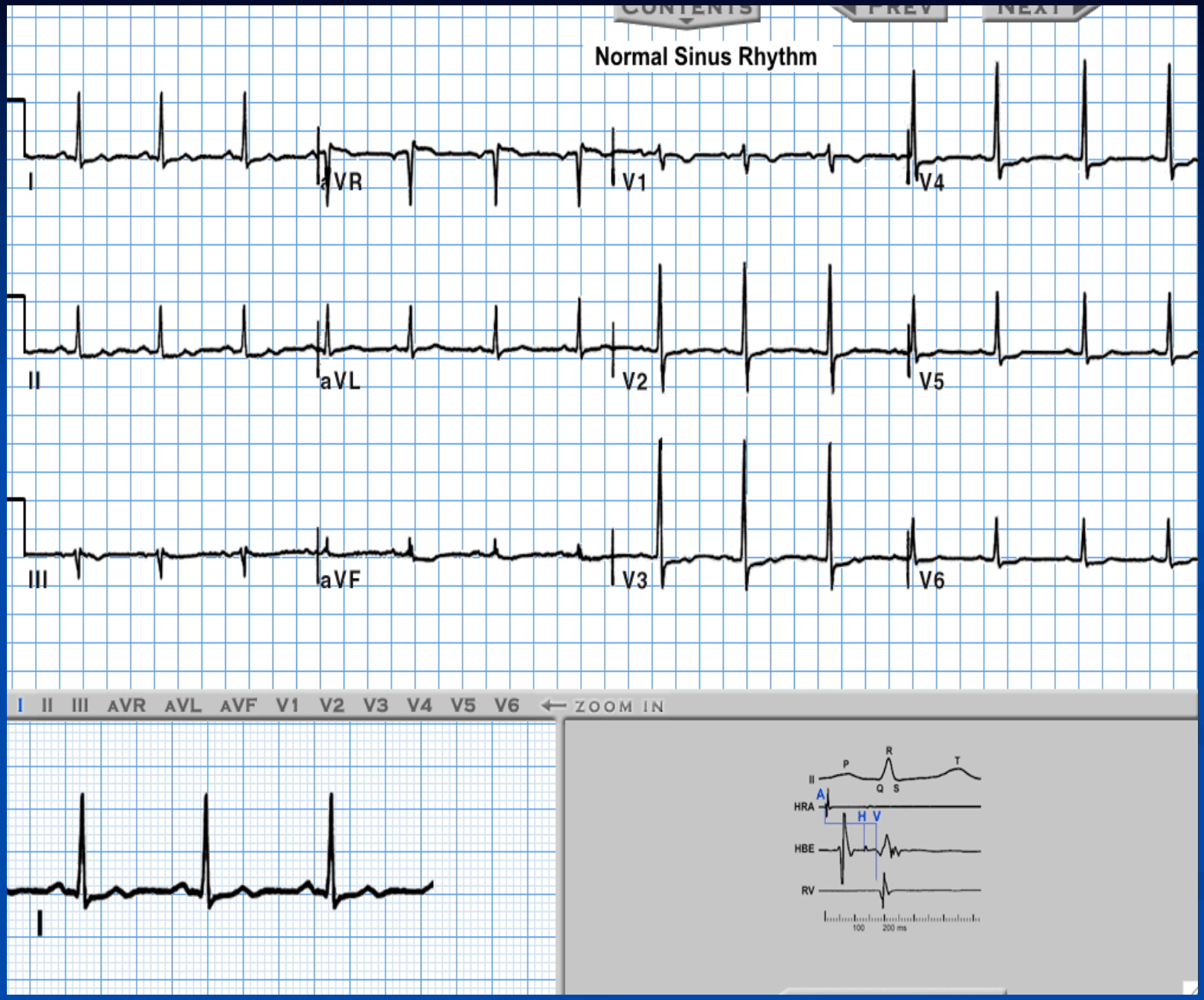
Normal Sinus Rhythm

The cardiac impulse originates in the **Sinus Node** and begins the process of atrial depolarization. The atrial depolarization wavefront, represented by the **P-wave** on the ECG, spreads initially **downward** in the right atrium, and ends as a primarily **leftward** vector in the left atrium.

Conduction through the **AV Node** is normally slow. Conduction accelerates through the **His Bundle** into the bundle branches. The septal fascicles of the Left Bundle Branch cause the first wave of **ventricular depolarization**, in a left-to-right direction across the **septum**, creating a **Q-wave** in leads I and II, and an R-wave in lead III. This is followed by **apical depolarization**, creating R-waves in leads I, II, and III, and finally **left ventricular depolarization**, creating an S-wave in lead III and increasing the R-waves in leads I and II.

The intracardiac tracings below show the normal intervals between initiation of atrial depolarization and His bundle activation **(AH)** and His to ventric = **PR** interval.

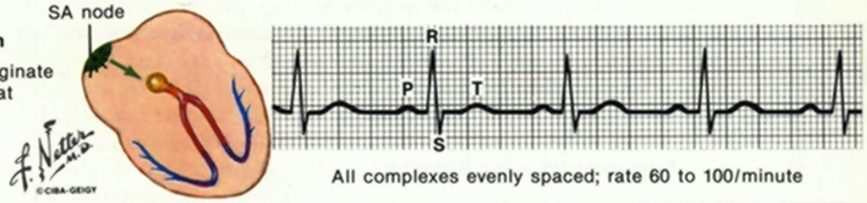



CONTENTS
PREV
NEXT
Normal Sinus Rhythm
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
I II III AVR AVL AVF V1 V2 V3 V4 V5 V6
ZOOM IN
P
R
T
Q S
II
HRA
A
H V
HBE
RV
100
200 ms

Supraventricular Rhythms

A. Normal sinus rhythm

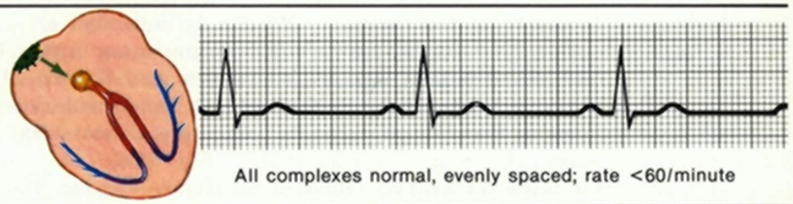
Impulses originate at SA node at normal rate



All complexes evenly spaced; rate 60 to 100/minute

B. Sinus bradycardia

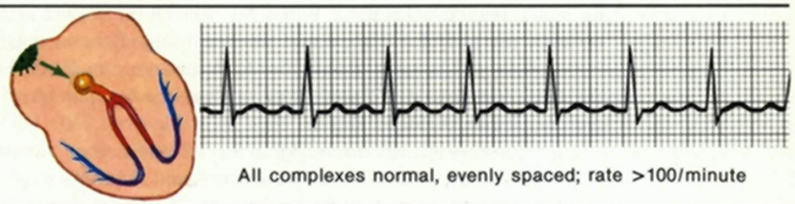
Impulses originate at SA node at slow rate



All complexes normal, evenly spaced; rate <60/minute

C. Sinus tachycardia

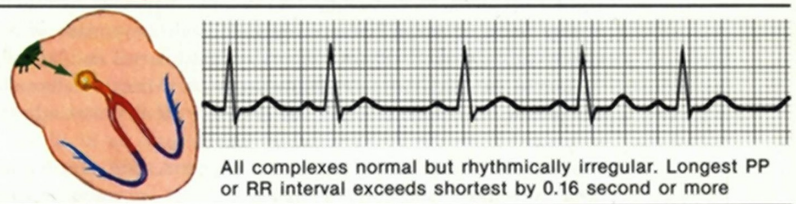
Impulses originate at SA node at rapid rate



All complexes normal, evenly spaced; rate >100/minute

D. Sinus arrhythmia

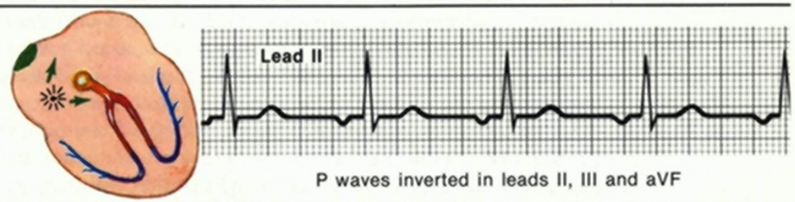
Impulses originate at SA node at varying rate



All complexes normal but rhythmically irregular. Longest PP or RR interval exceeds shortest by 0.16 second or more

E. Nonsinus atrial (coronary sinus) rhythm

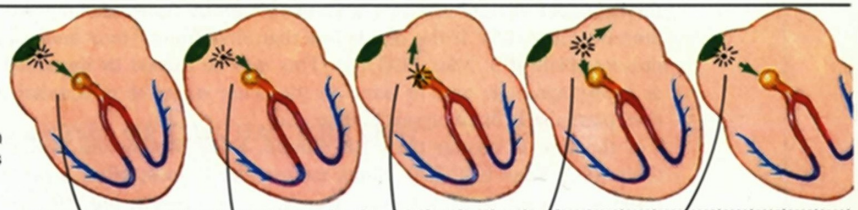
Impulses originate low in atrium; travel retrograde as well as distally



P waves inverted in leads II, III and aVF

F. Wandering atrial pacemaker

Impulses originate from varying points in atria



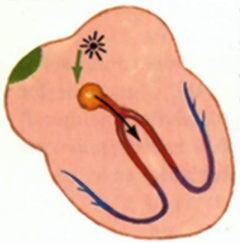
Variation in P wave contour, PR interval, PP and thus RR intervals

Extrasístoles

Unusual Beats

A. Premature contractions (occur early, before next sinus beat is expected)

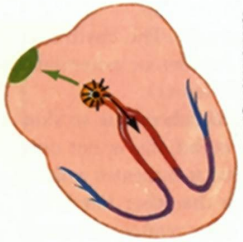
1. Atrial



Premature contraction

P wave often has contour slightly different from sinus beats. PR interval often long. QRS narrow (<0.10 second), similar to normal beats except for timing

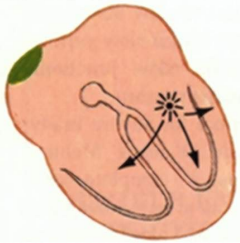
2. Junctional (nodal)



Premature contraction

QRS narrow (<0.10 second). P wave often inverted; may precede, be incorporated in, or follow QRS, depending on whether of high, mid or low nodal origin

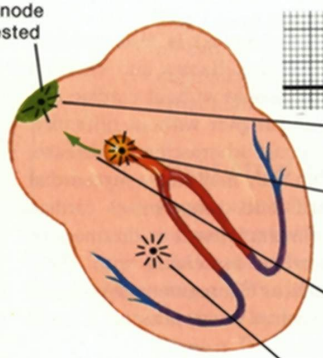
3. Ventricular

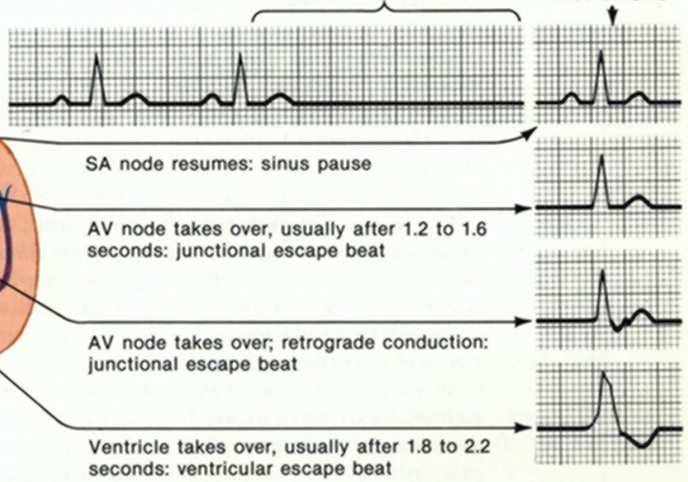


Premature contraction

QRS wider than normal and distorted in shape. Usually no P wave

B. Escape beats (occur late)





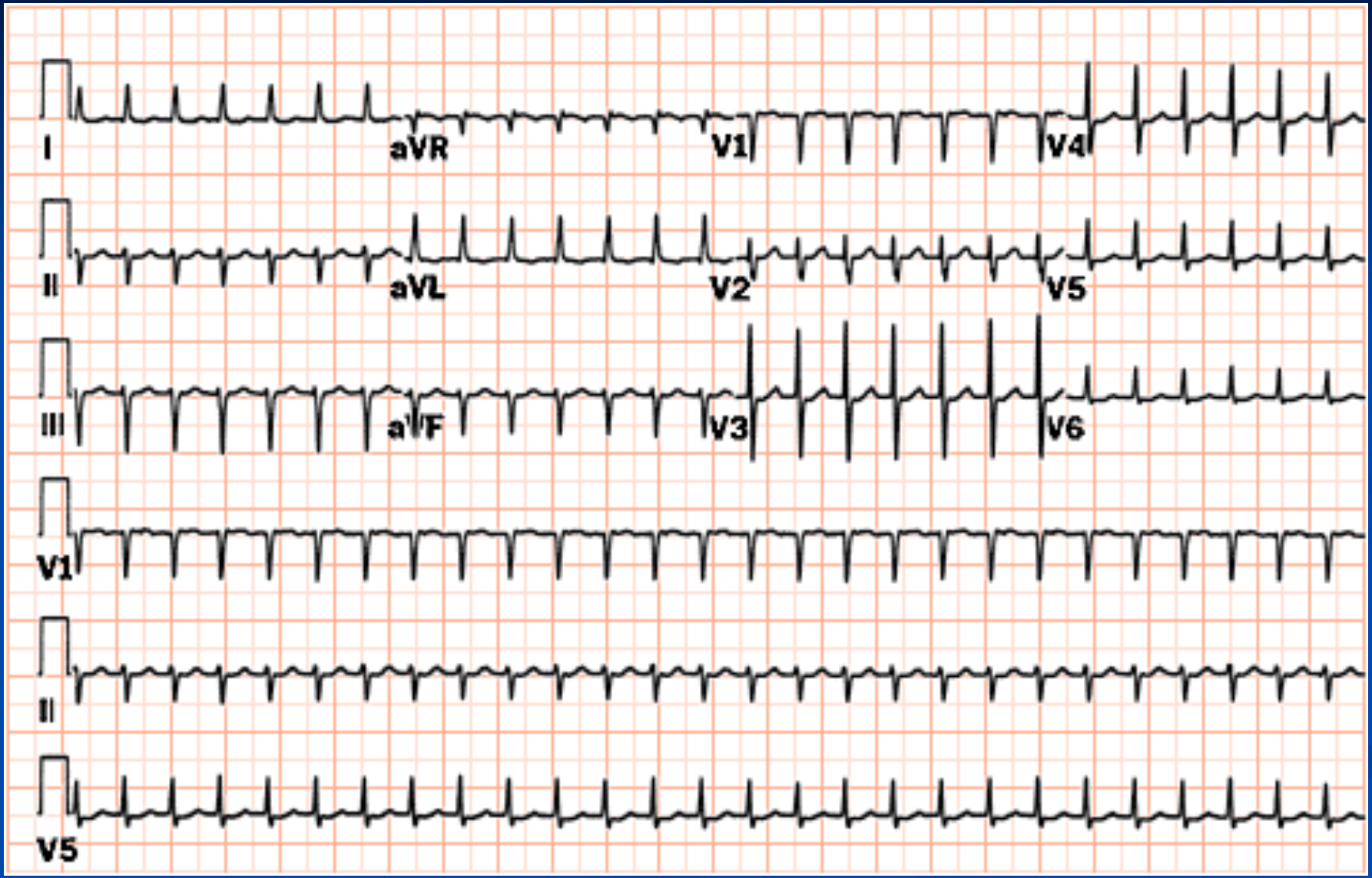
SA node resumes: sinus pause

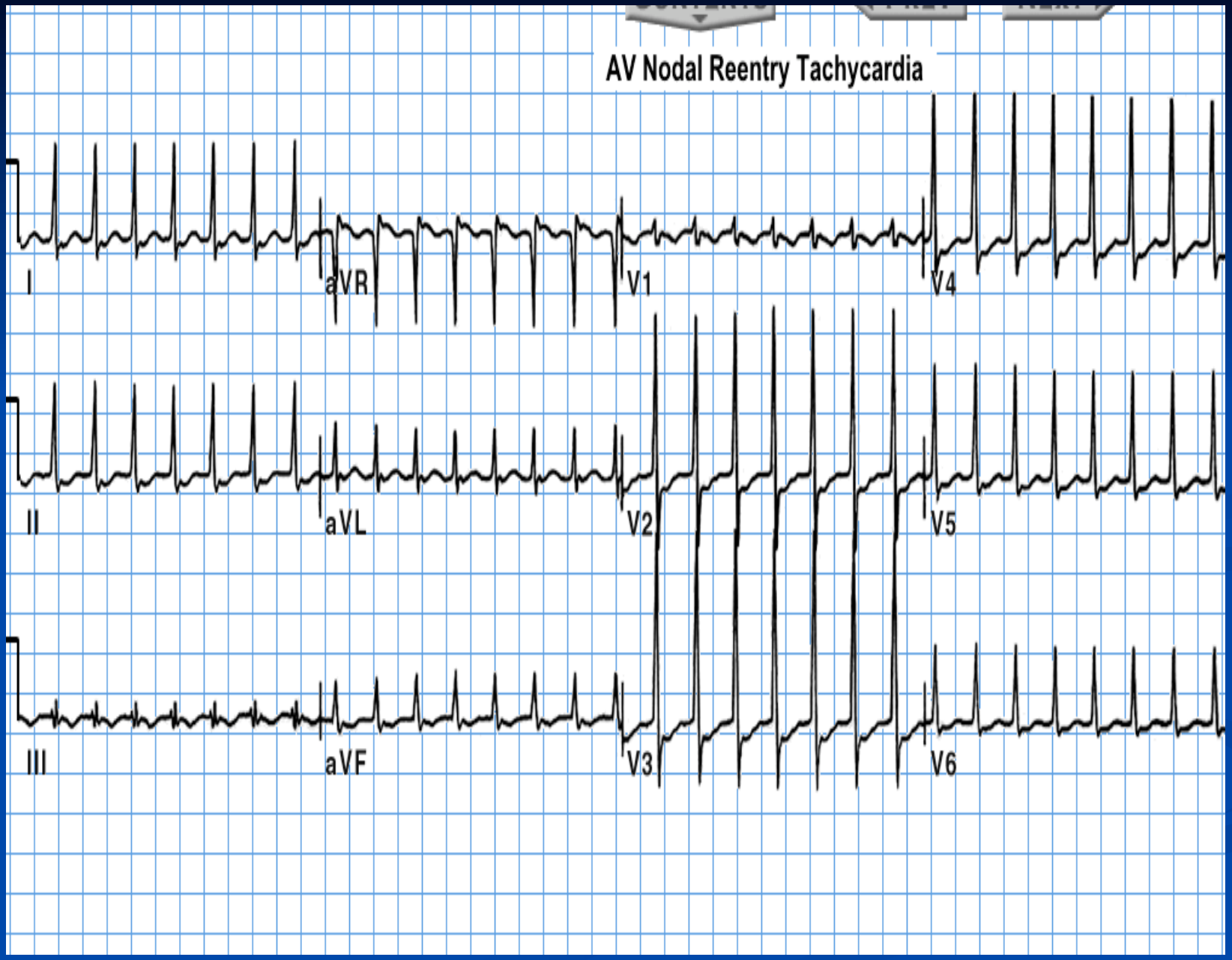
AV node takes over, usually after 1.2 to 1.6 seconds: junctional escape beat

AV node takes over; retrograde conduction: junctional escape beat

Ventricle takes over, usually after 1.8 to 2.2 seconds: ventricular escape beat

TPSV




AV Nodal Reentry Tachycardia
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

