Arritmias não dependentes de doença estrutural

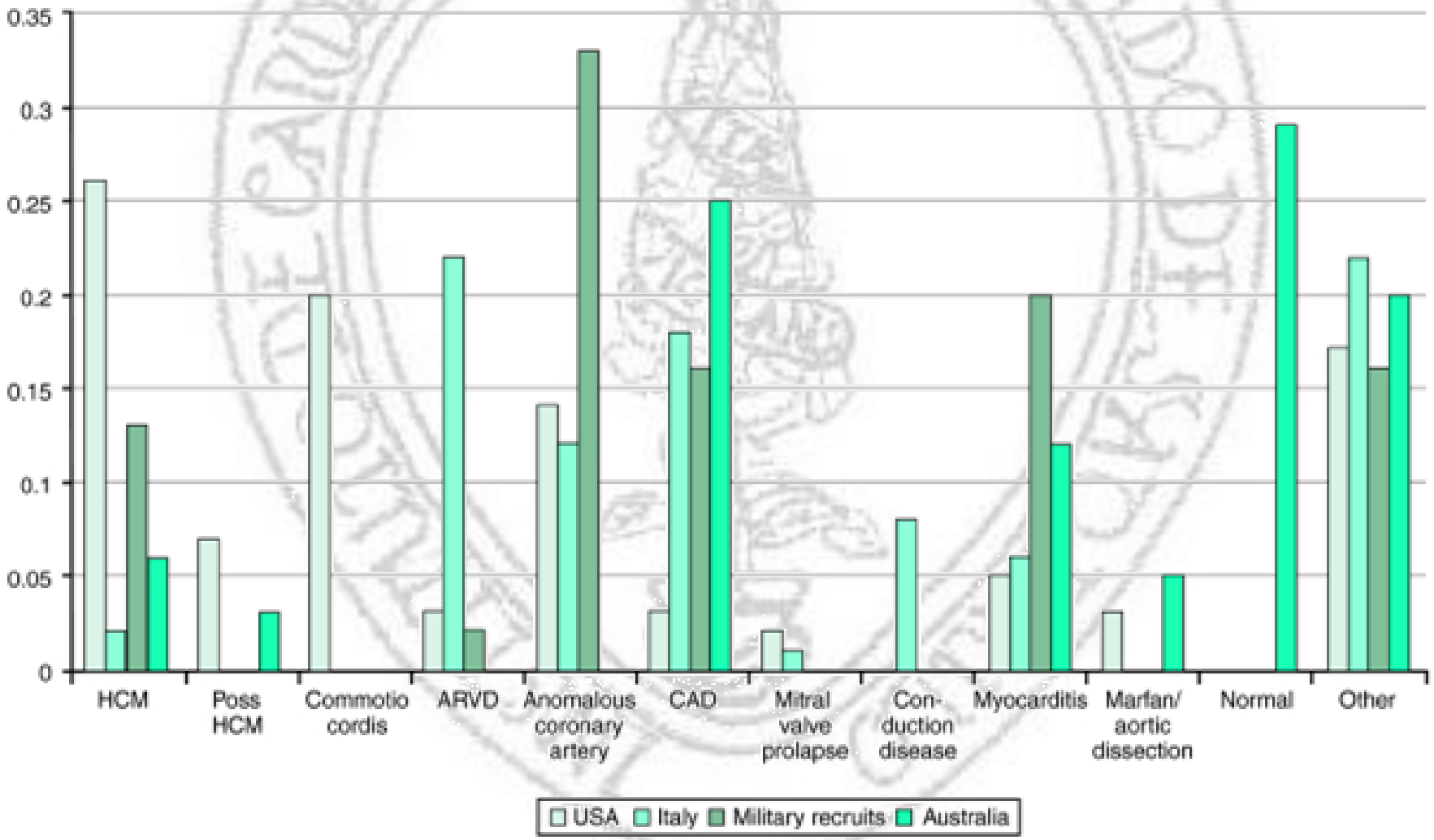
Rogério Andalaft

Seção Médica de Eletrofisiologia Clínica e Arritmias Cardíacas
Instituto Dante Pazzanese de Cardiologia