Doble vía nodal

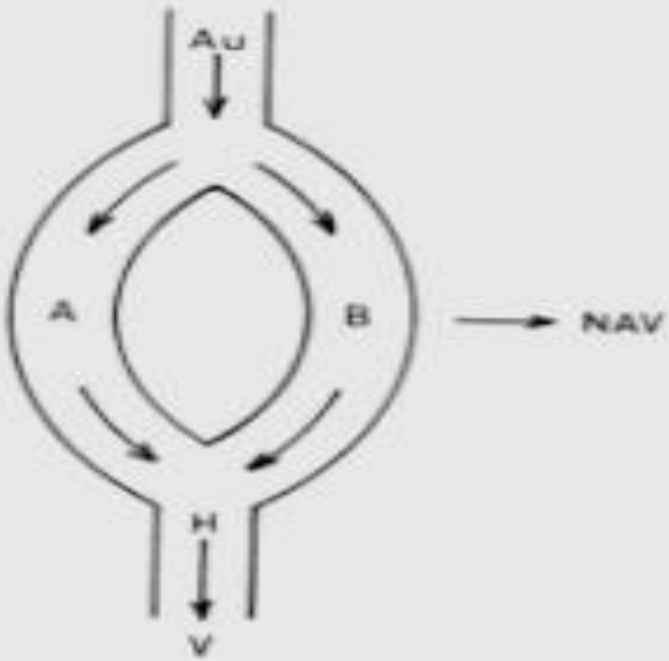
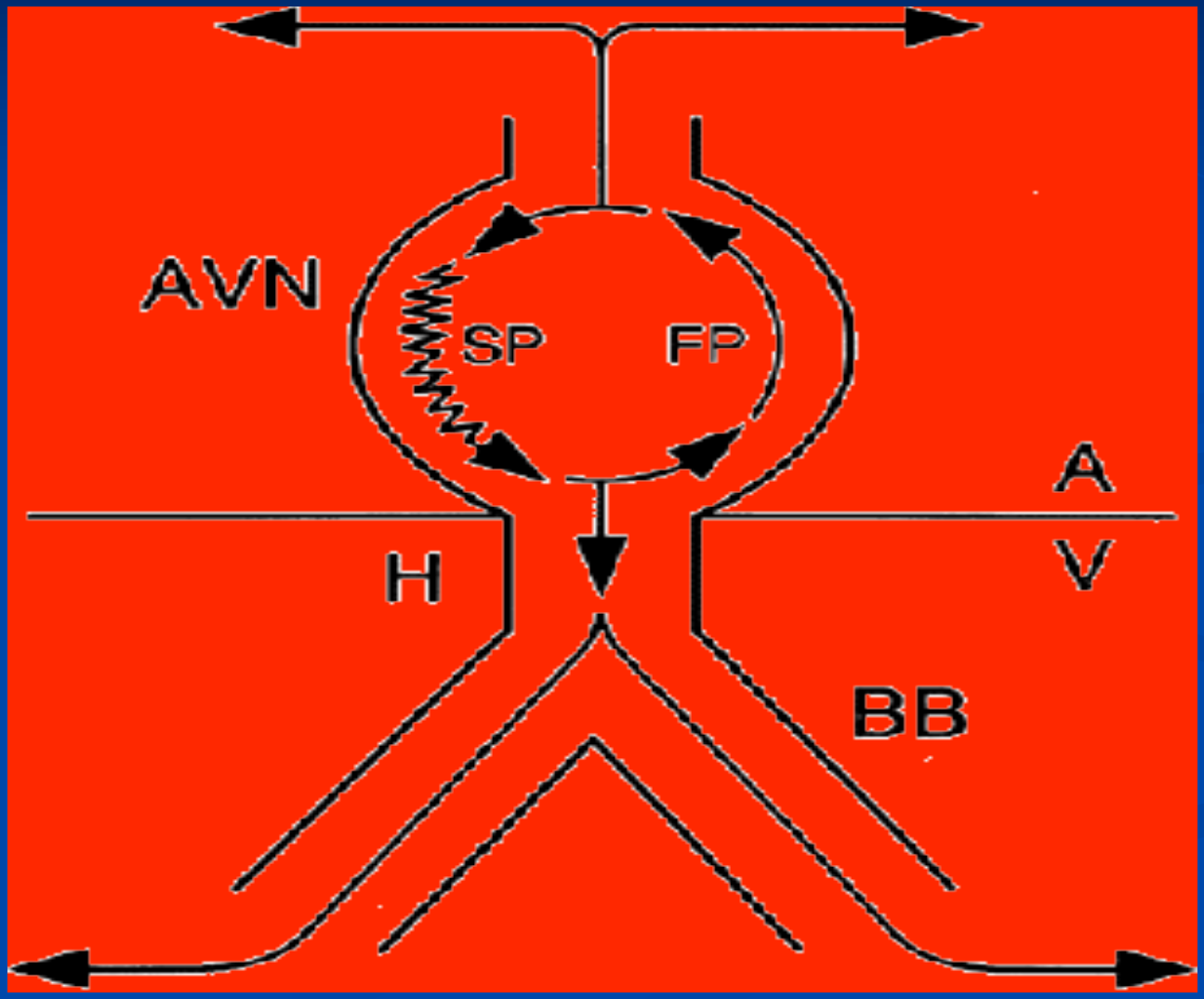
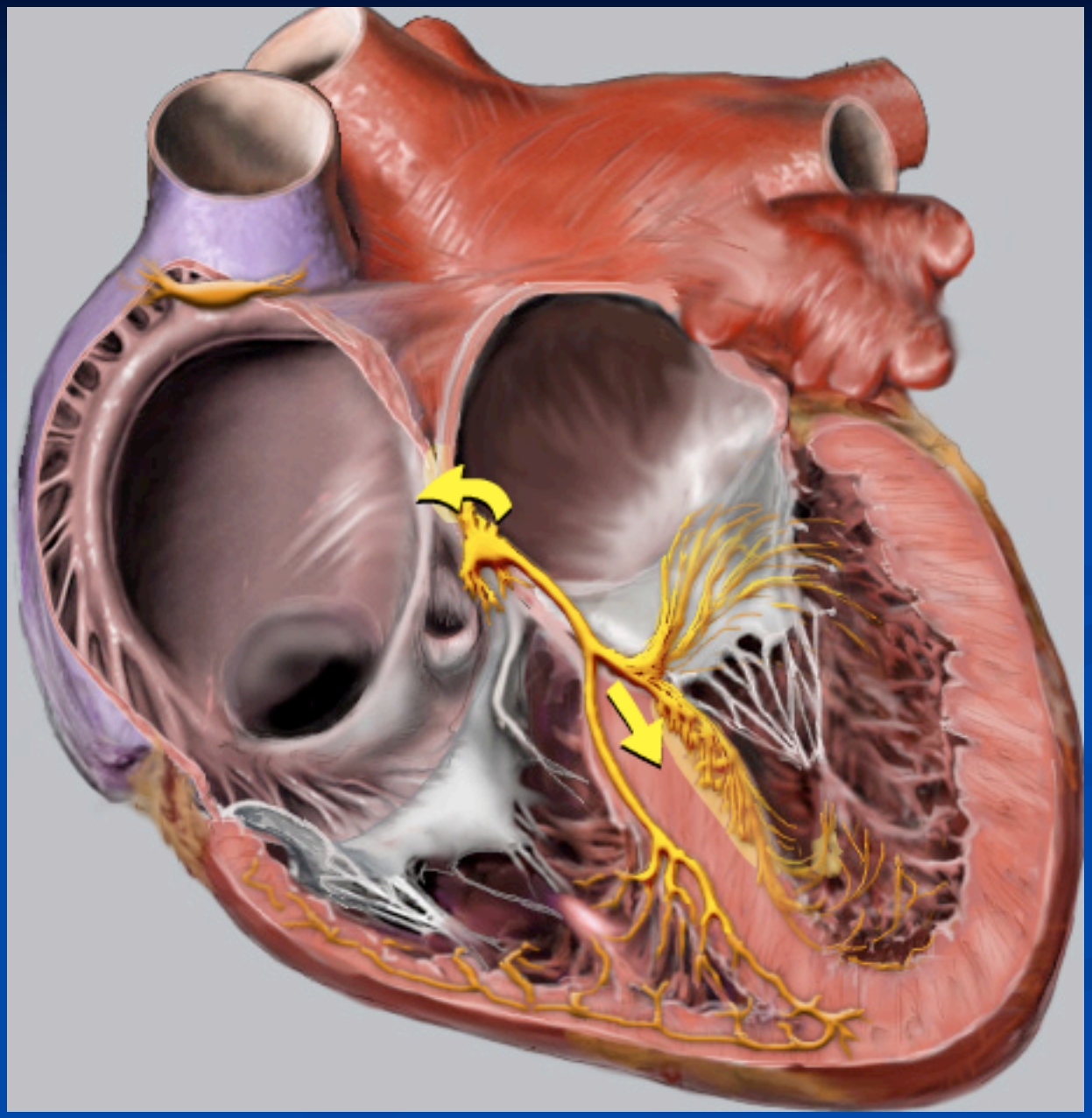


Figura 18-39. Esquema de una doble vía nodal. Au: aurícula; NAV: nodo auriculoventricular; A: vía nodal con conducción lenta y período refractario corto; B: vía nodal con conducción rápida y período refractario largo; H: His; V: ventrículo.

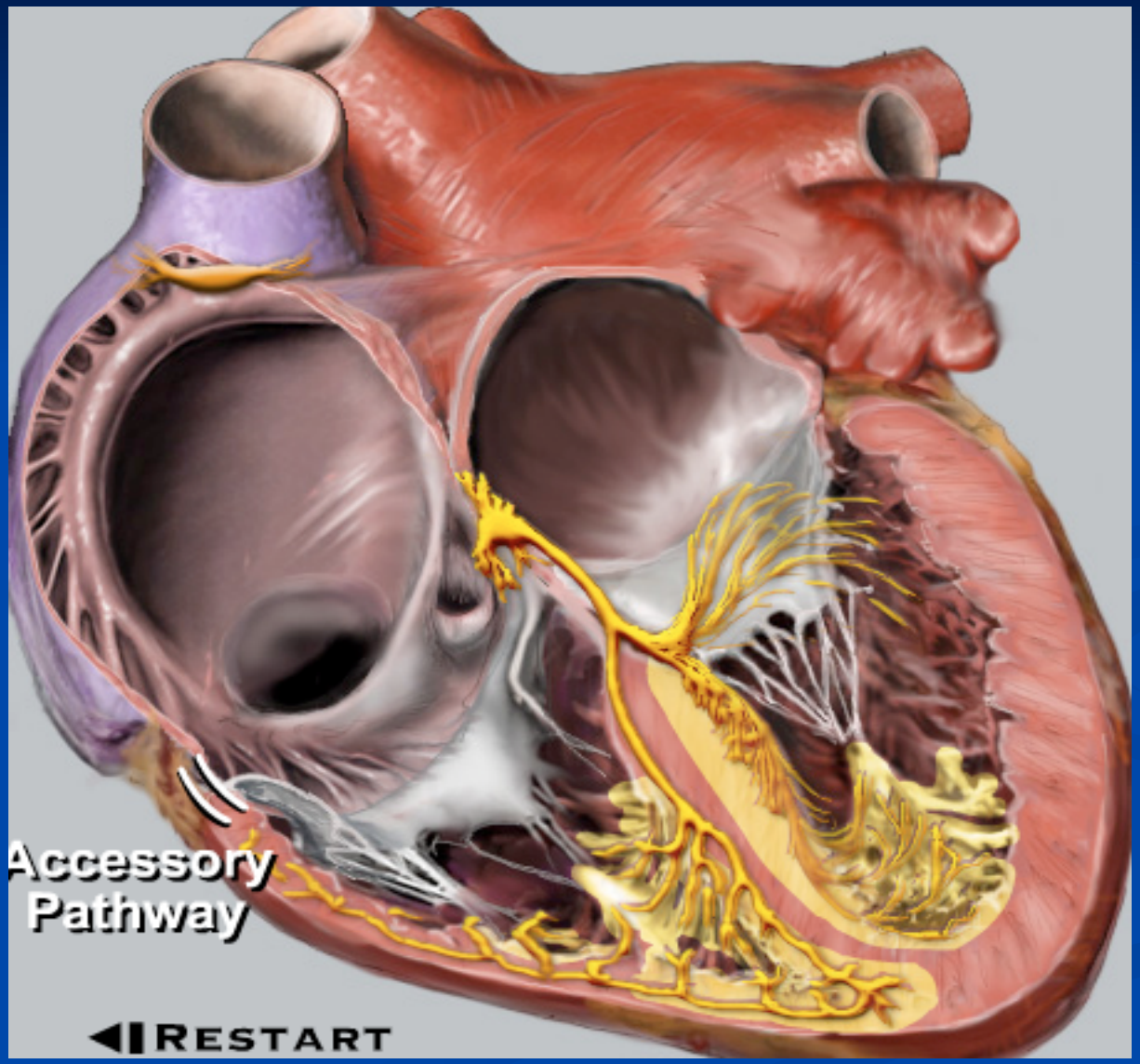
Reentrada intranodal



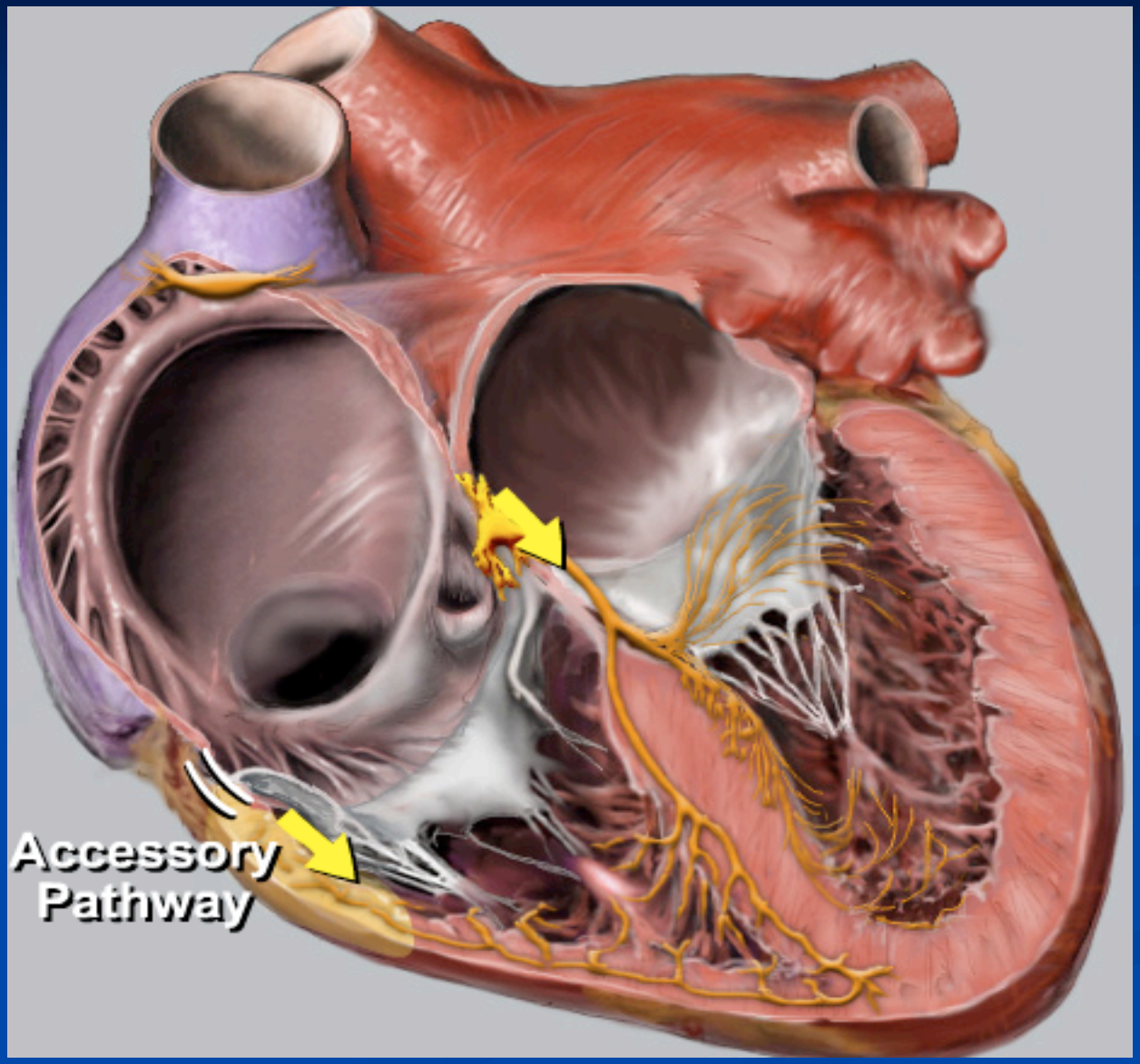
Reentrada nodal

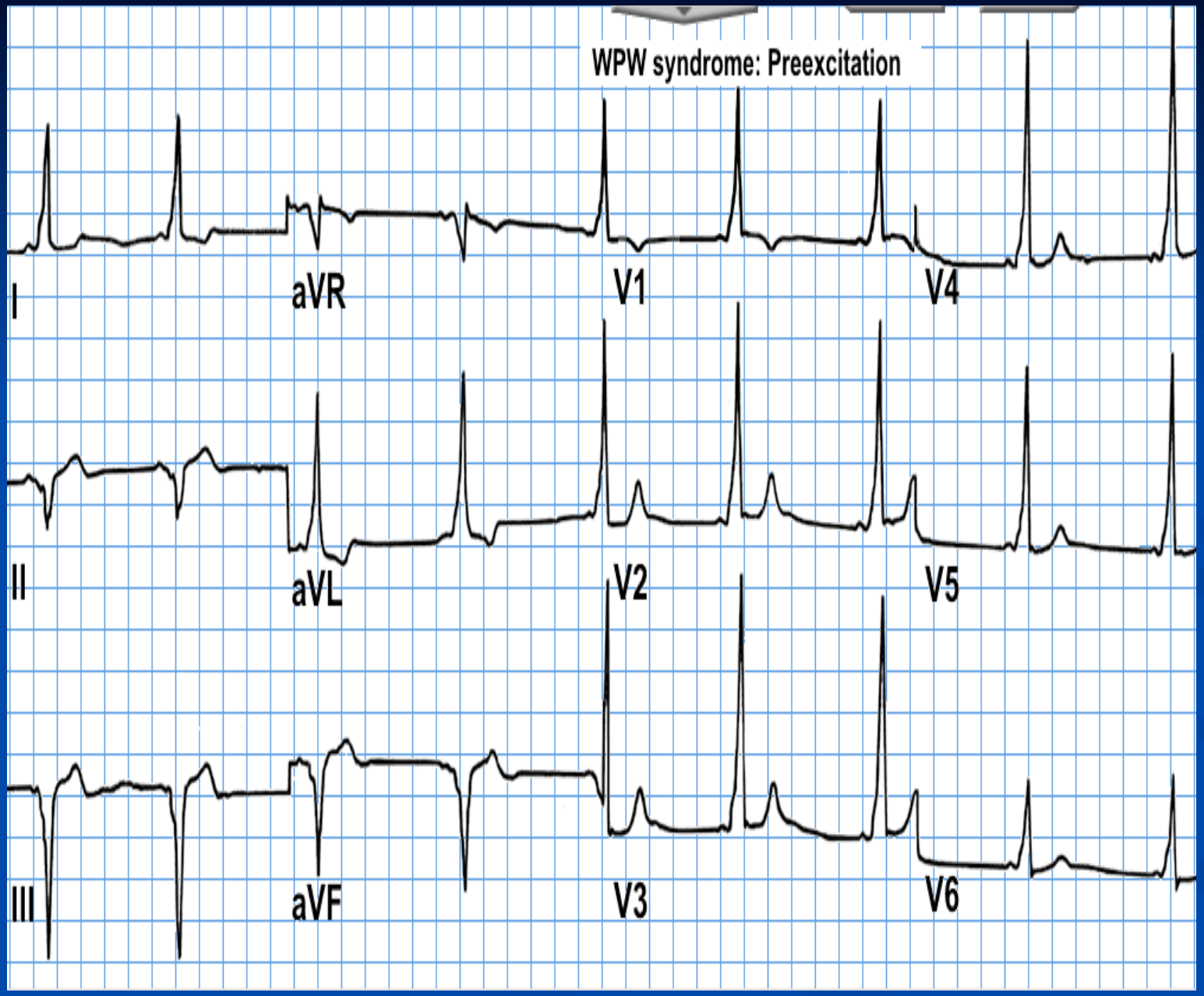


Sindrome de WPW

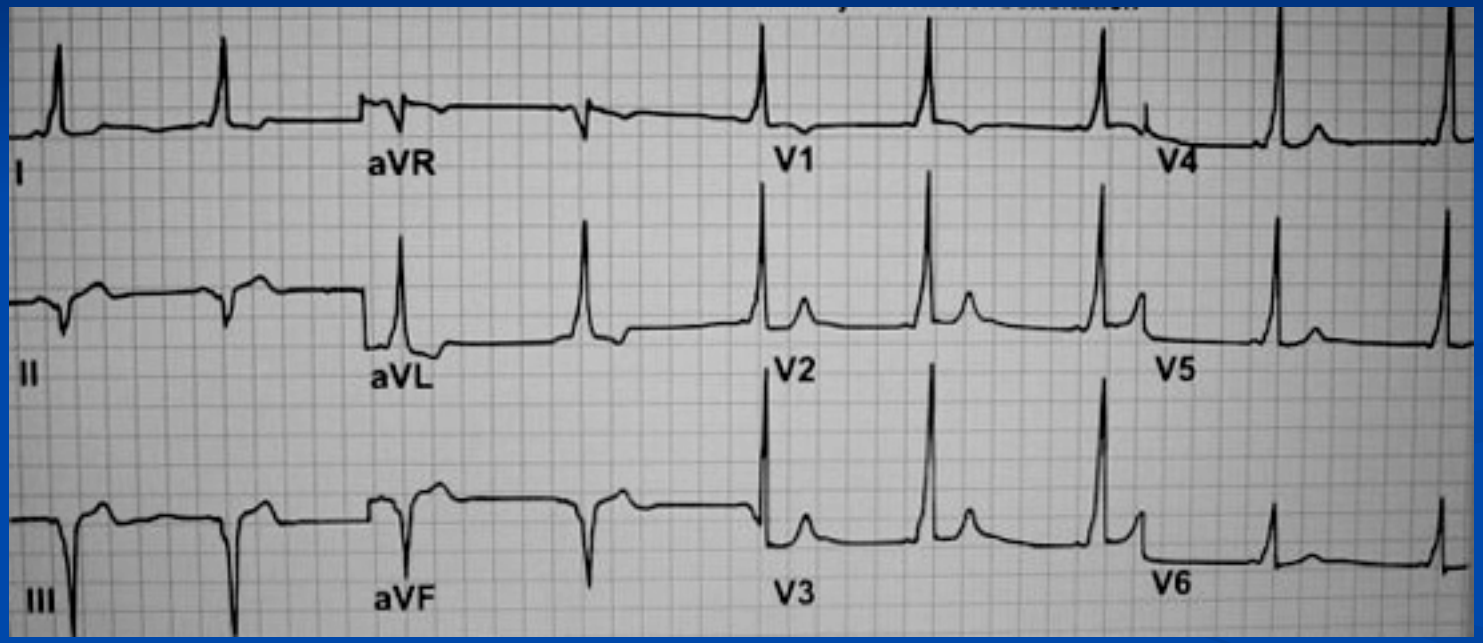


Sindrome de WPW

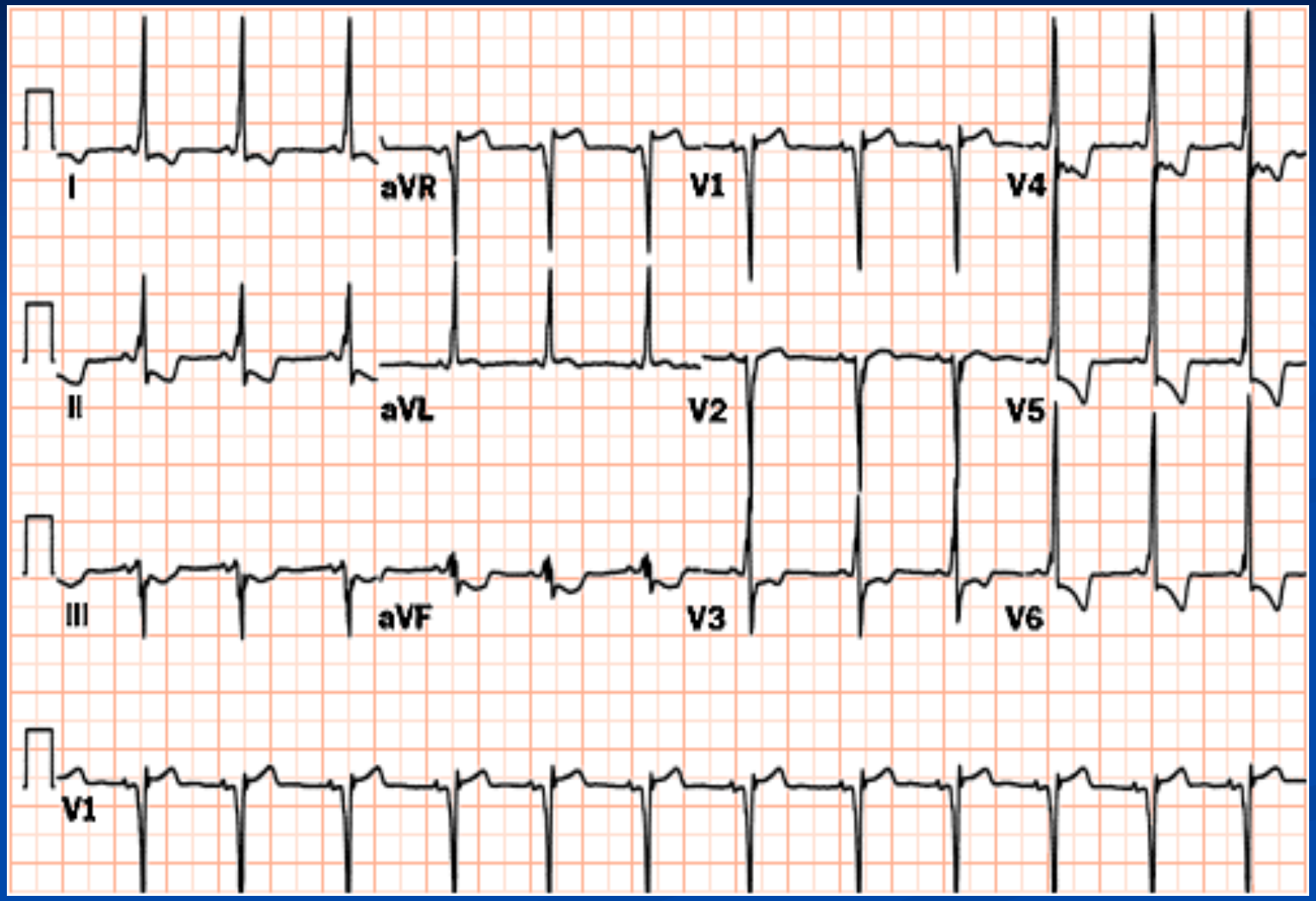



WPW syndrome: Preexcitation
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

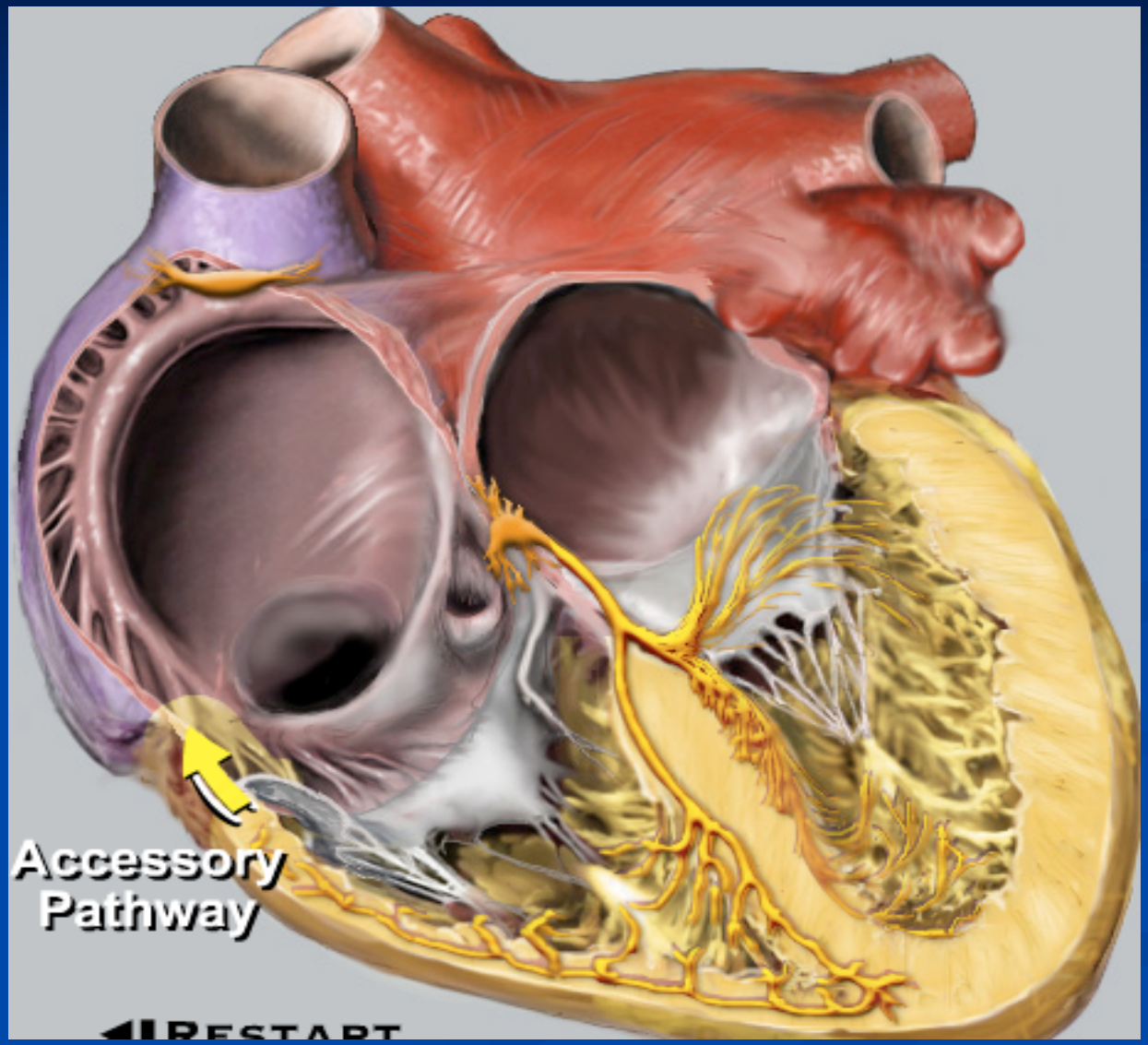
W.P.W Preexcitación



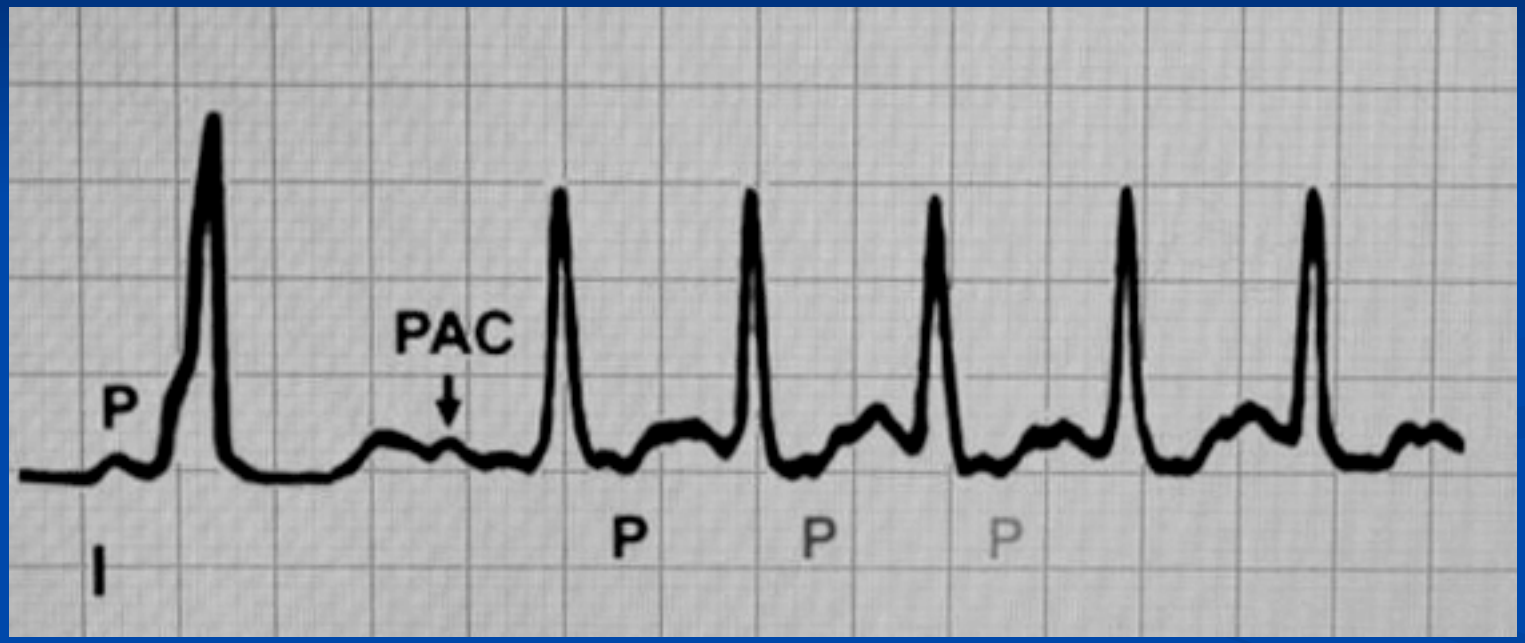
W.P.W Preexcitación

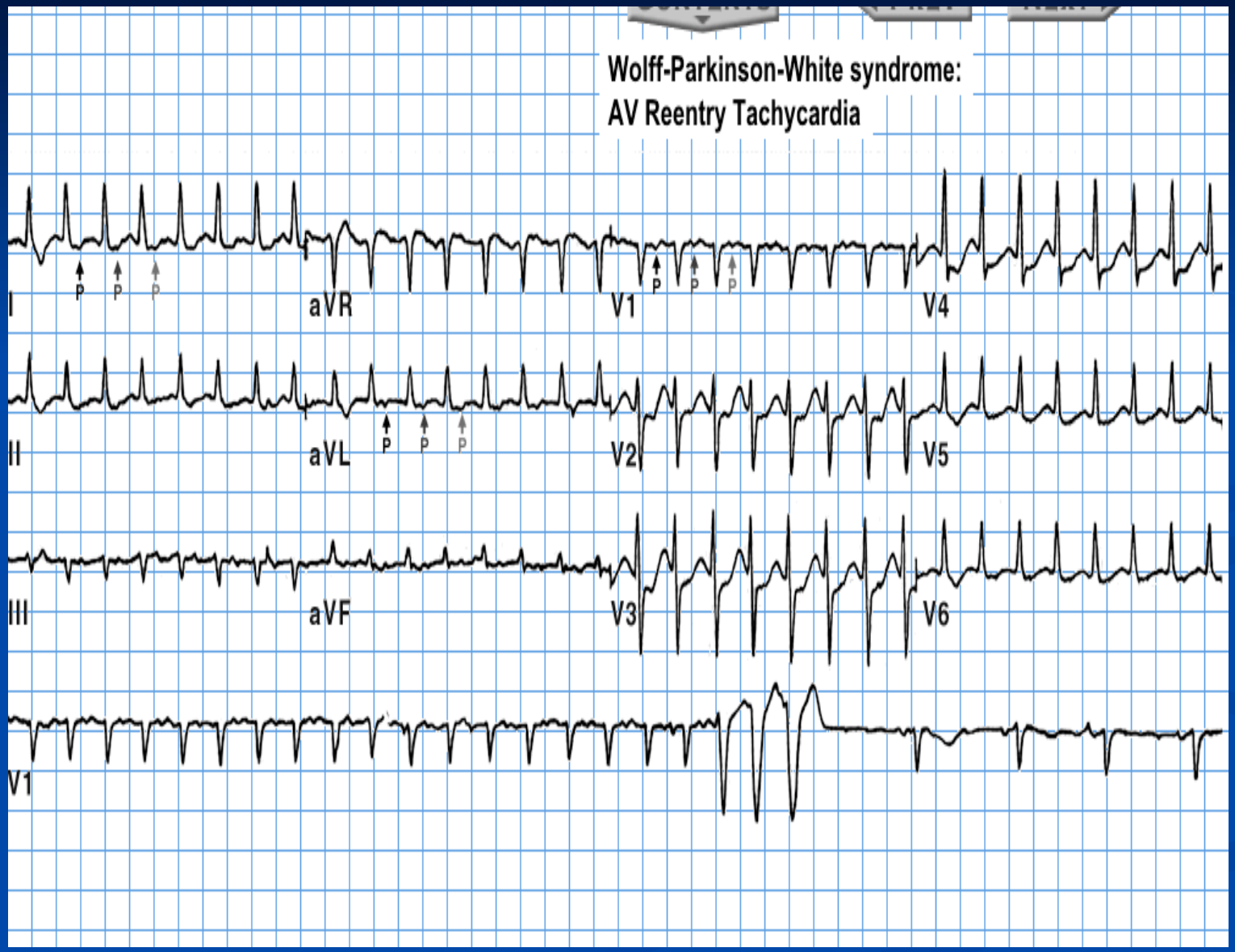


Sindrome de WPW: TPSV

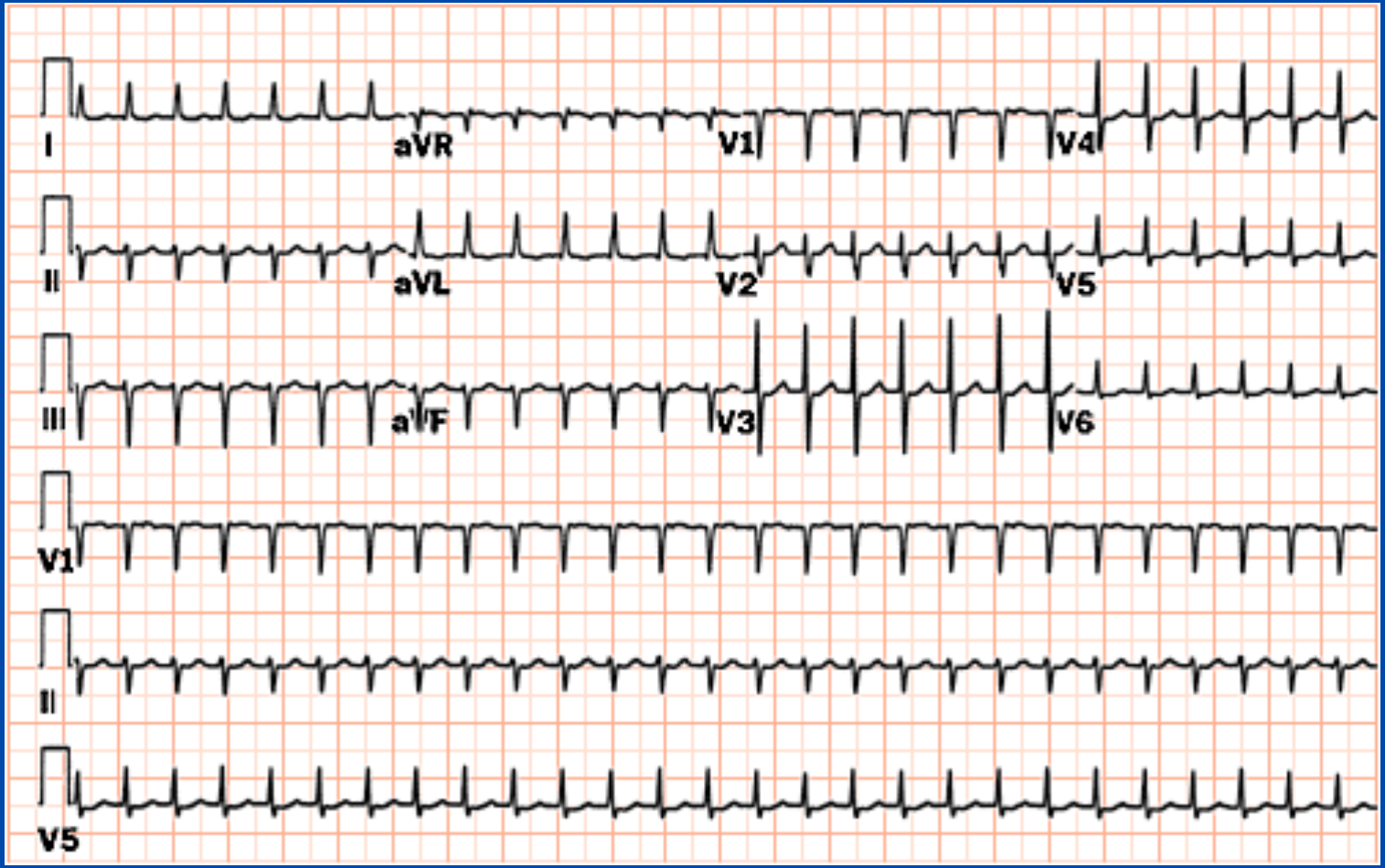


Sindrome de WPW: TPSV

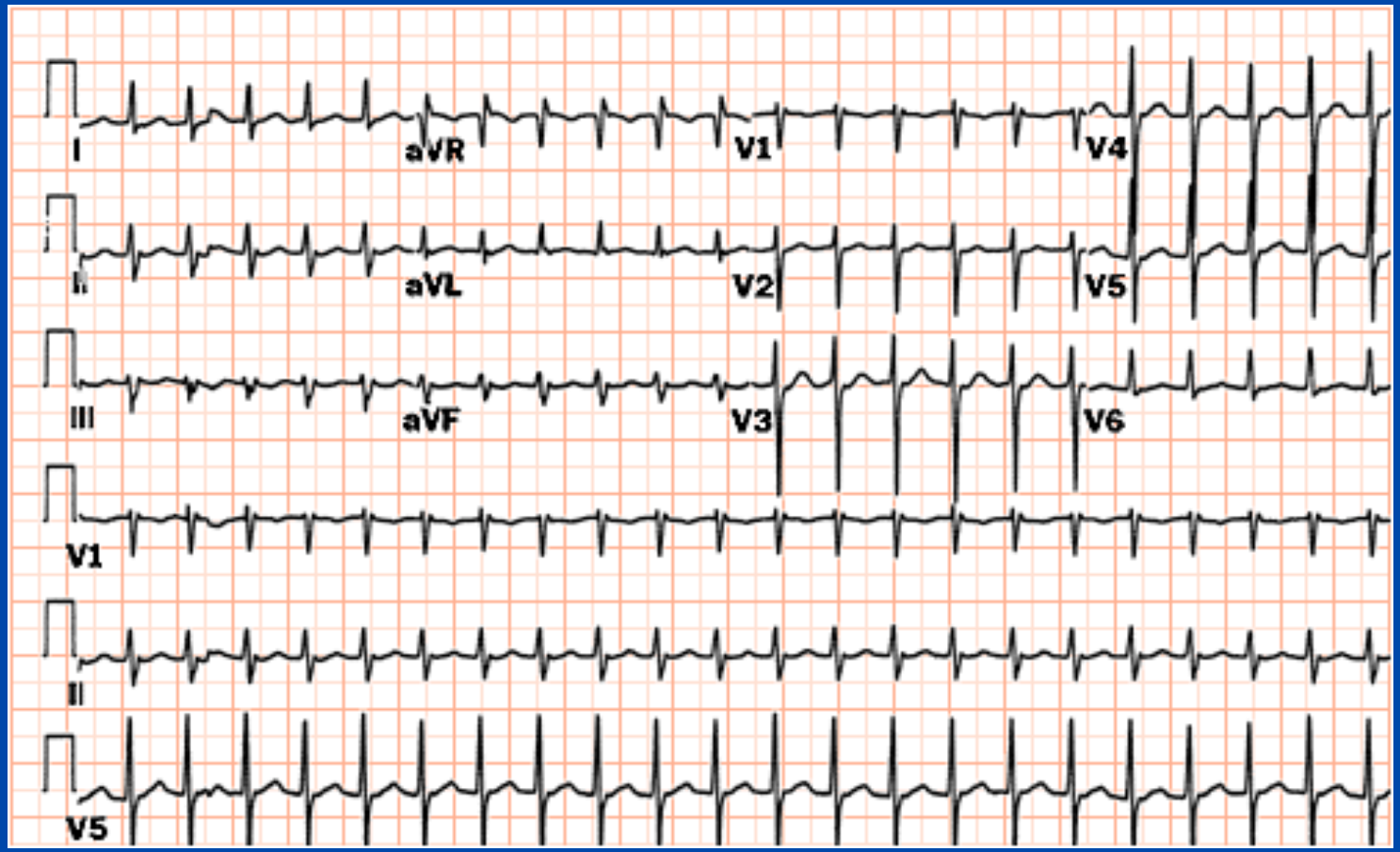



Wolff-Parkinson-White syndrome:
AV Reentry Tachycardia
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1
P
P
P
P
P
P

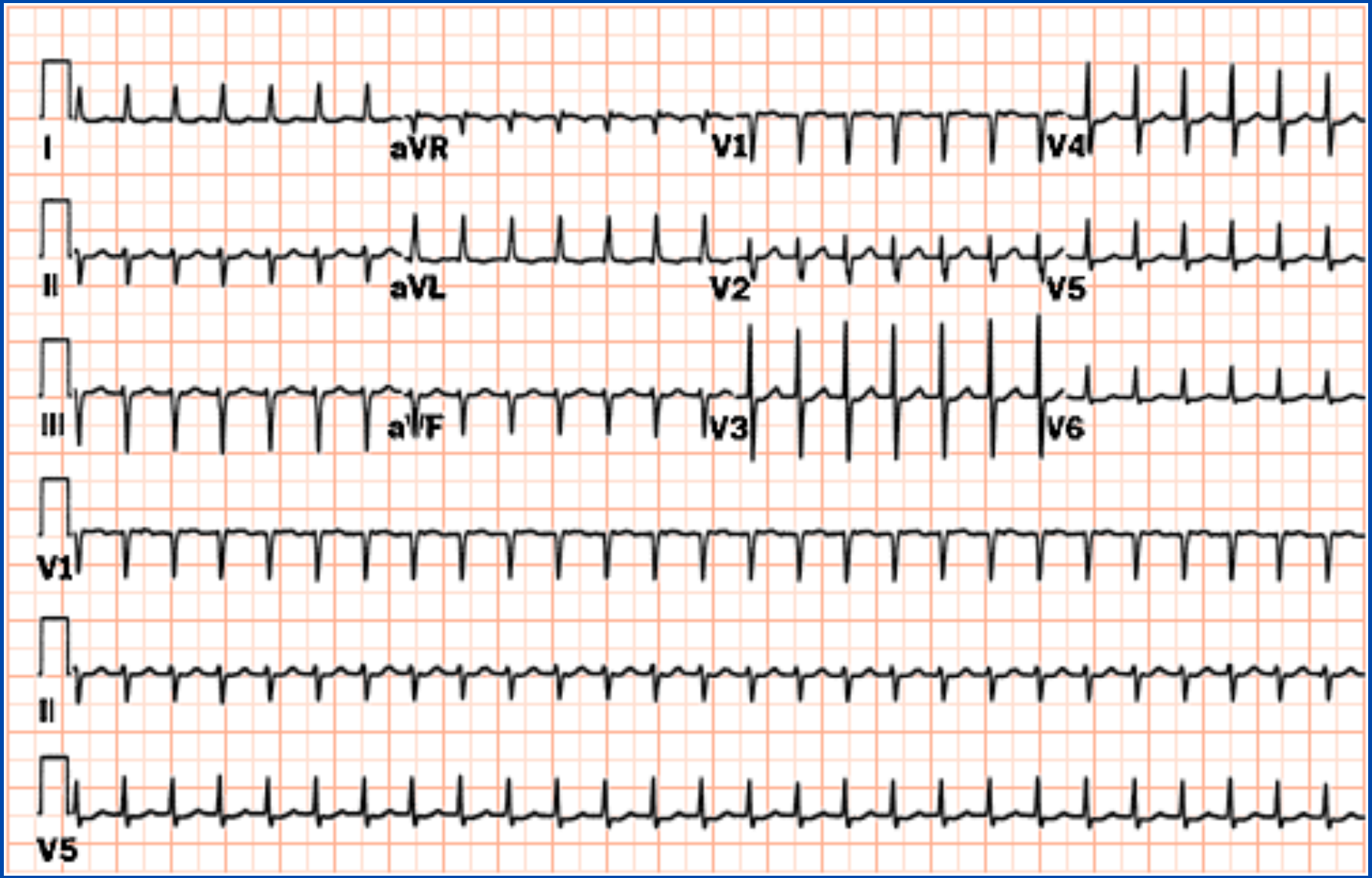
TPSV

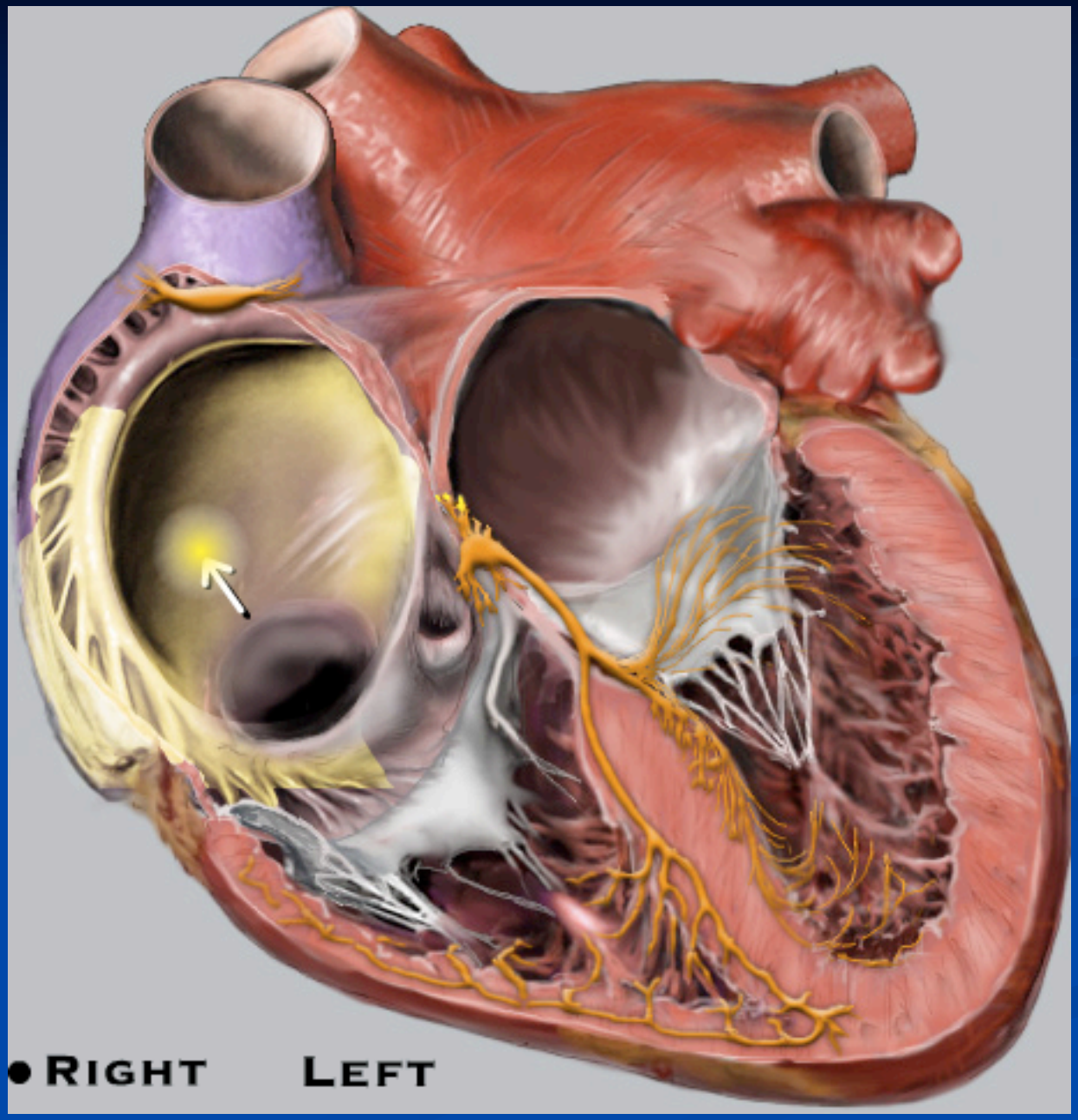


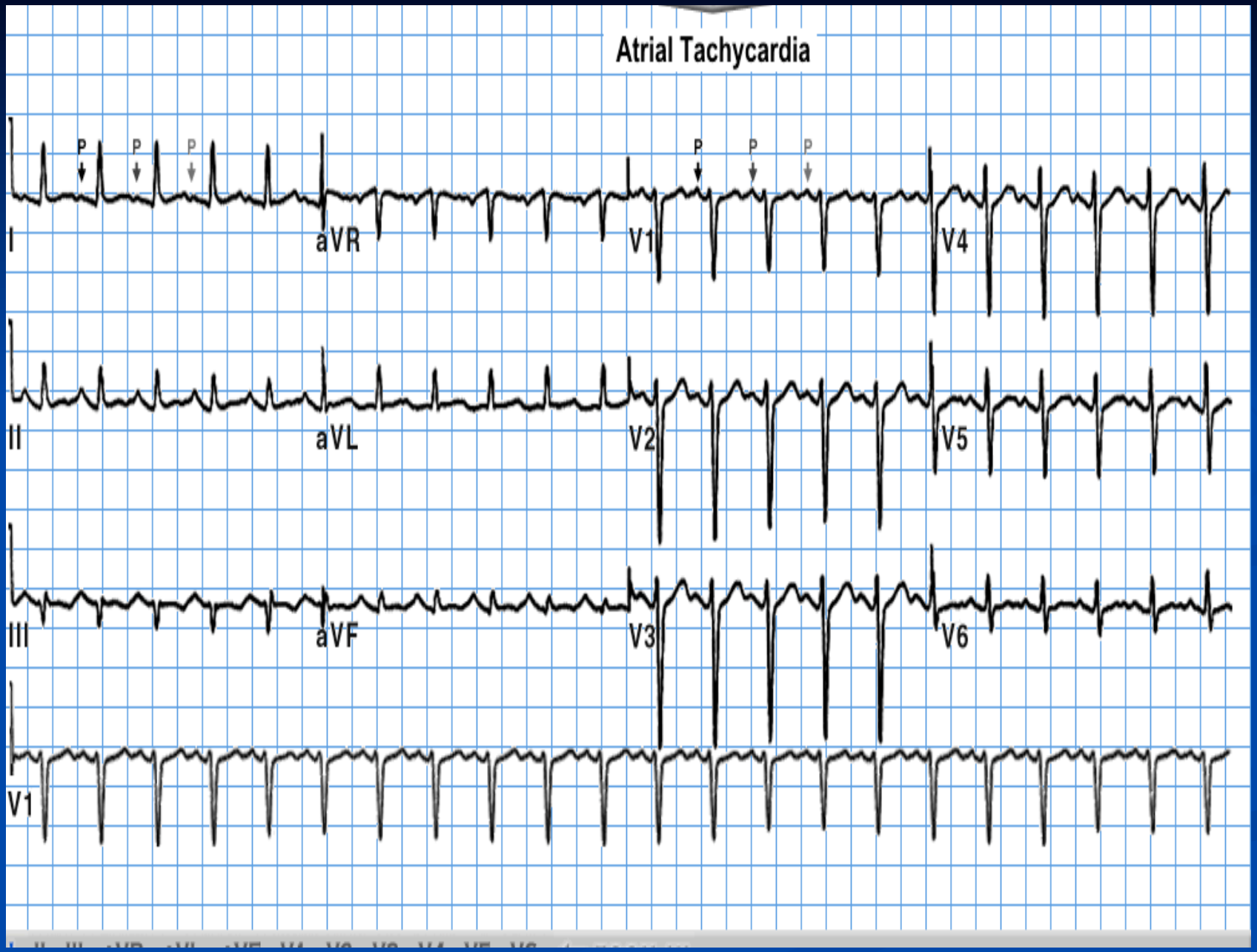
TPSV



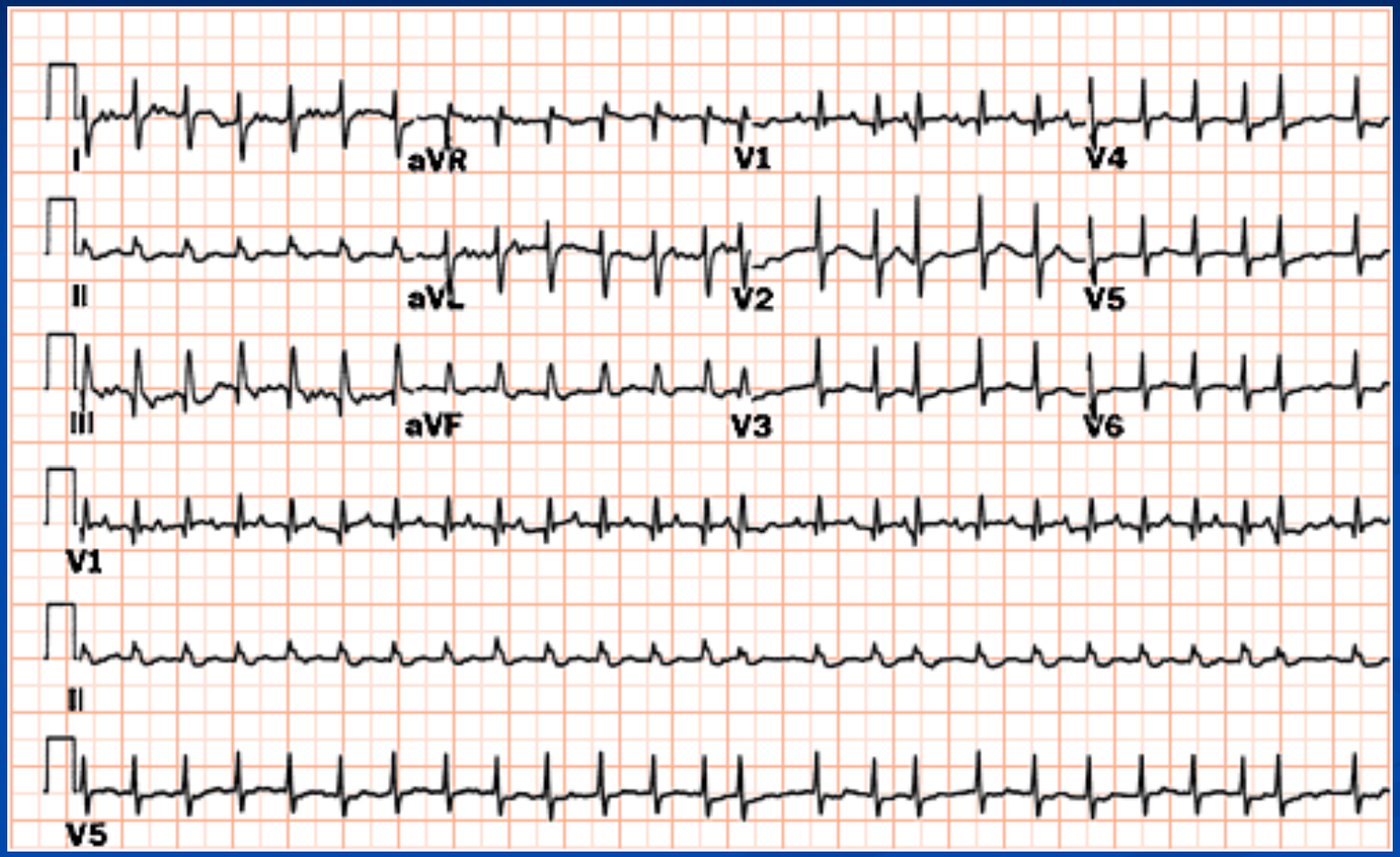
TPSV

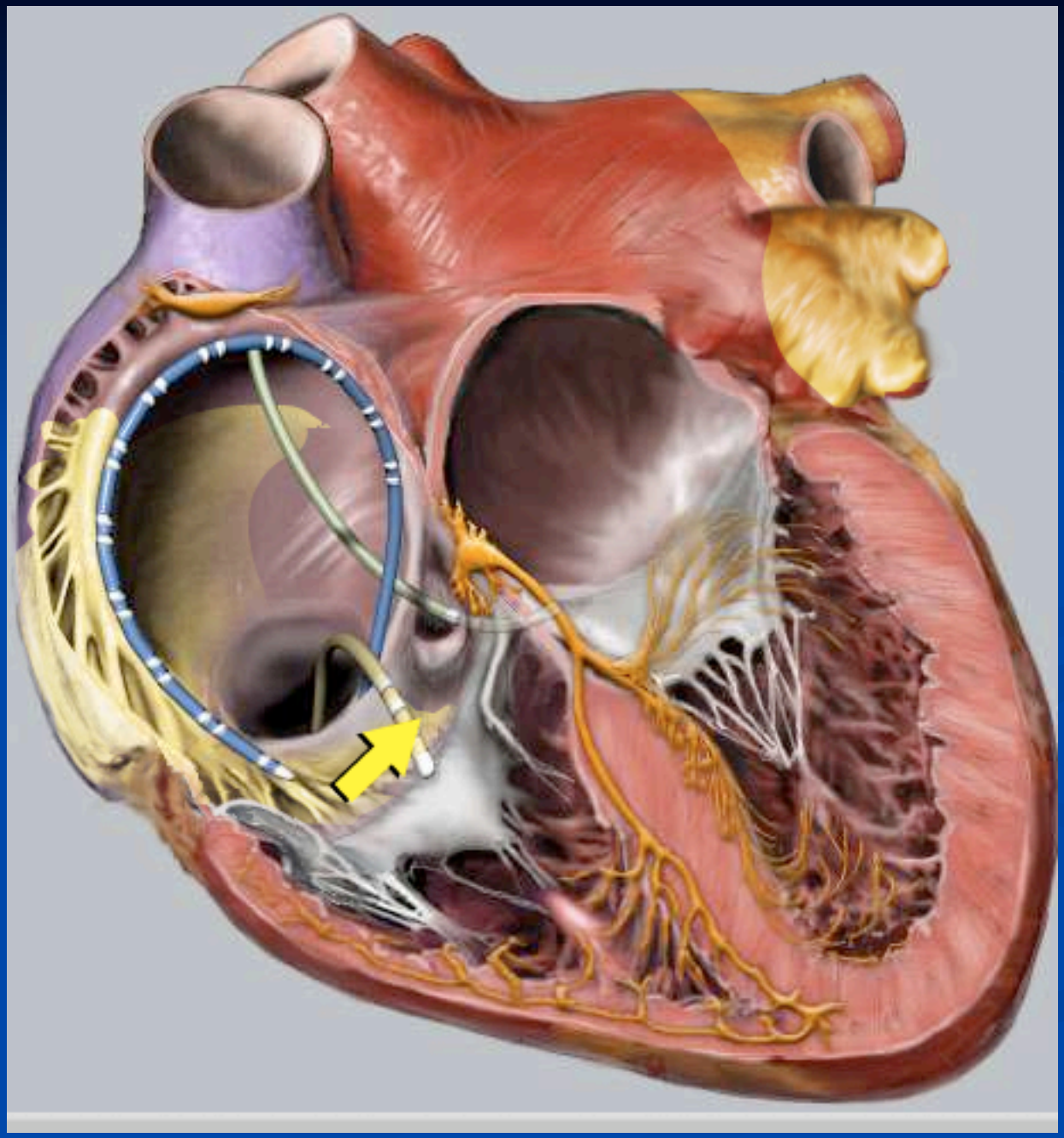



RIGHT
LEFT


Atrial Tachycardia
P
P
P
P
P
P
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
V1

Taquicardia Auricular Multifocal



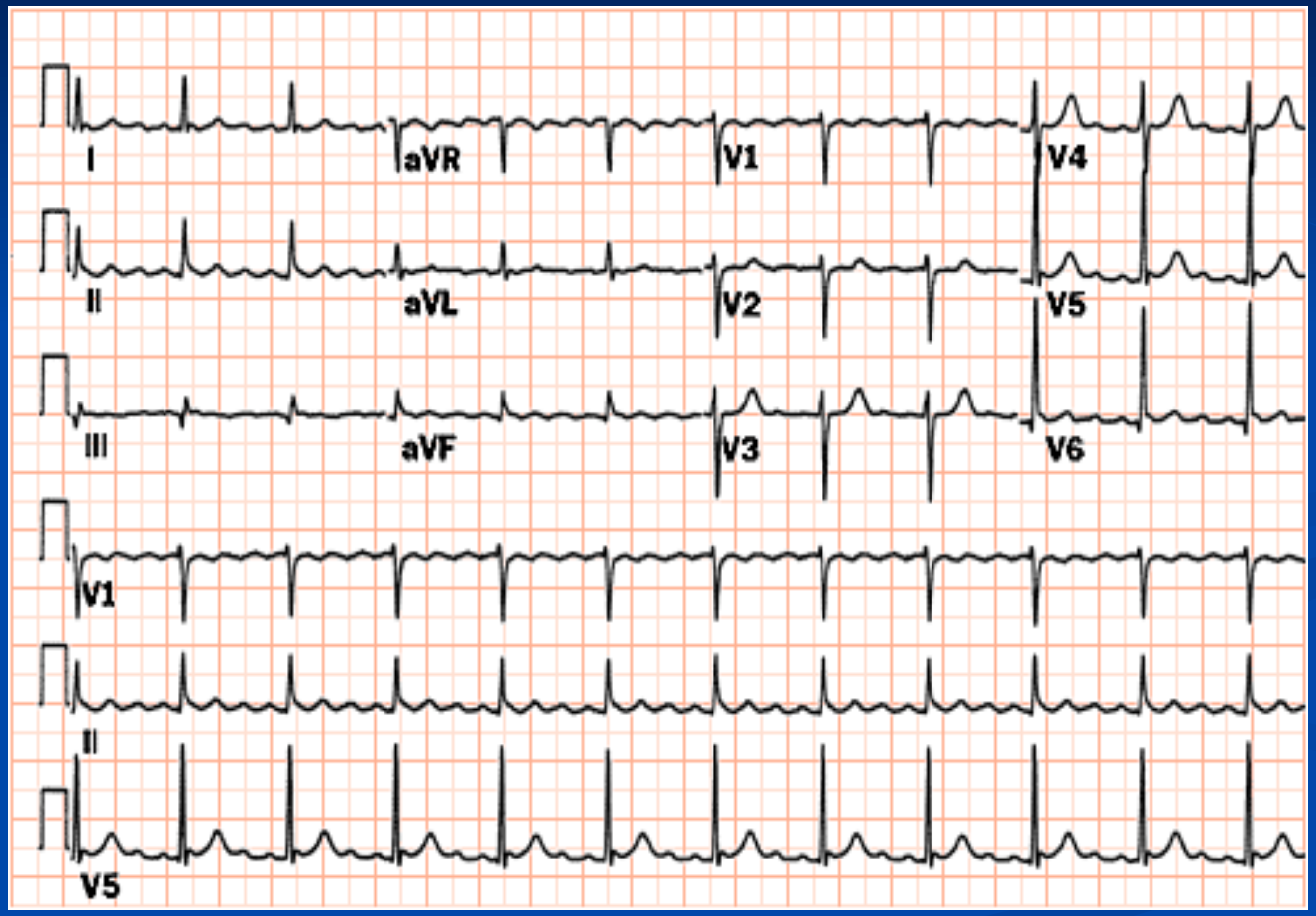


Flutter

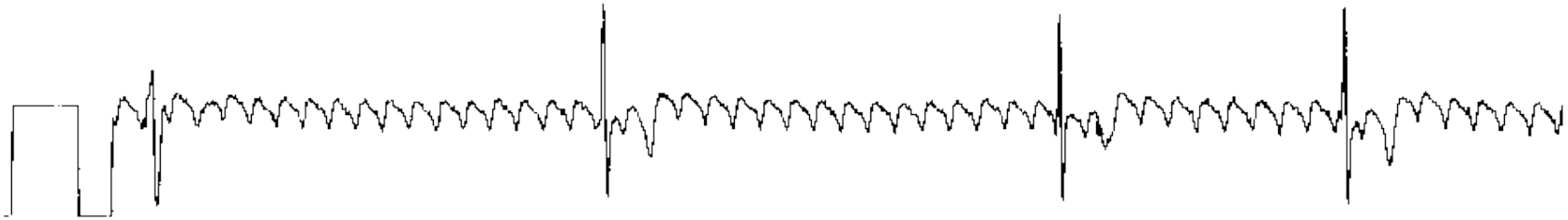

Atrial Flutter
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

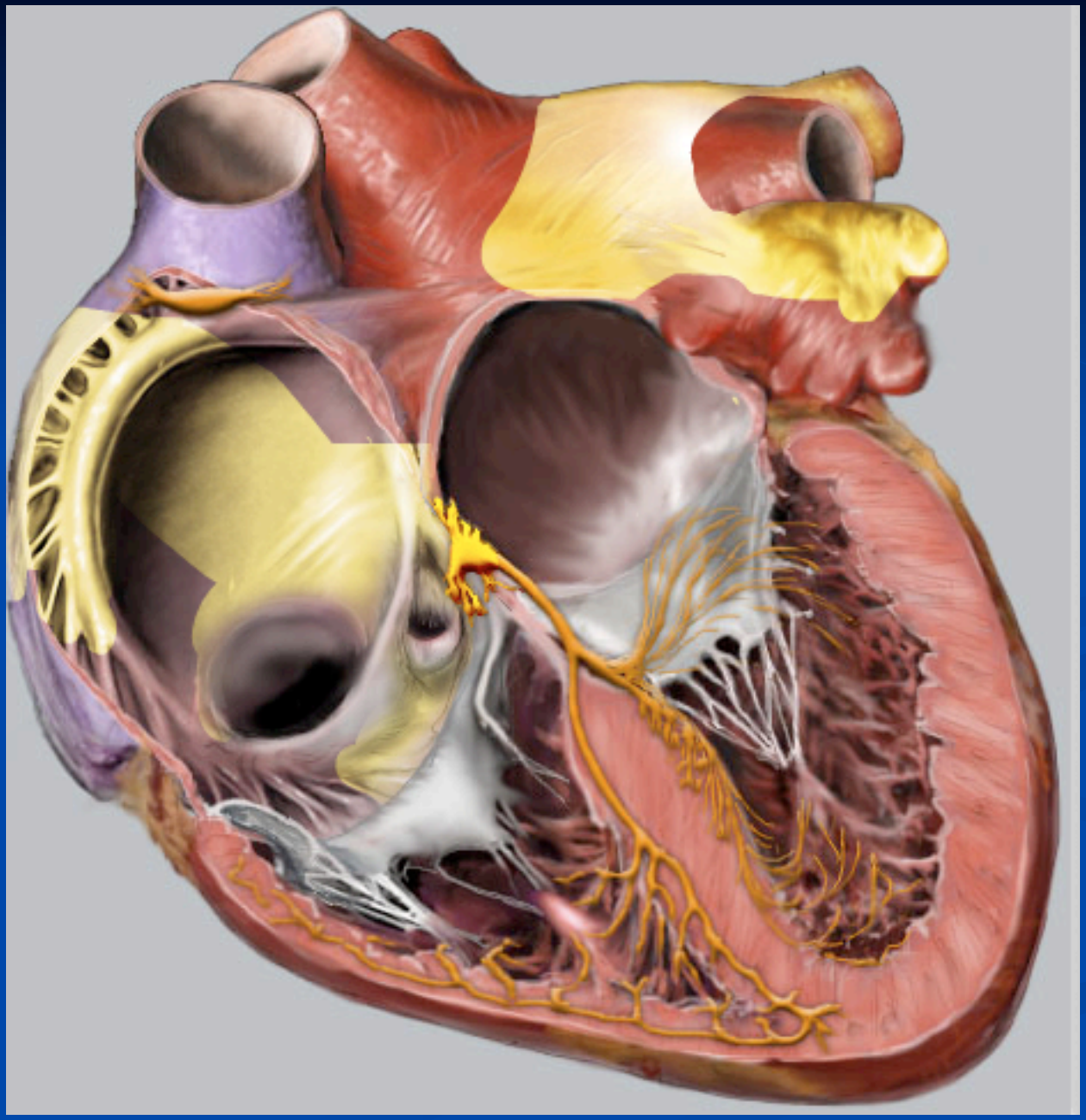
Flutter



Flutter con alto grado de bloqueo AV



Flutter 2:1

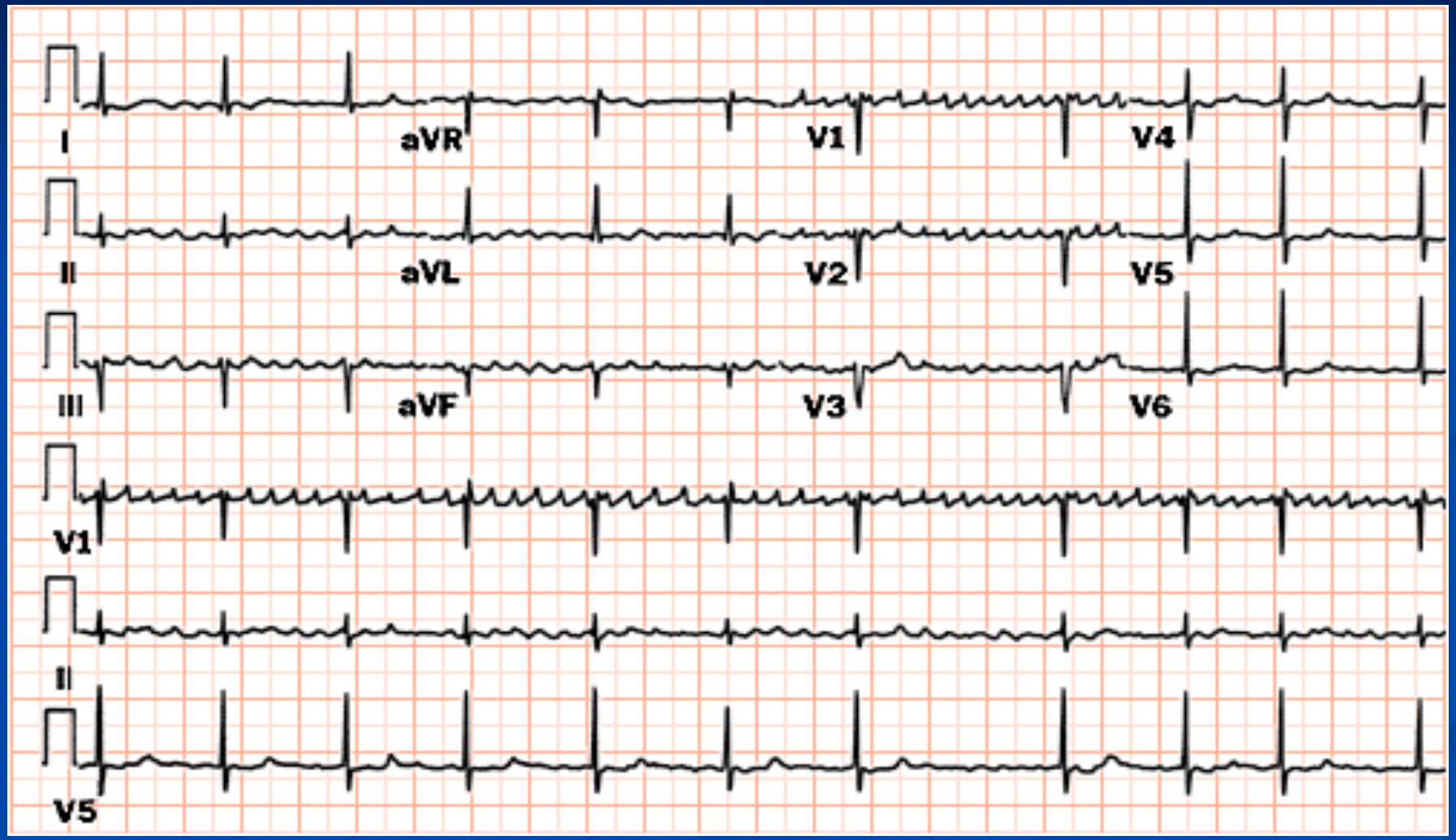


FA

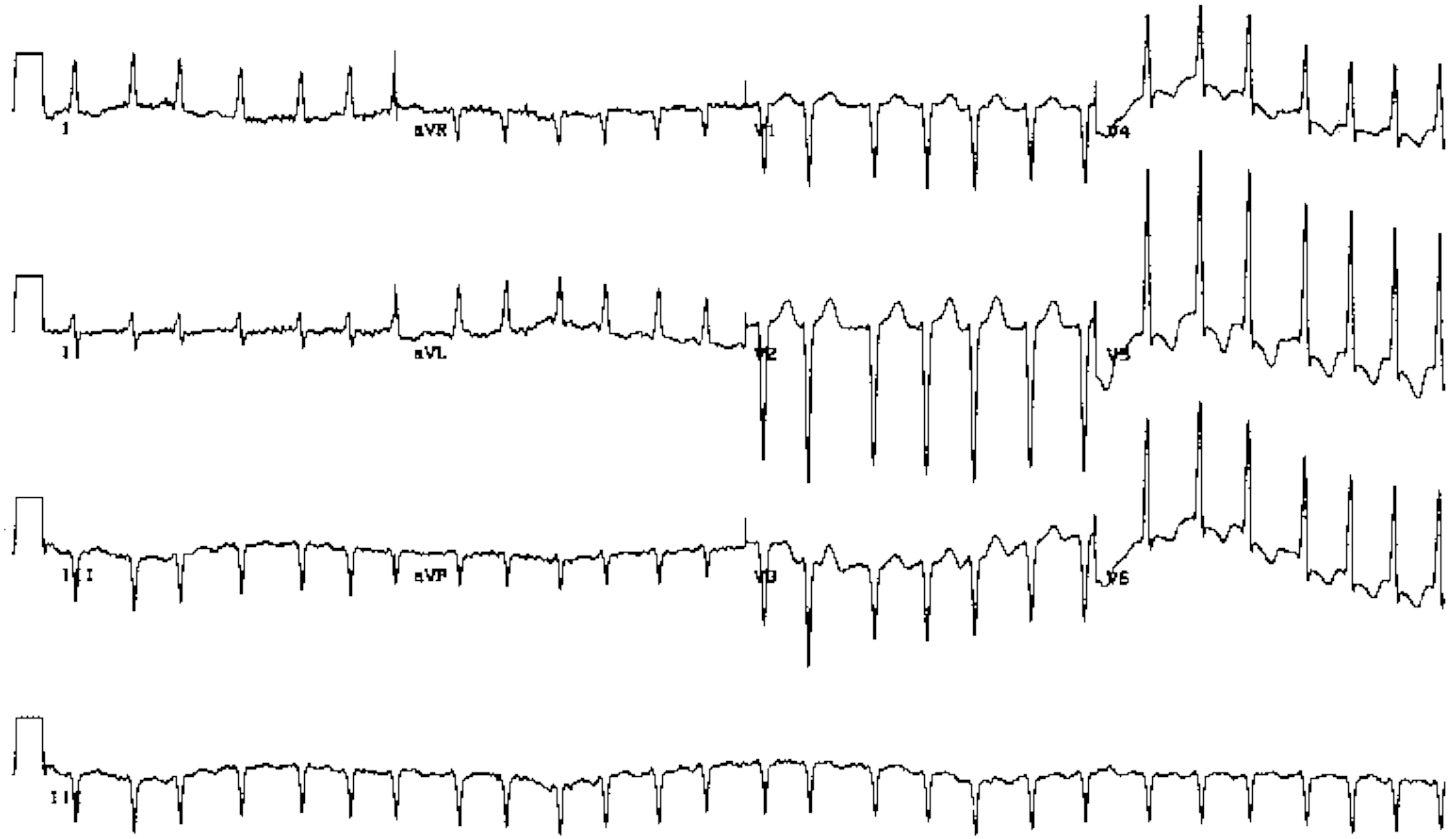

Atrial Fibrillation
I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6

Fibrilación Auricular

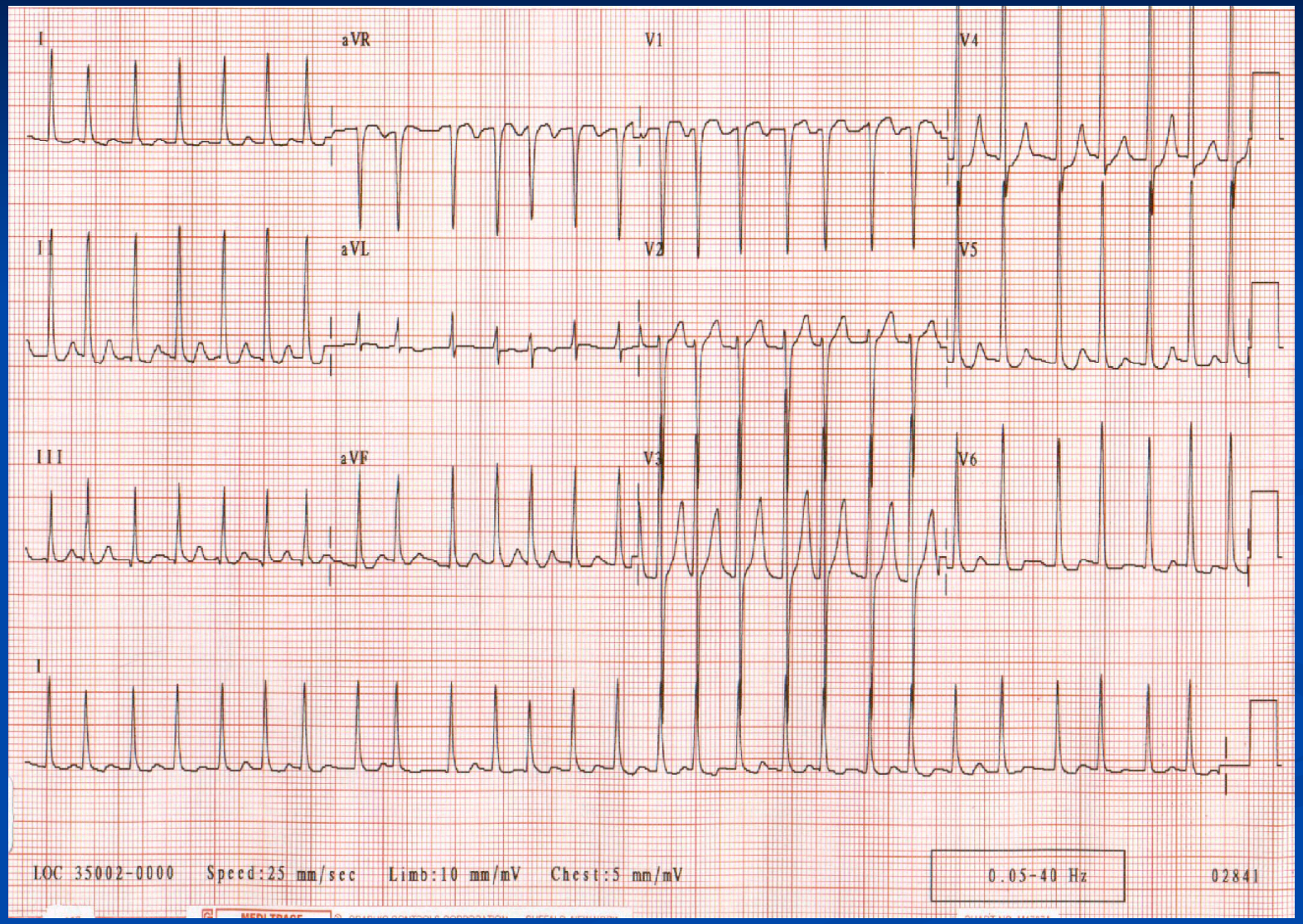
Fibrilación Auricular

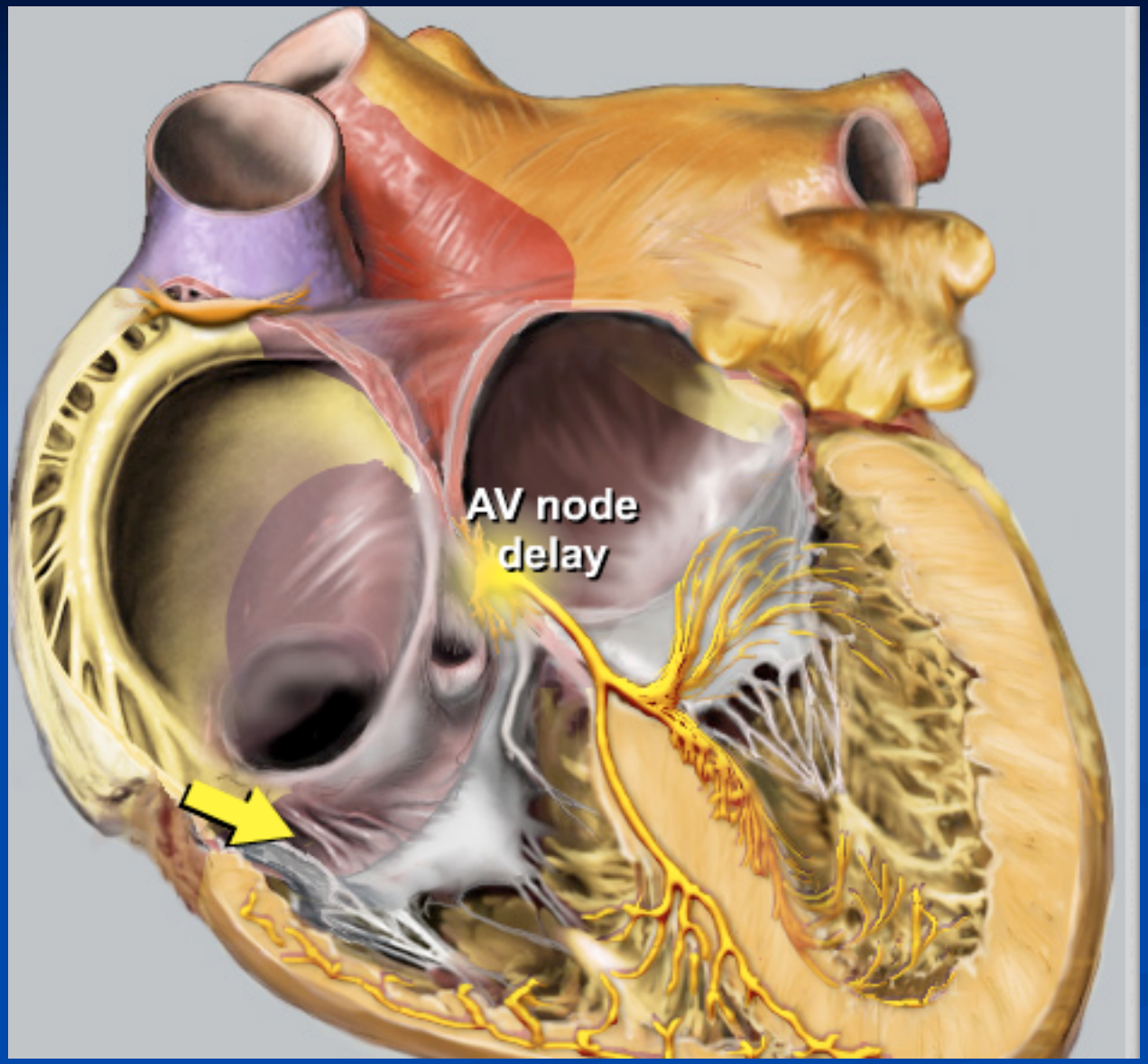


Fibrilación Auricular



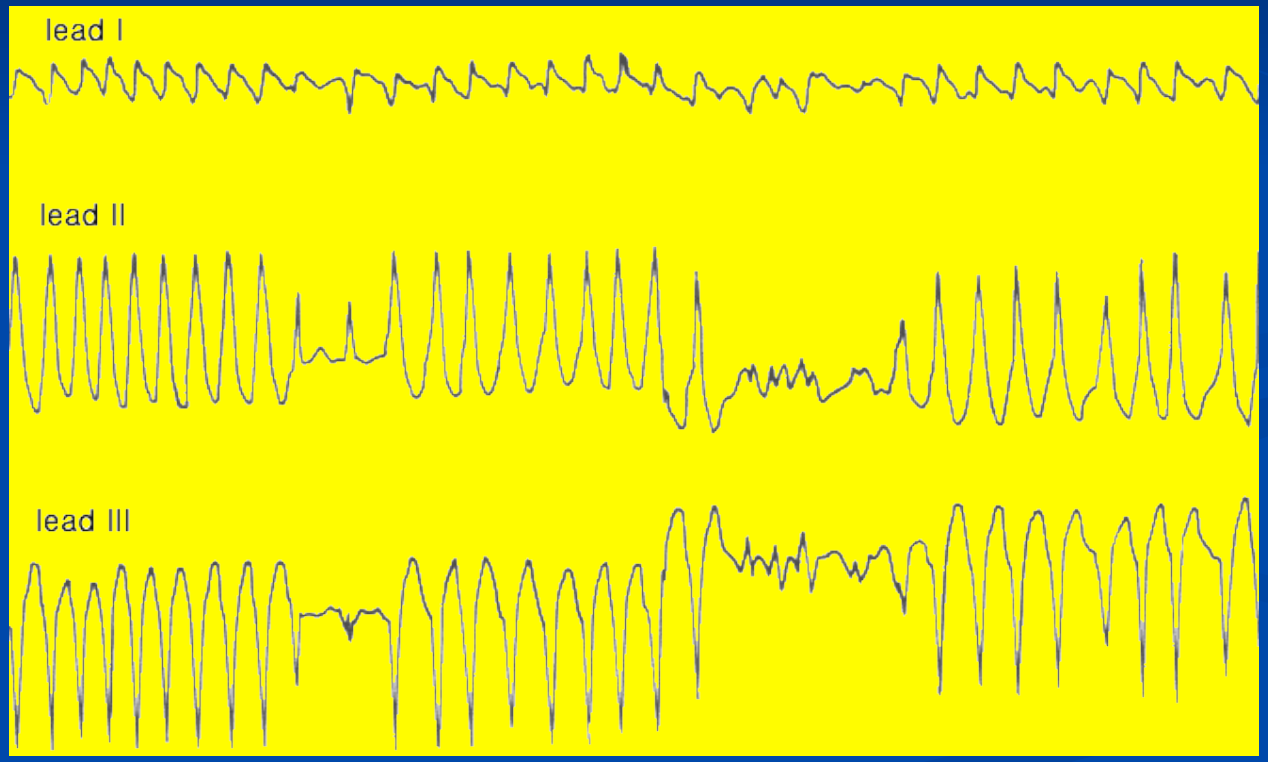
Fibrilación Auricular





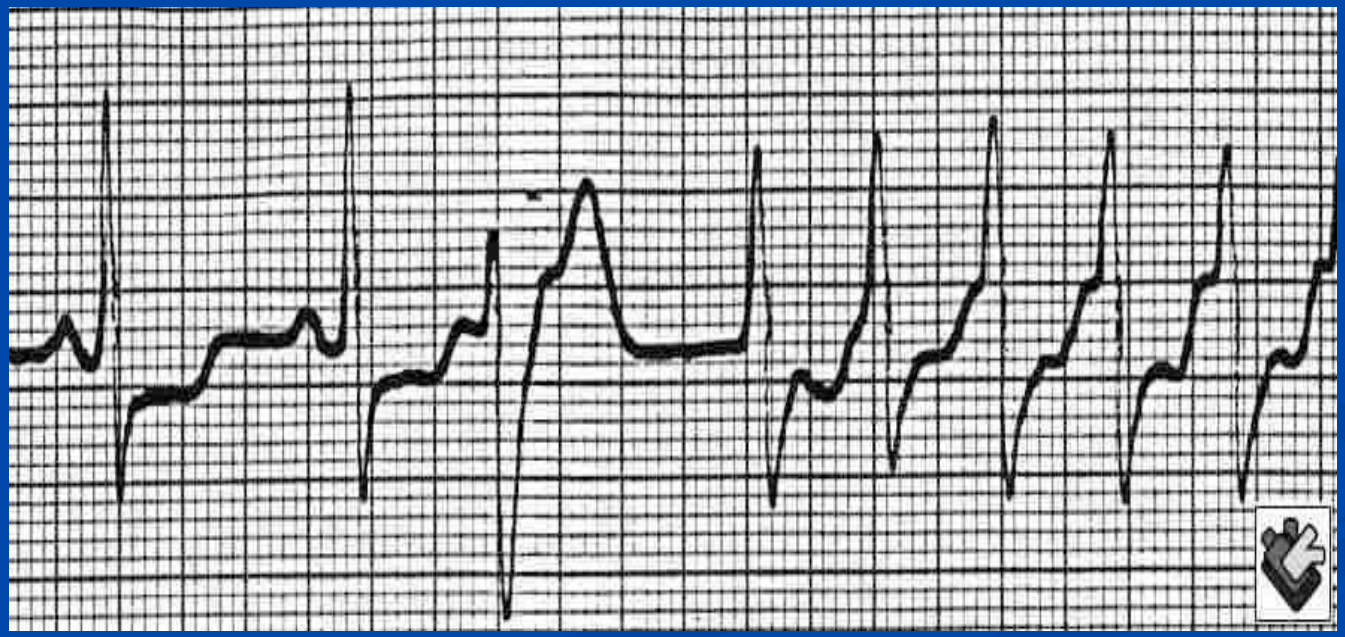
FA y WPW

FA en S.de WPW

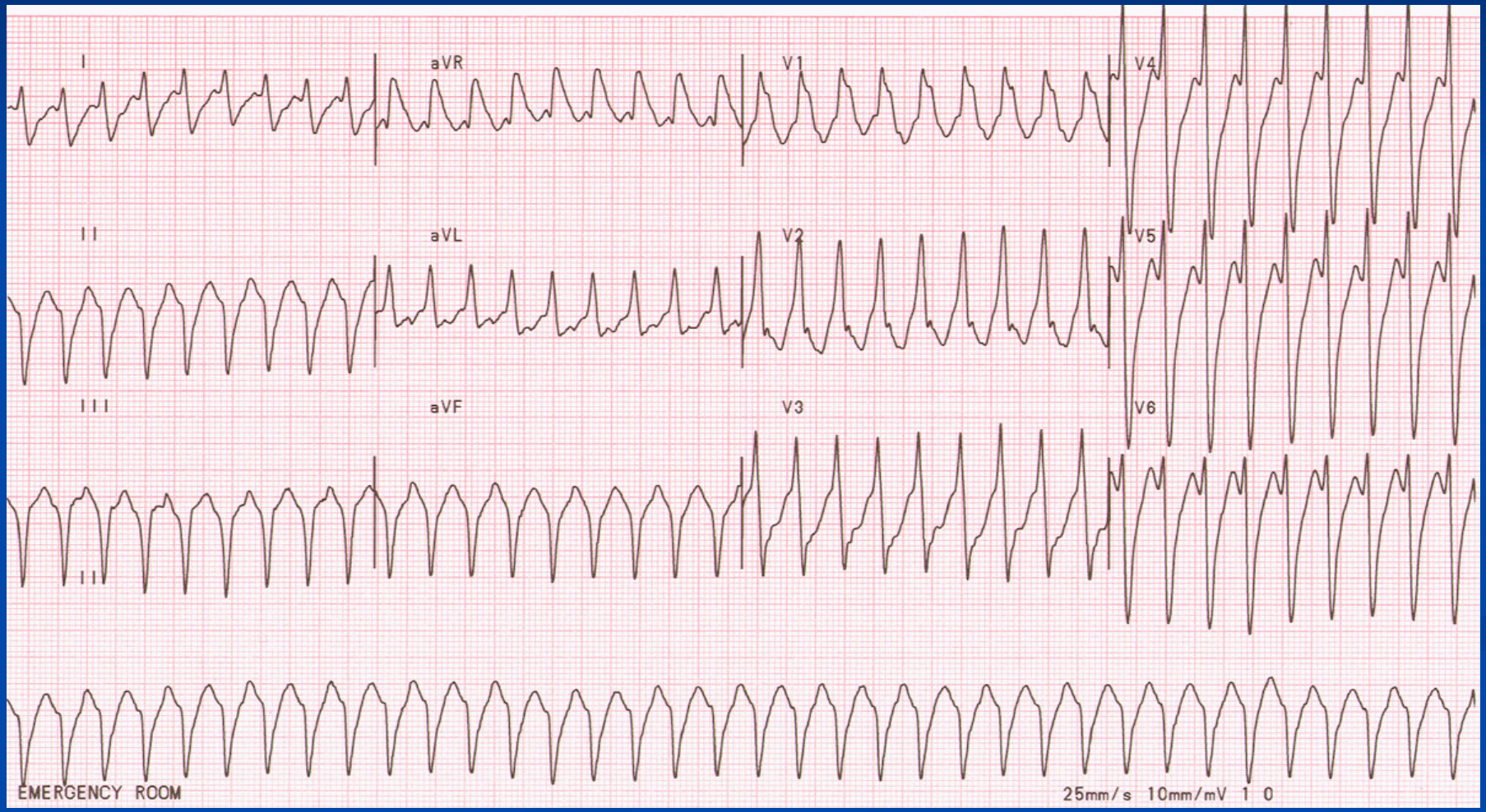


Sindrome taquicardia -bradicardia

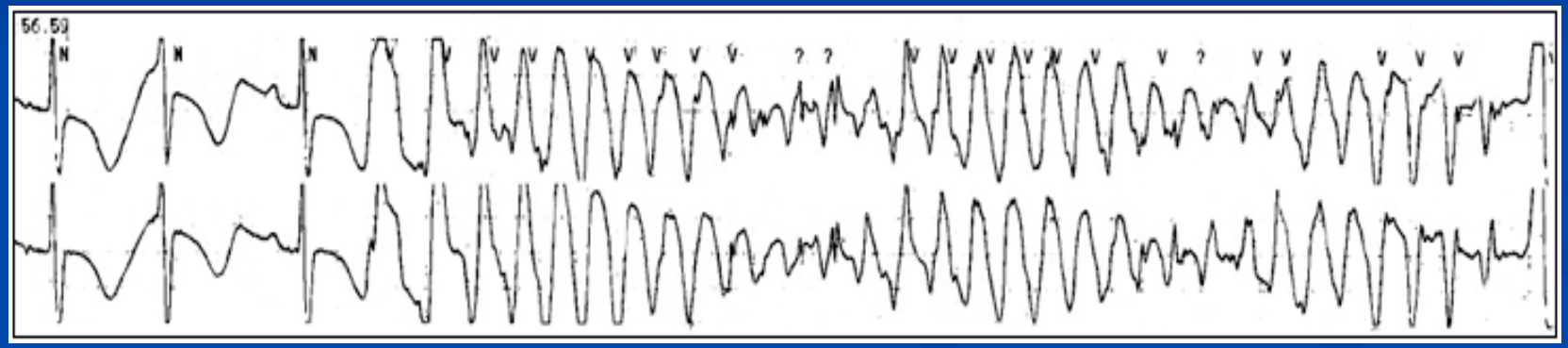
Taquicardia Ventricular



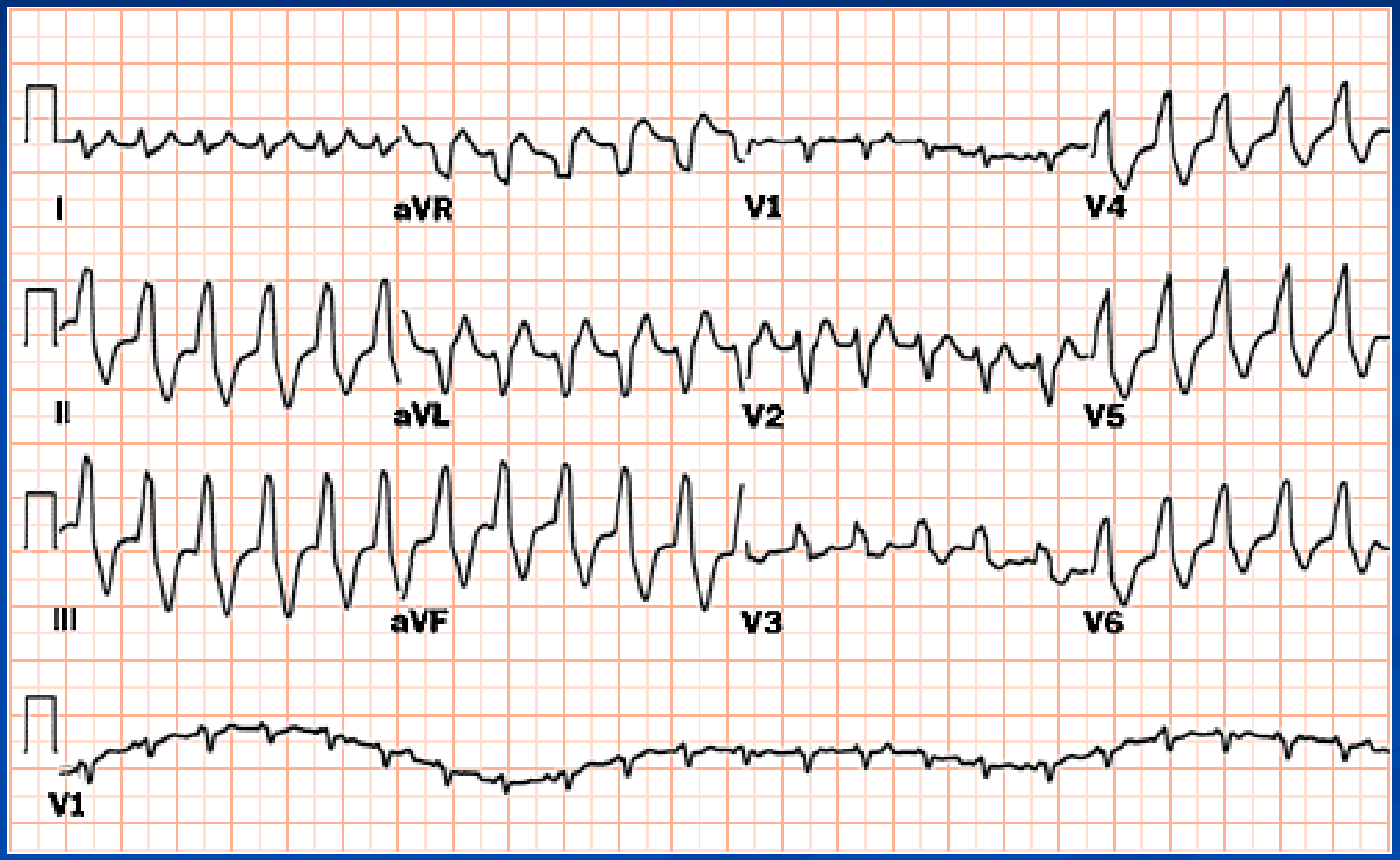
TV Monomorfa



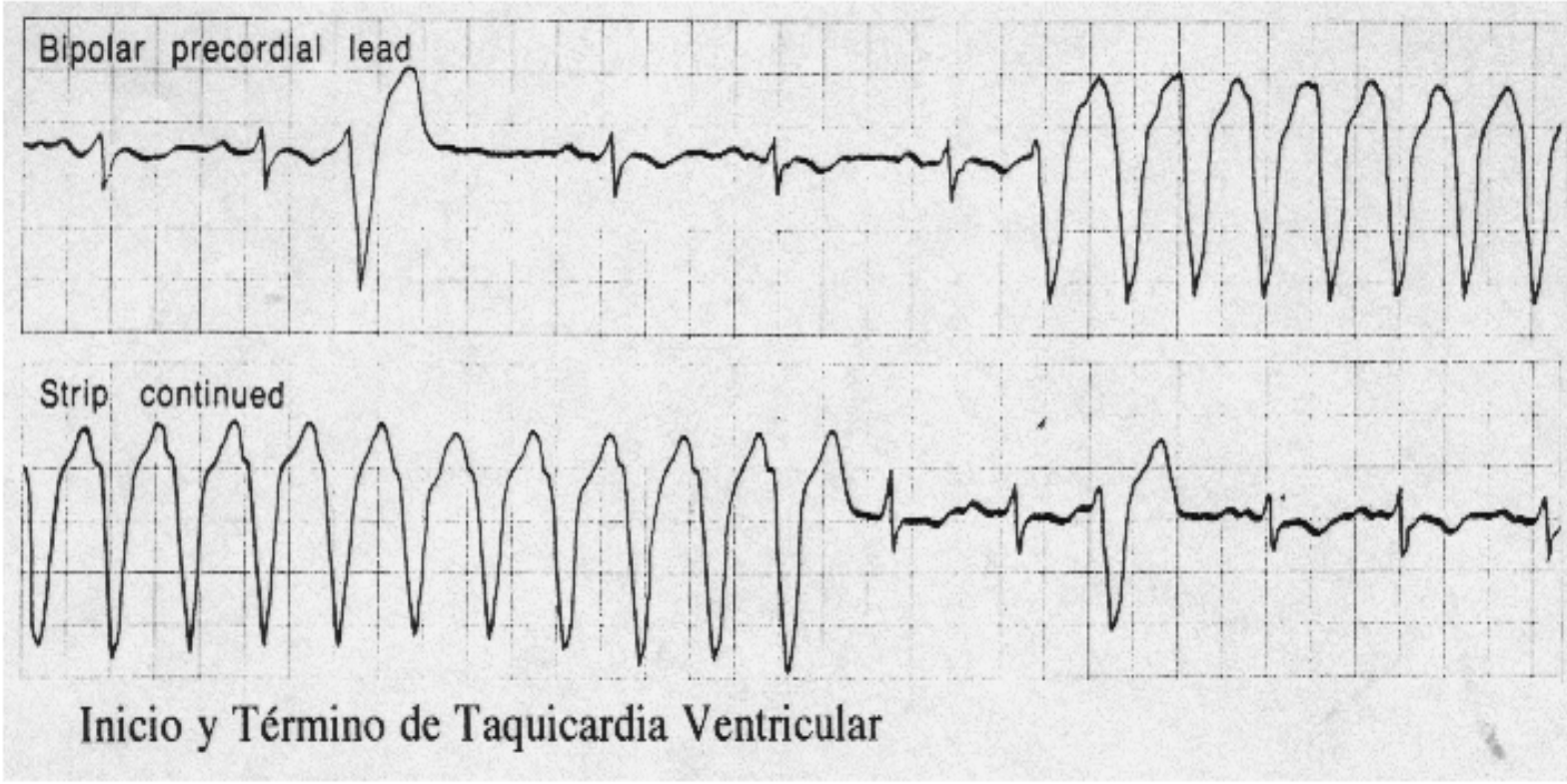
TV polimorfa



TV sostenida

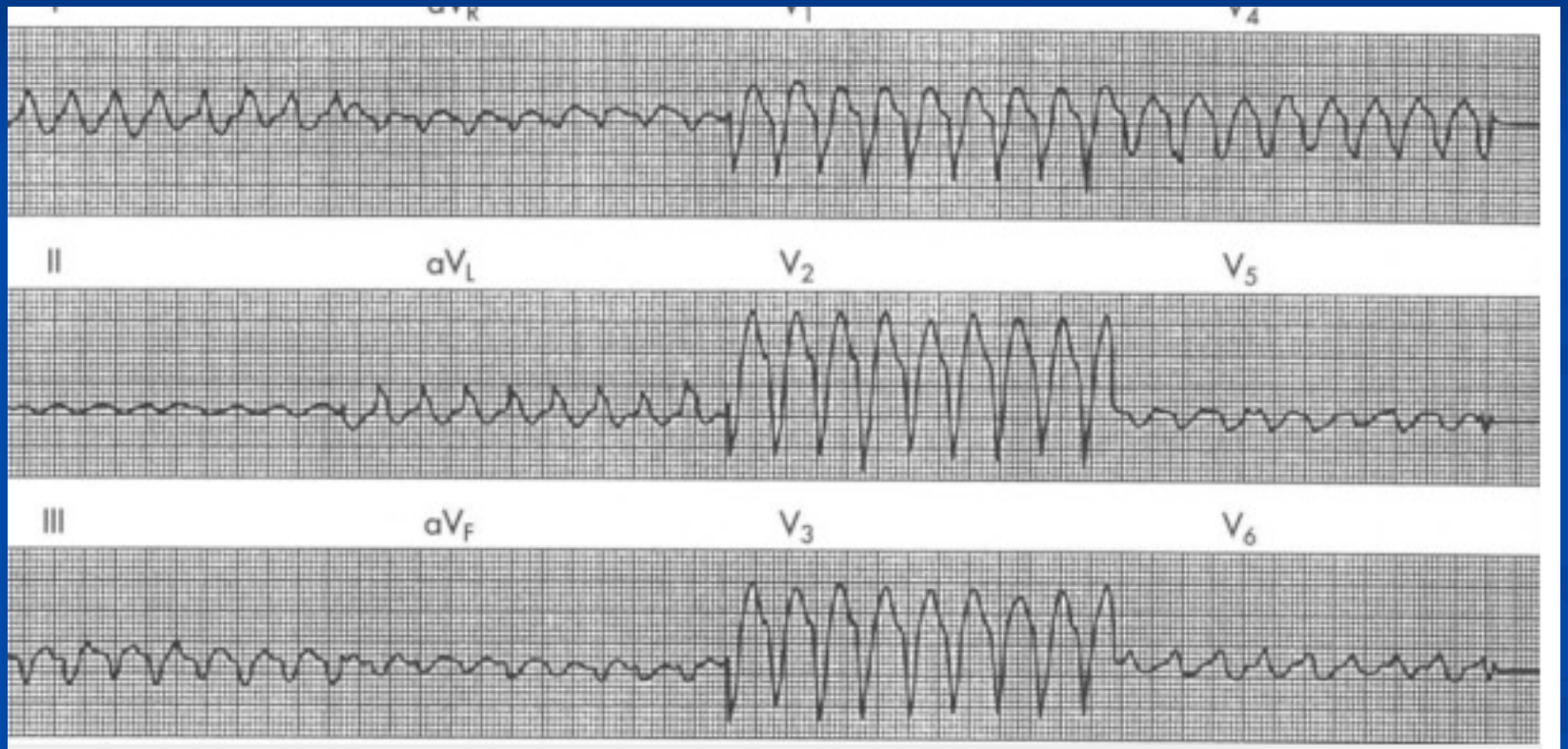


TV autolimitada



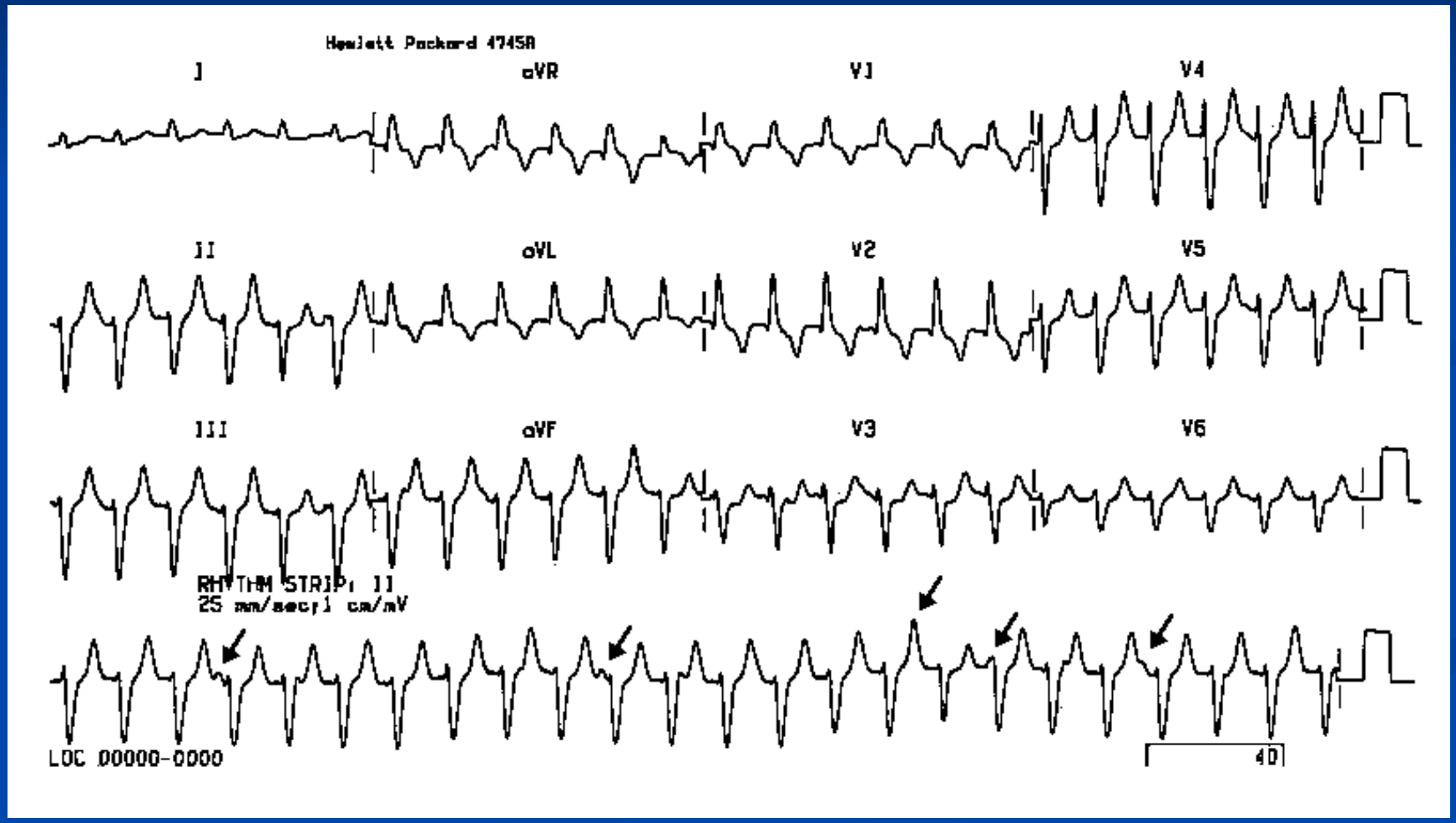
Inicio y Término de Taquicardia Ventricular

Taquicardia Ventricular

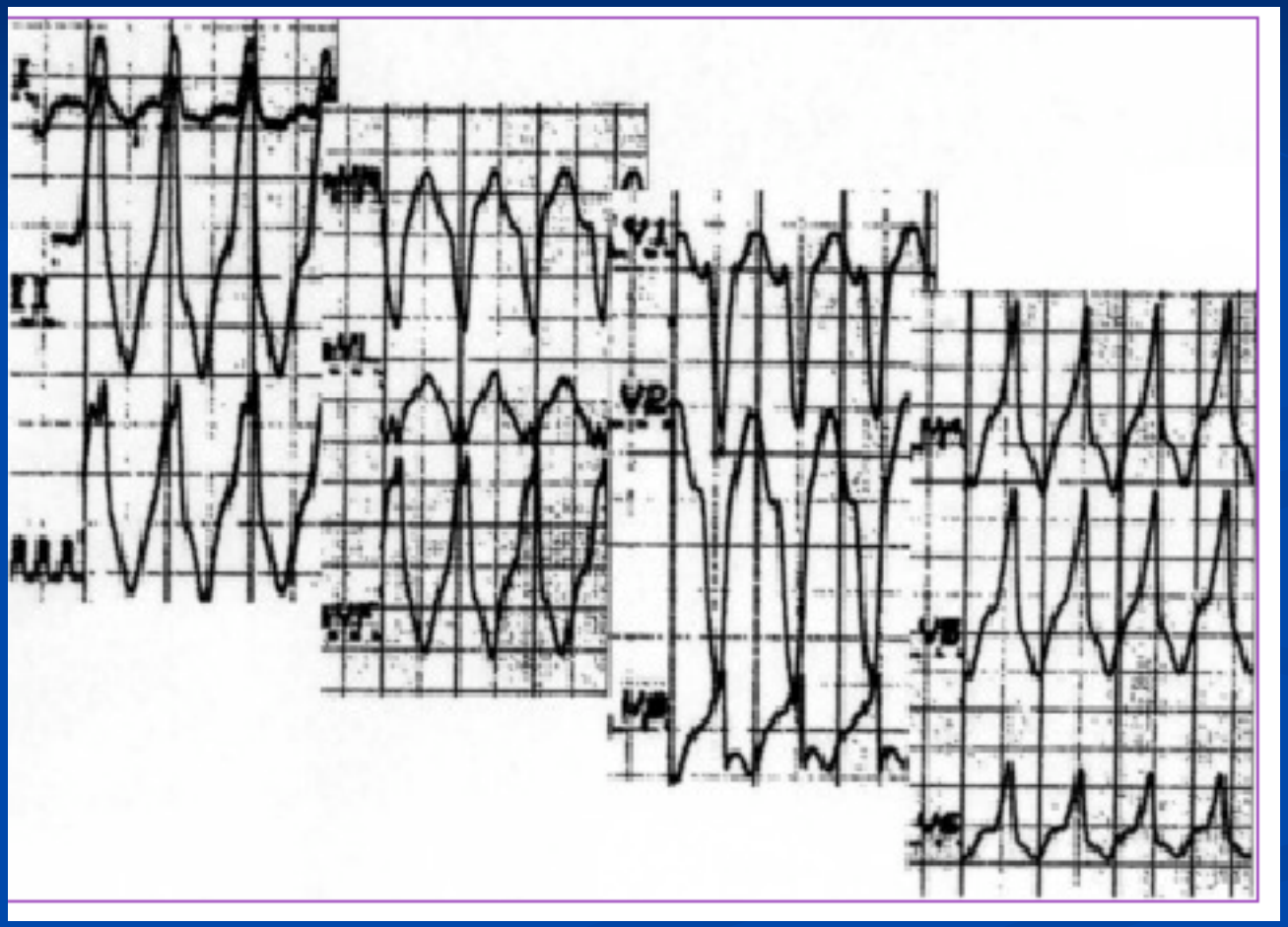


Taquicardia ventricular con imagen de bloqueo completo de rama izquierda y eje QRS desviado

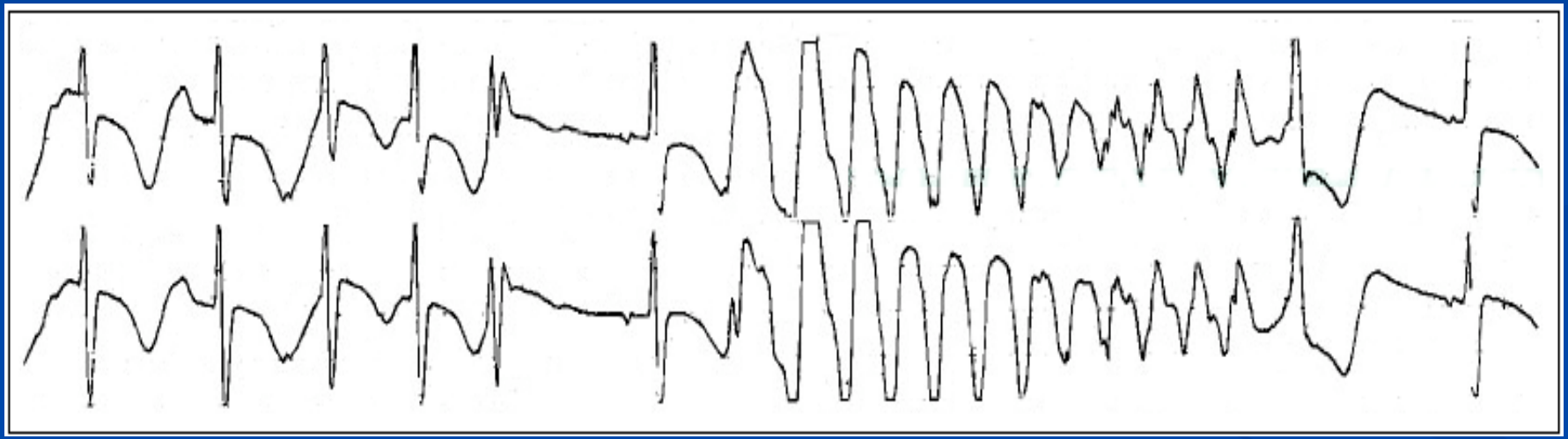
Taquicardia Ventricular



Taquicardia Ventricular



Torsades de Pointes



Taquicardia con QRS ancho

- Criterios clásicos

- Algoritmo de Brugada

Taquicardia con QRS ancho

- Criterios clásicos

Inespecíficos :

Ancho del QRS,eje eléctrico,
morfología del QRS

Específicos : disociación AV,capturas y fusión

Morfología del QRS

Criterios Clásicos de TV

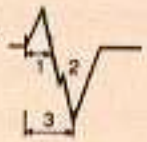
CLASSIC CRITERIA SUGGESTING VENTRICULAR TACHYCARDIA (VT)

QRS width > 0.14 s

Superior QRS axis

Morphology in precordial leads:

RBBB–like pattern	LBBB–like pattern
V_1:	V_1: RT > RS
	V_2
V_6: R/S ratio < 1	V_6: qR



1: 30 ms
2: notch
3: 70 ms

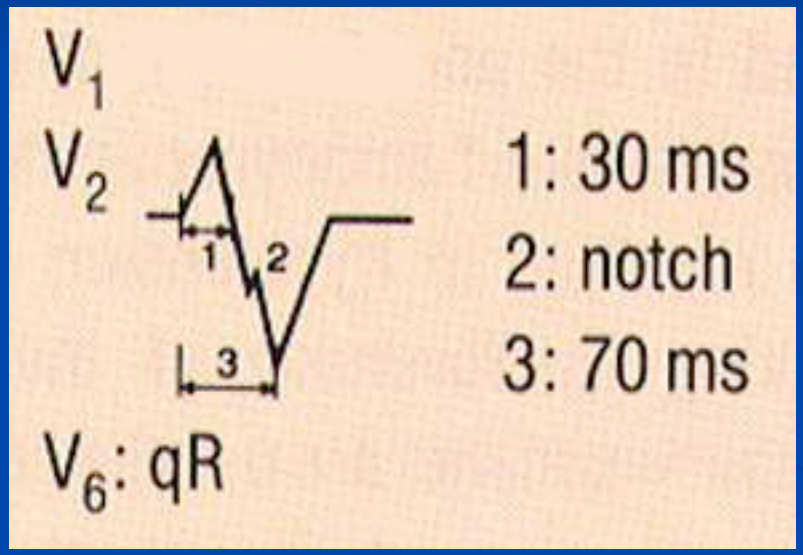
AV dissociation, fusion, capture present

Aislados : inespecíficos

Específicos Insensibles

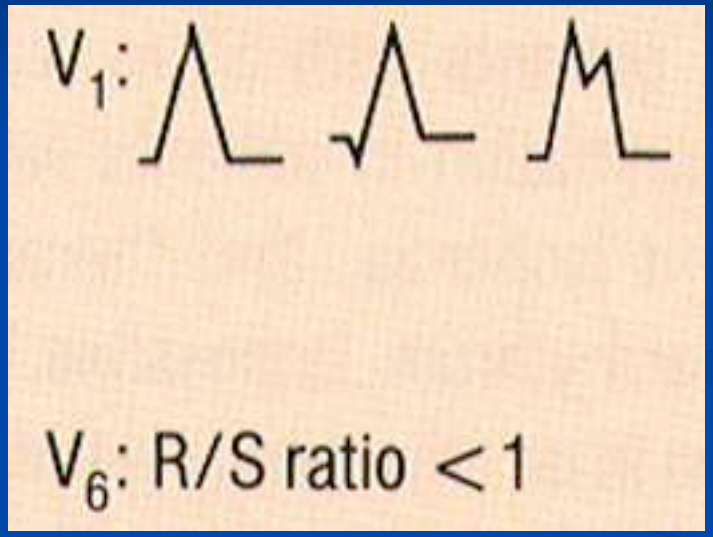
Morfología del QRS

Tipo retardo izquierdo de origen ventricular



Morfología del QRS

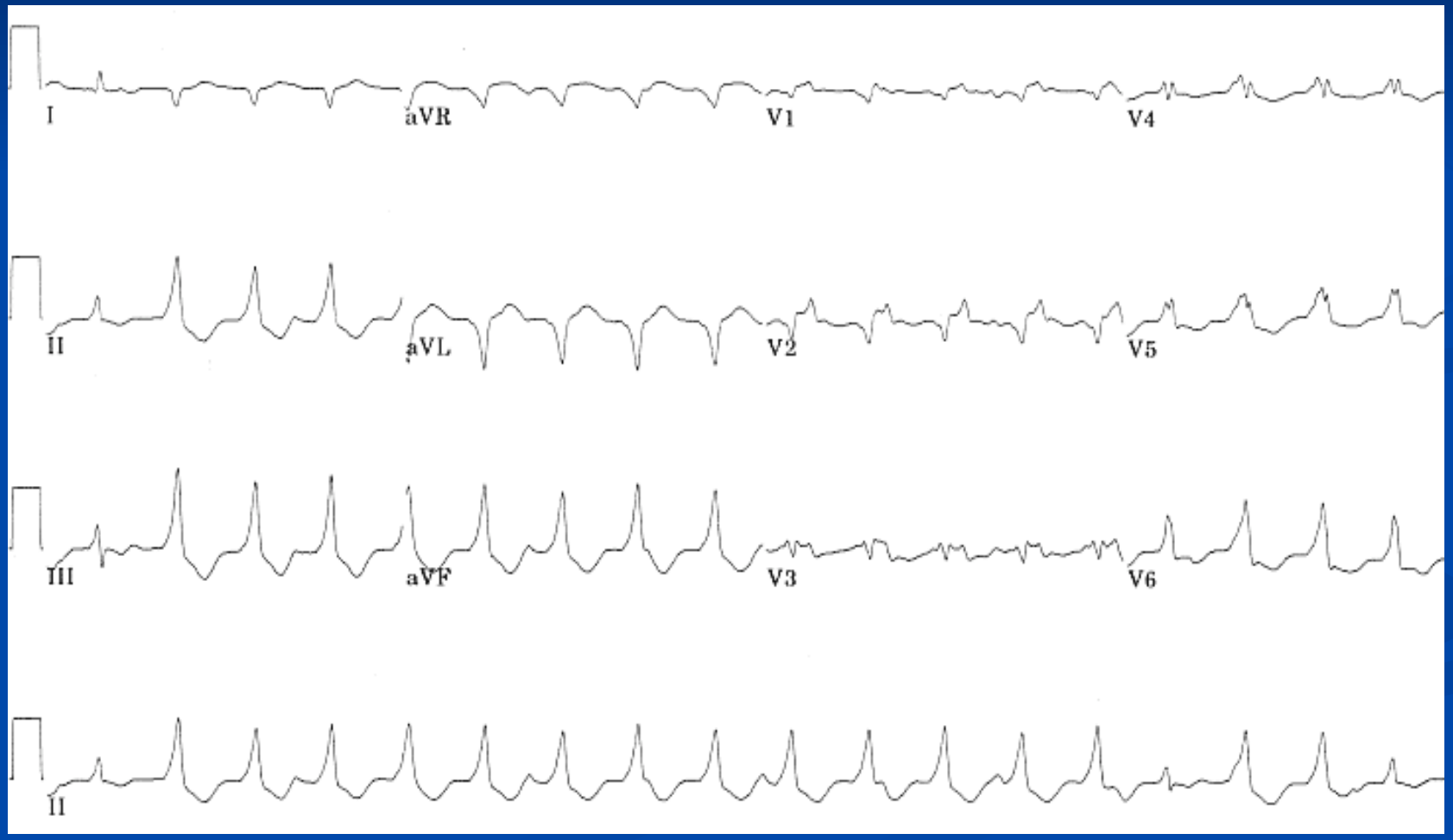
Tipo retardo derecho de origen ventricular



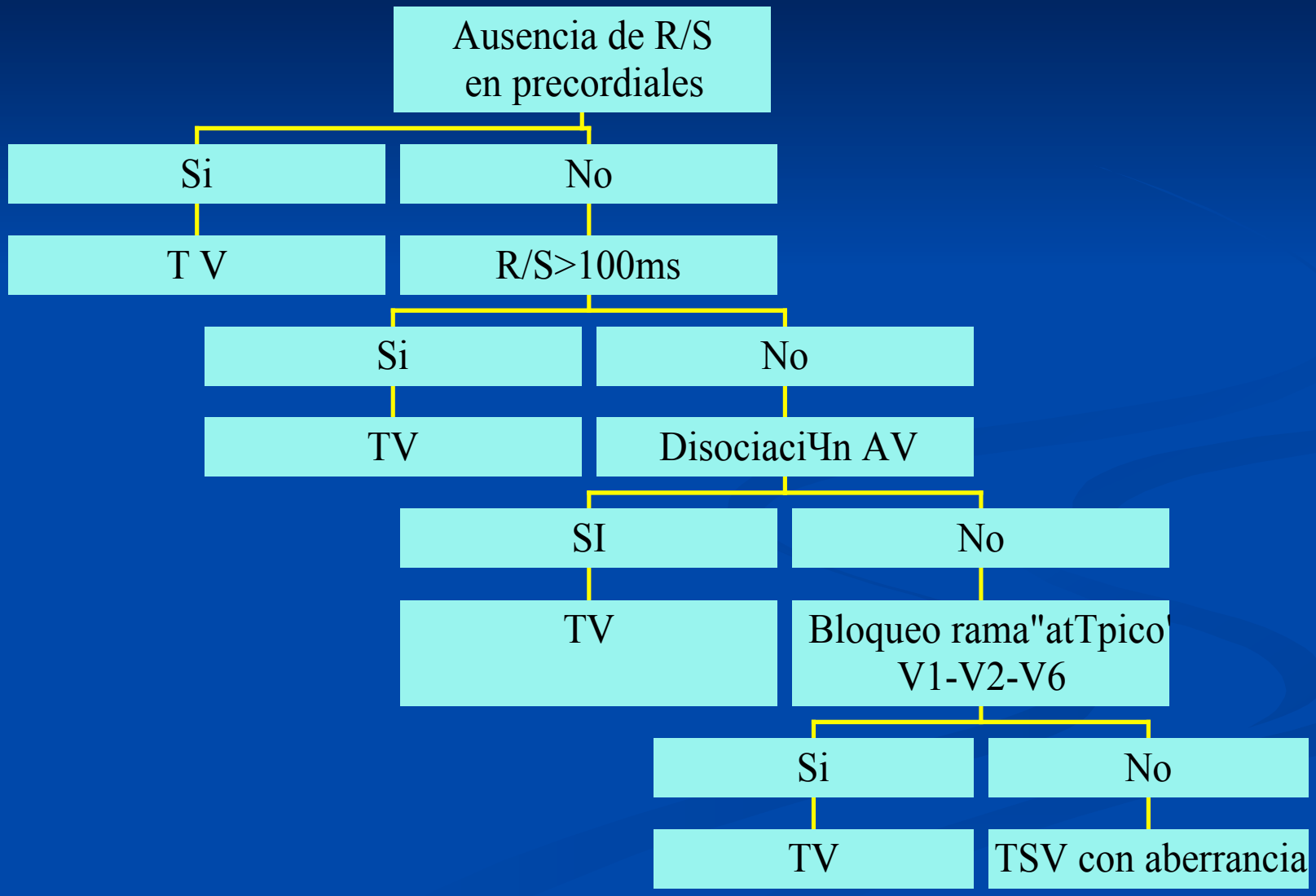
Fusión

Isochronic Ventricular rhythm
F = fusion beat
Arrows point at dissociated P waves

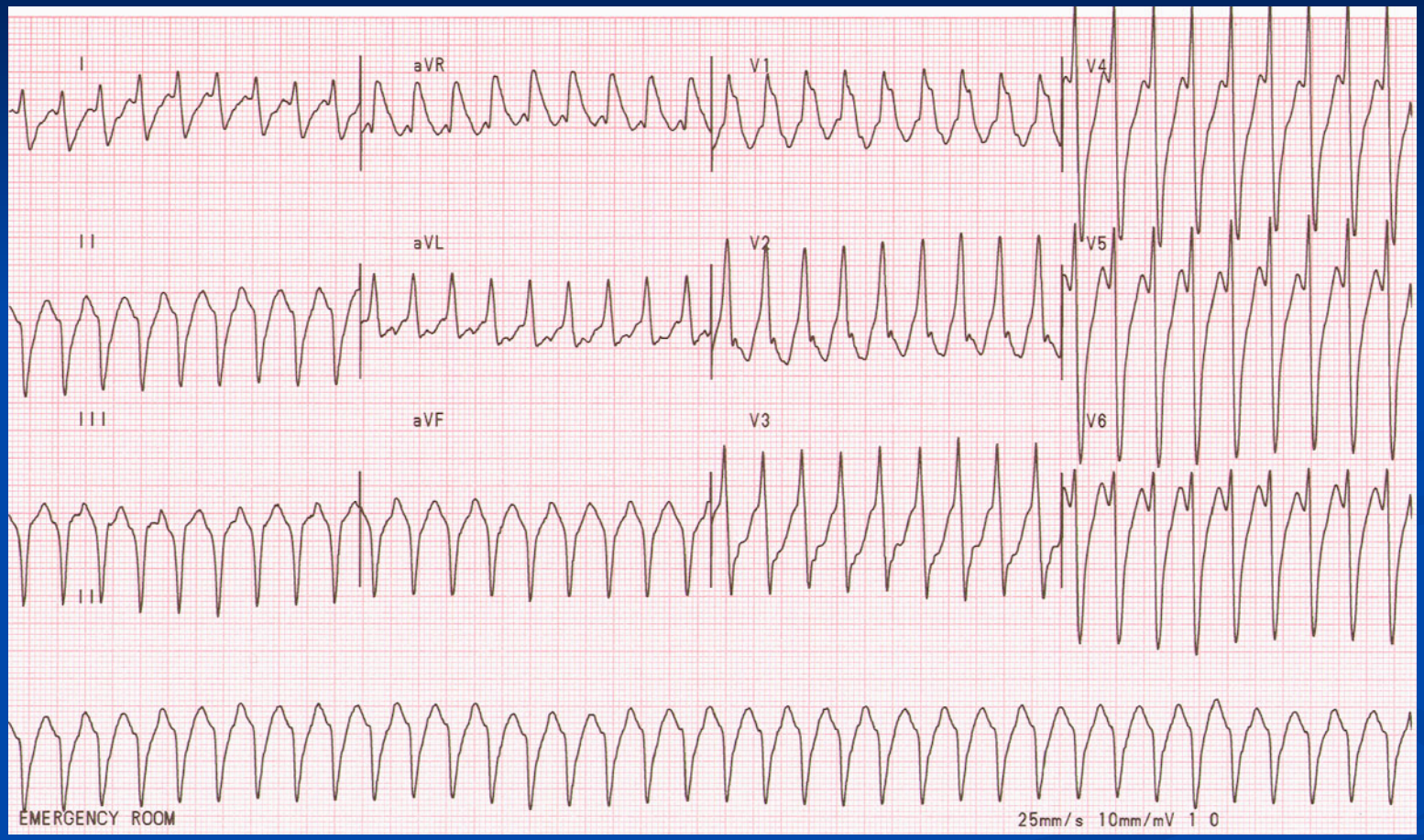
Captura



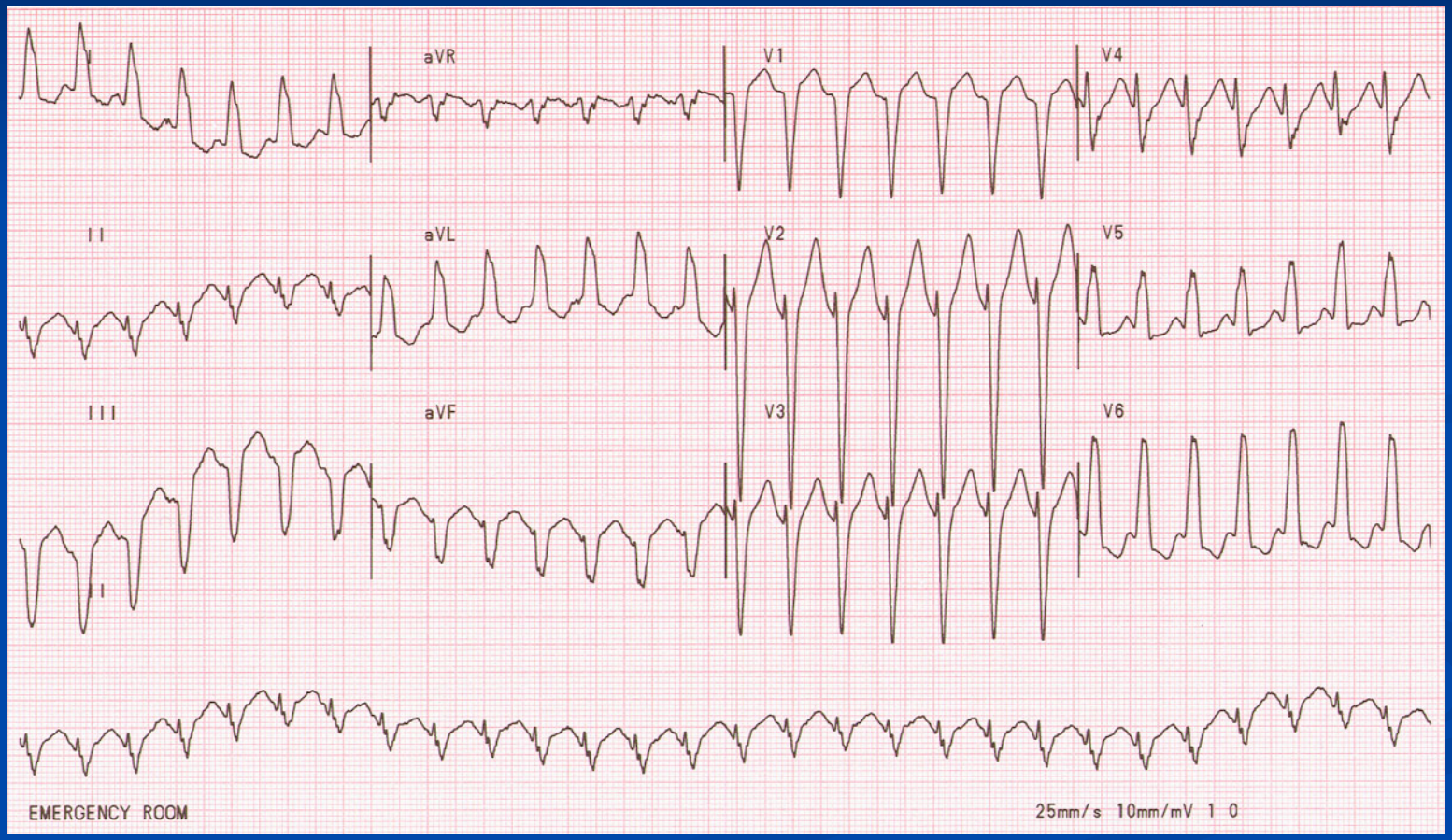
Algoritmo de Brugada



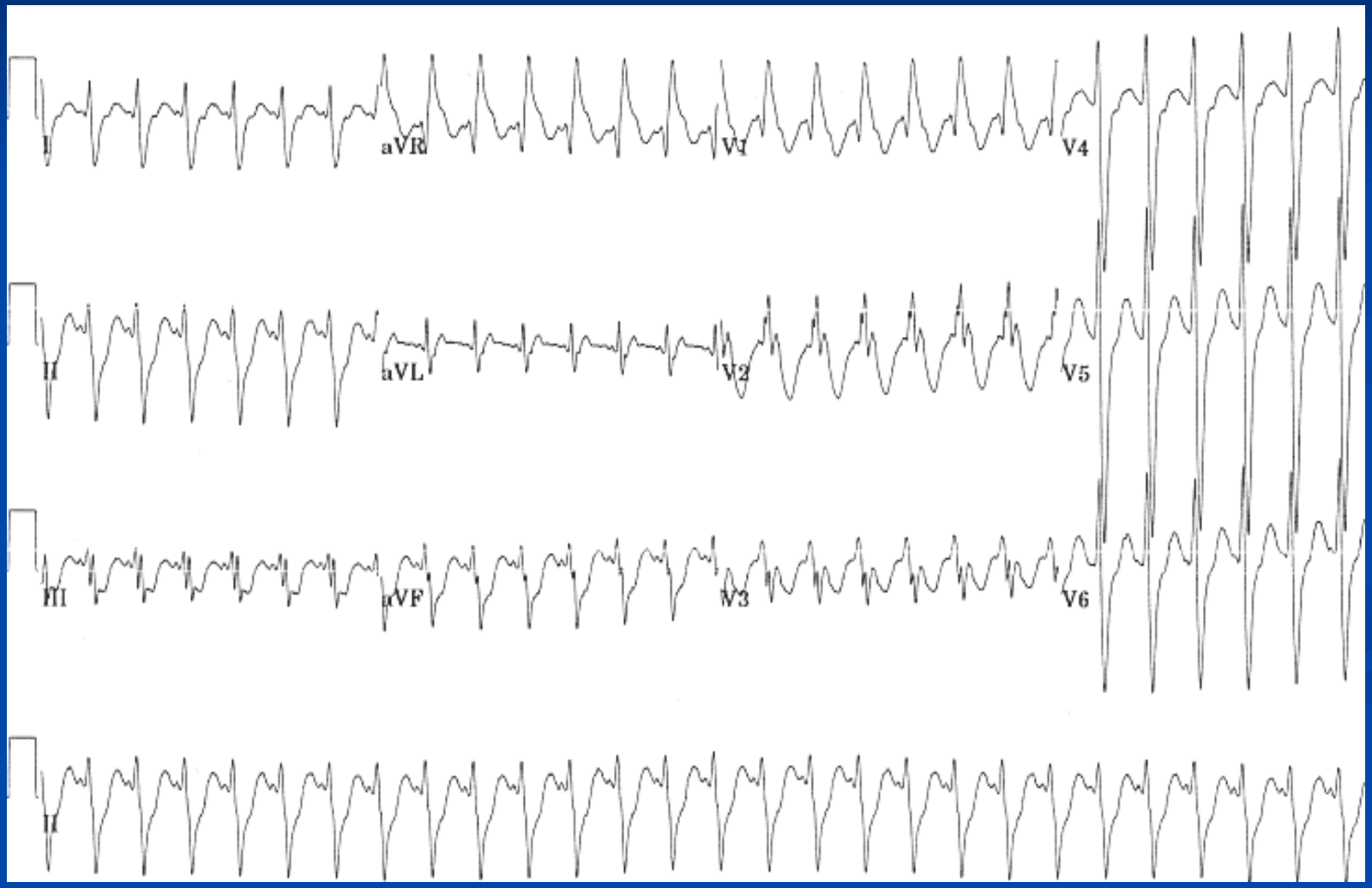
T.Ventricular



TSV con aberrancia

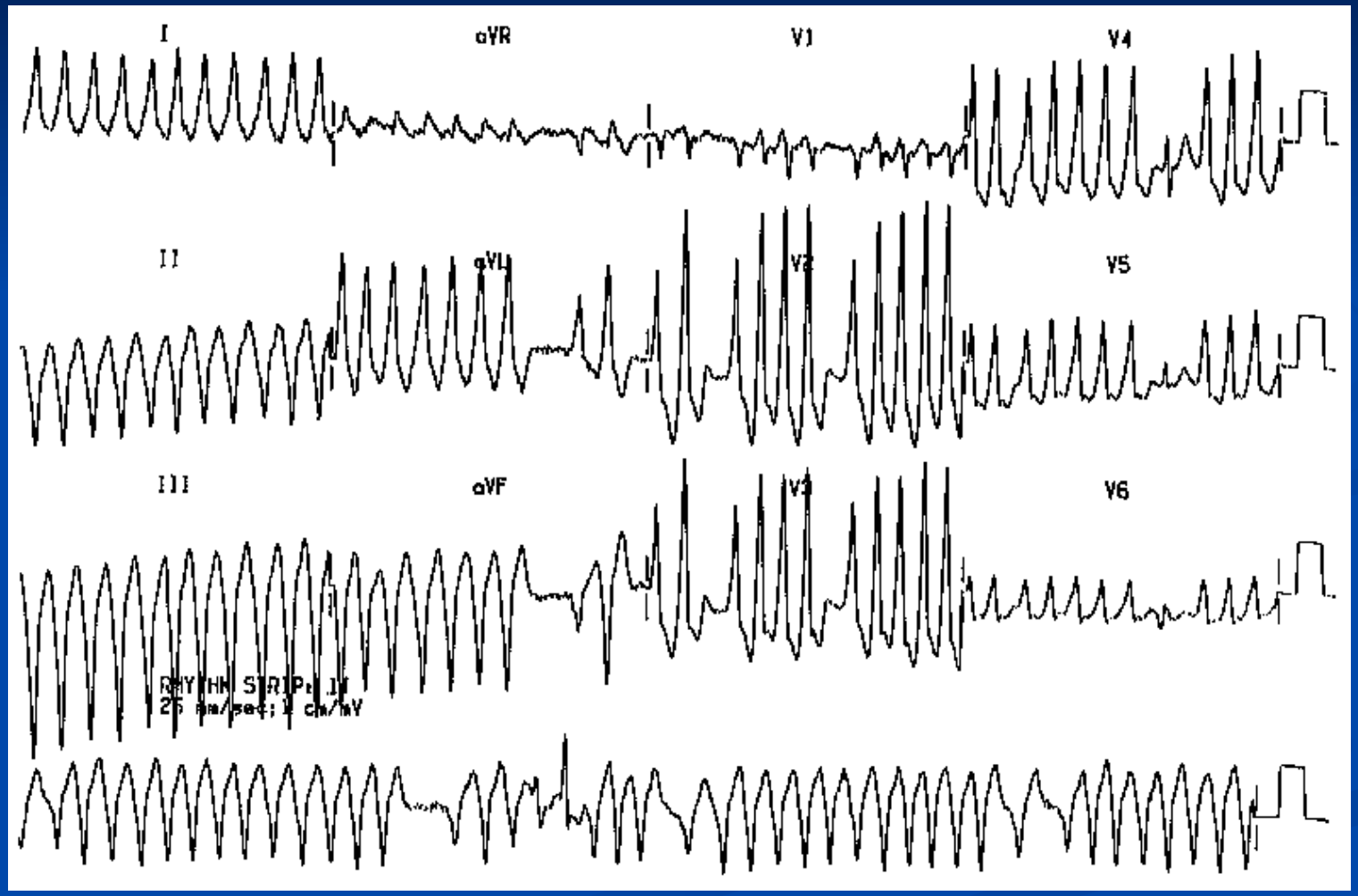


TSV con aberrancia



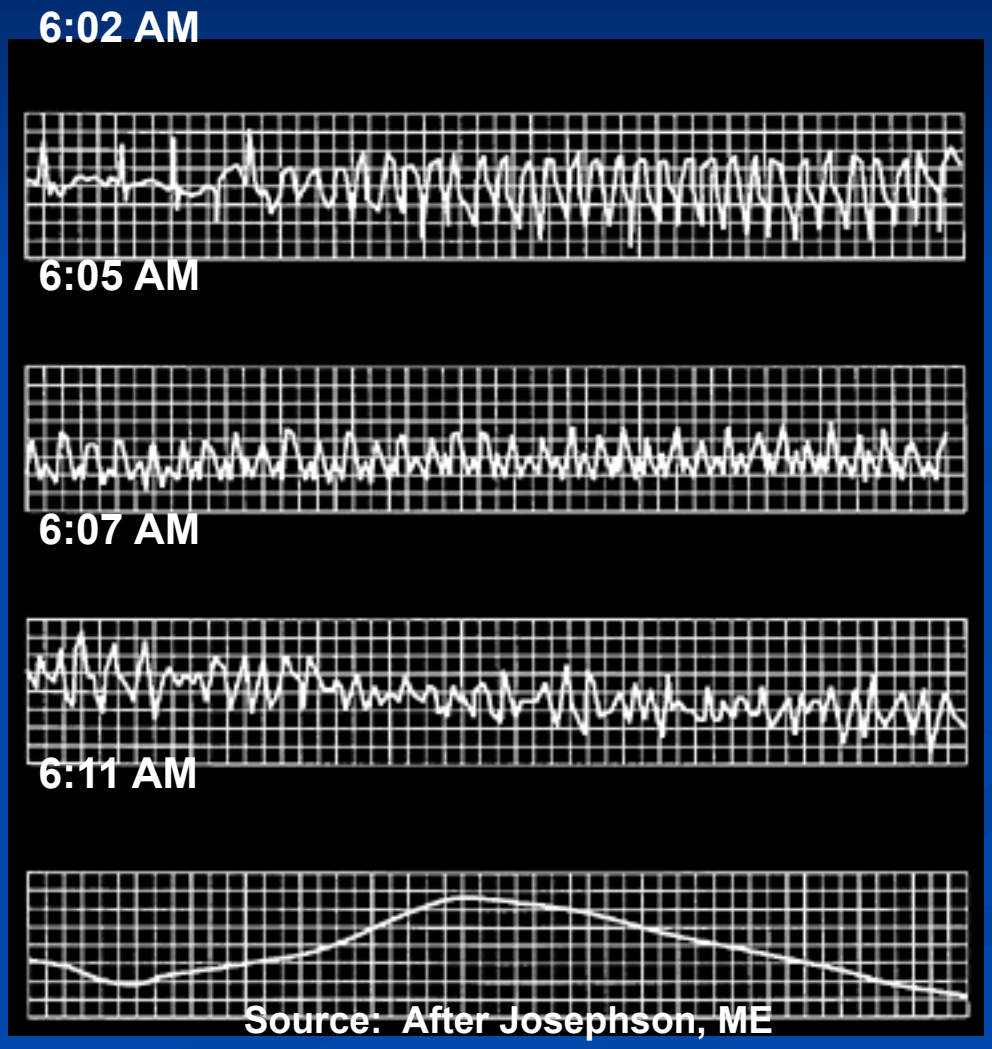
T.Ventricular

FA en S.de WPW


I
aVR
V1
V4
II
aVL
V2
V5
III
aVF
V3
V6
RHYTHM STRIP: II
25 mm/sec; 1 cm/mV

Muerte Súbita

Fibrilación Ventricular



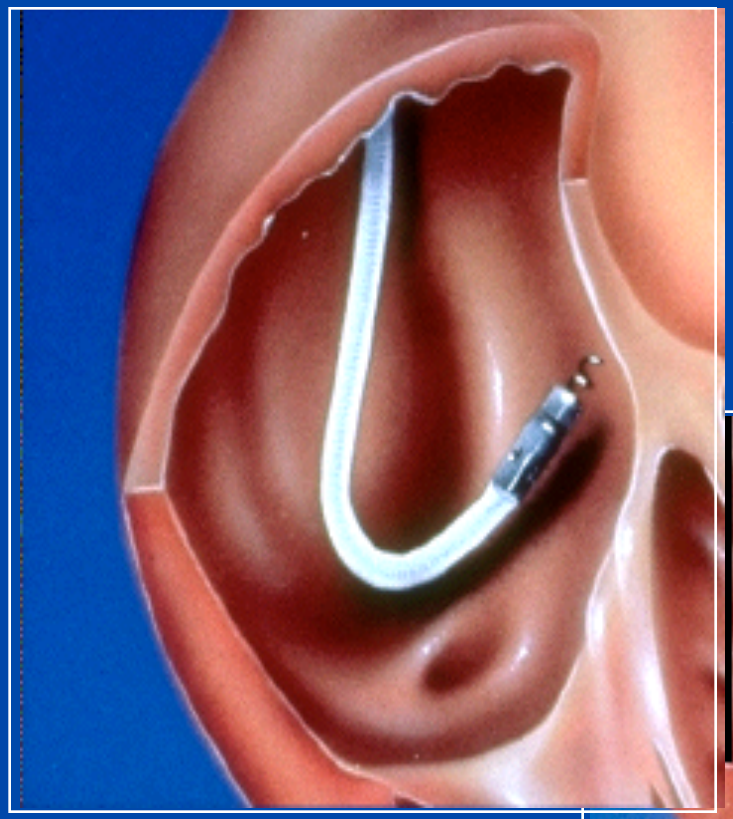
Marcapasos

Código de marcapasos

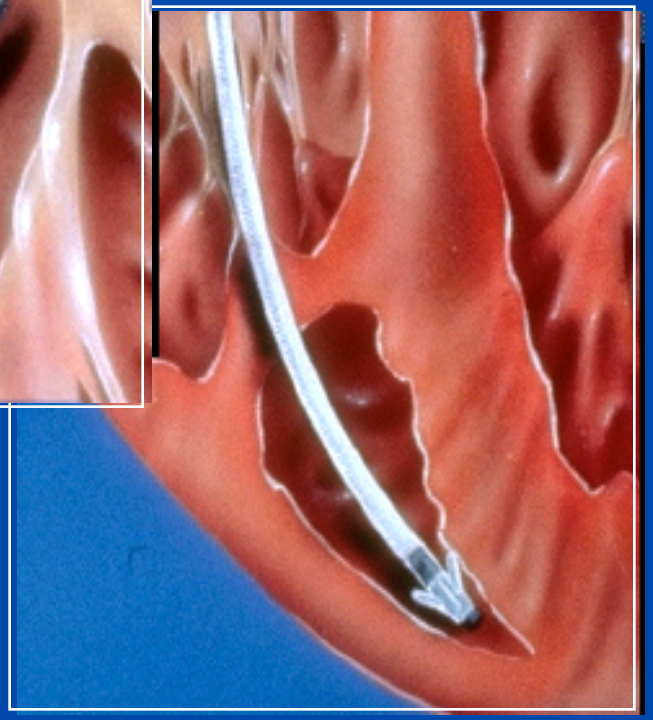
Position	I	II	III	IV	V
Category	Chamber(s) Paced	Chamber(s) Sensed	Response to Sensing	Rate Modulation	Multisite Pacing
Letters Used	O = None A = Atrium V = Ventricle D = Dual (A + V)	O = None A = Atrium V = Ventricle D = Dual (A + V)	O = None T = Triggered I = Inhibited D = Dual (T + I)	O = None R = Rate modulation	O = None A = Atrium V = Ventricle D = Dual (A + V)
Manufacturers' Designation Only	S = Single (A or V)	S = Single (A or V)			

GUIDANT

Unicameral

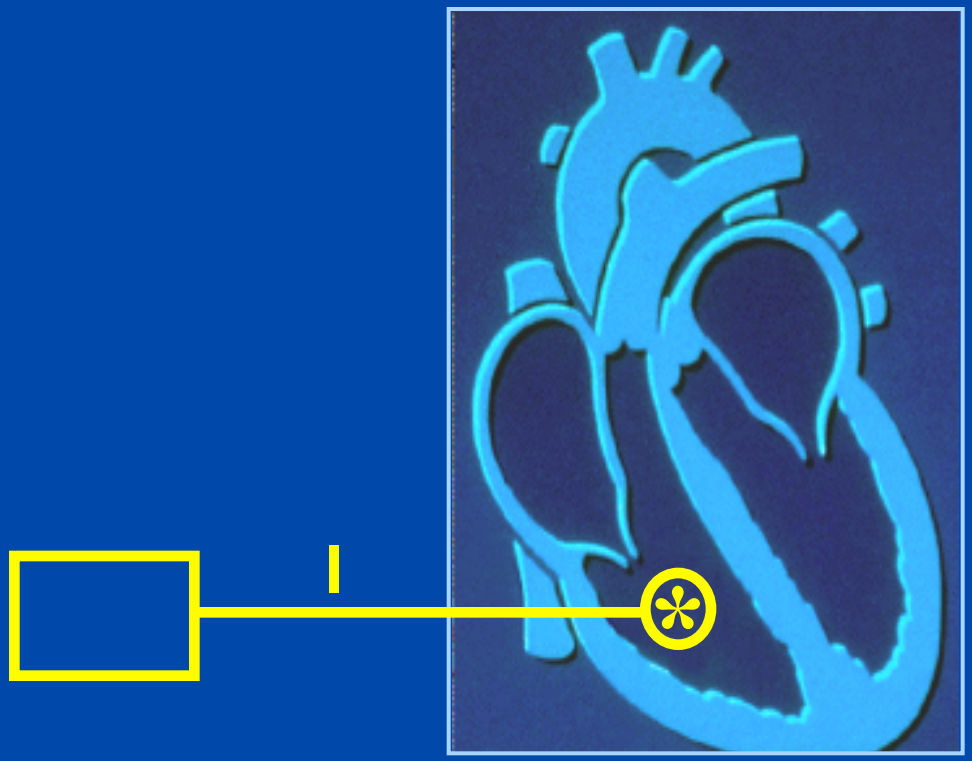


AAI(R)



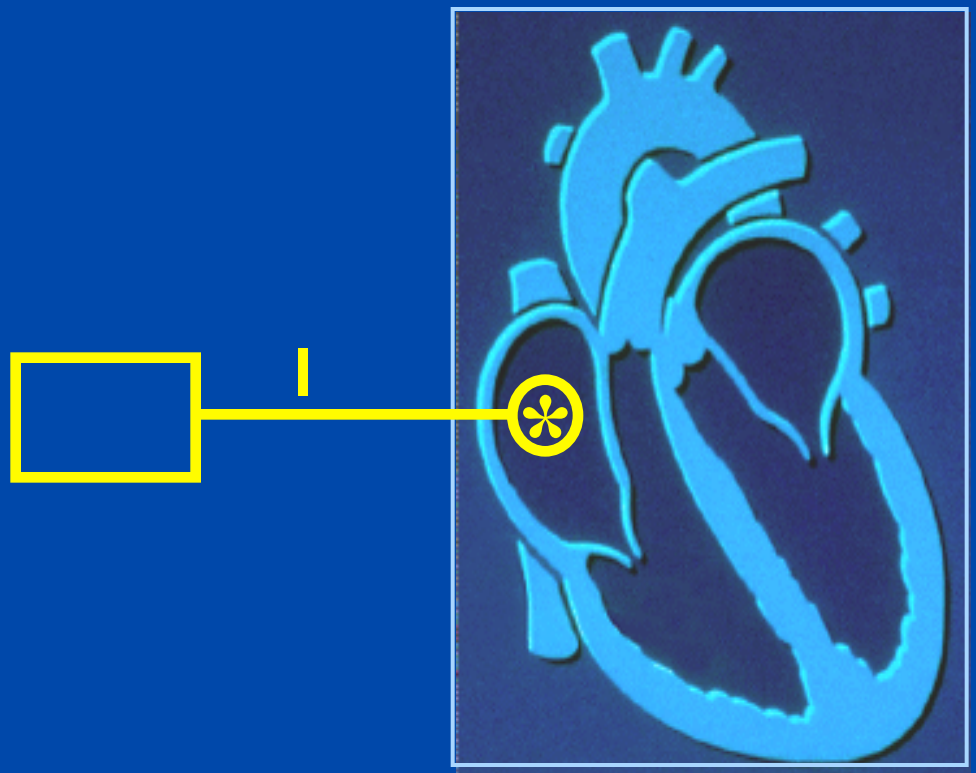
VVI(R)

GUIDANT



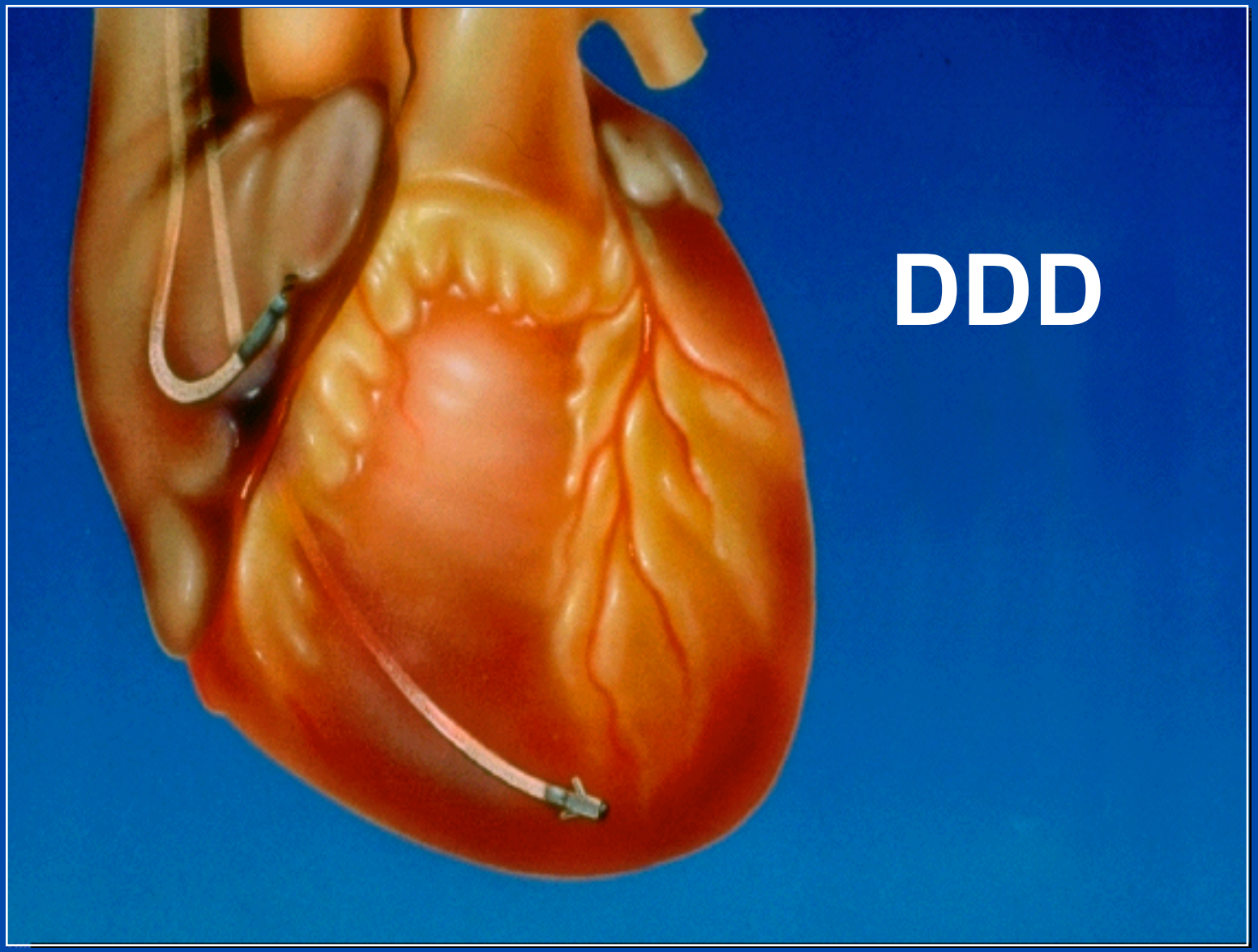
VVI

GUIDANT

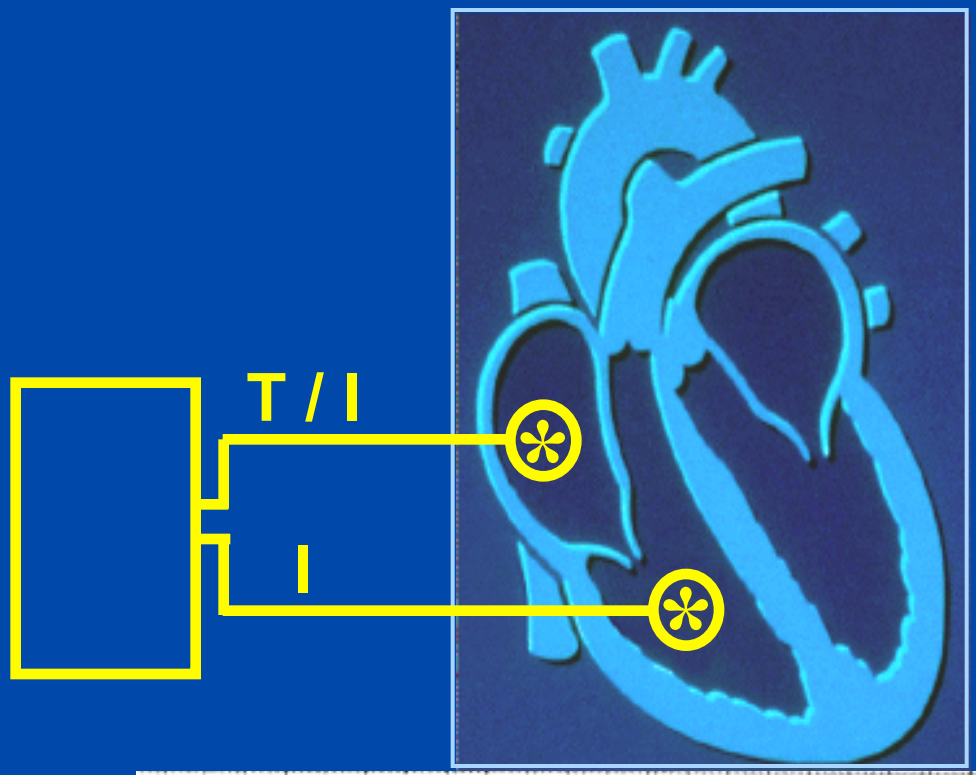


AAI

GUIDANT



GUIDANT



DDD

FIBRILACIÓN AURICULAR CON BLOQUEO A-V

VVIR