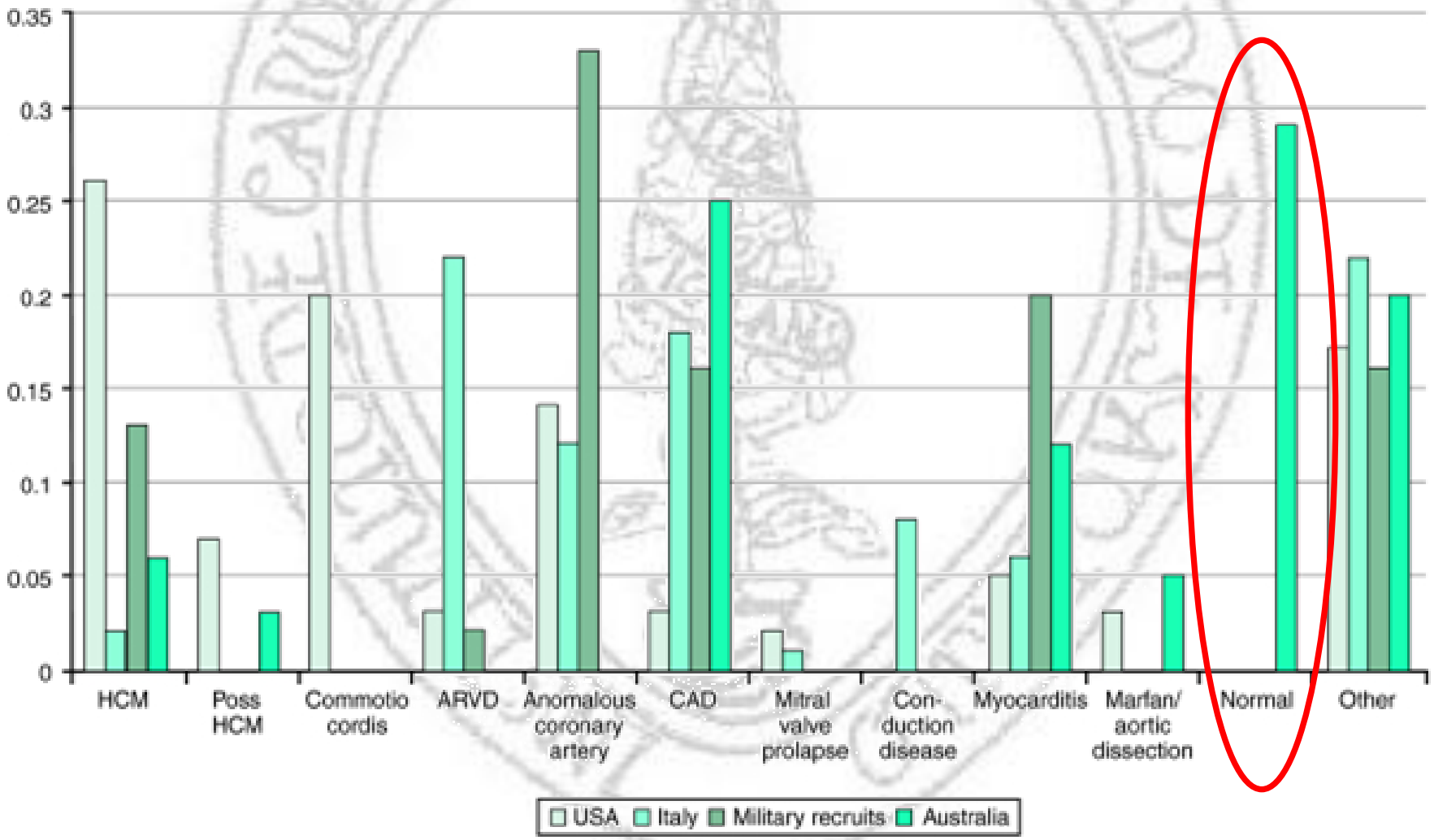
XXX Olympiad London 2012

CERQUILHO SP
ATLETAS DO BEM
BRAHMA
16:59

Arritmias e Morte Súbita



Arritmias e Morte Súbita



As doenças eletrogenéticas

- **Síndromes eletrogenéticas**
  - **Brugada**
  - **QT longo**
  - **TV catecolaminérgica**
  - **QT curto**

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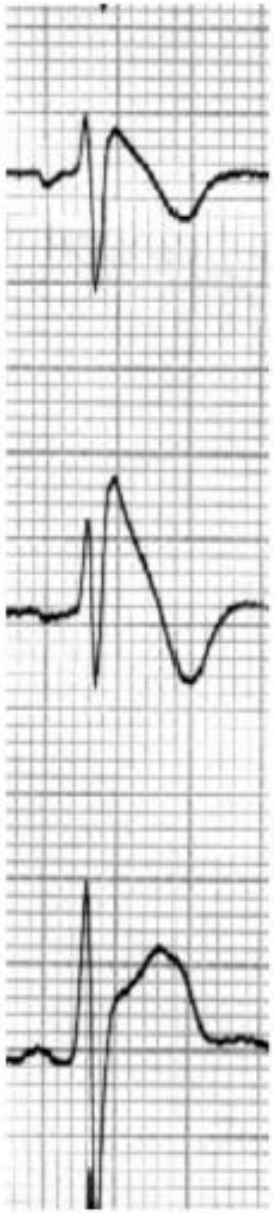
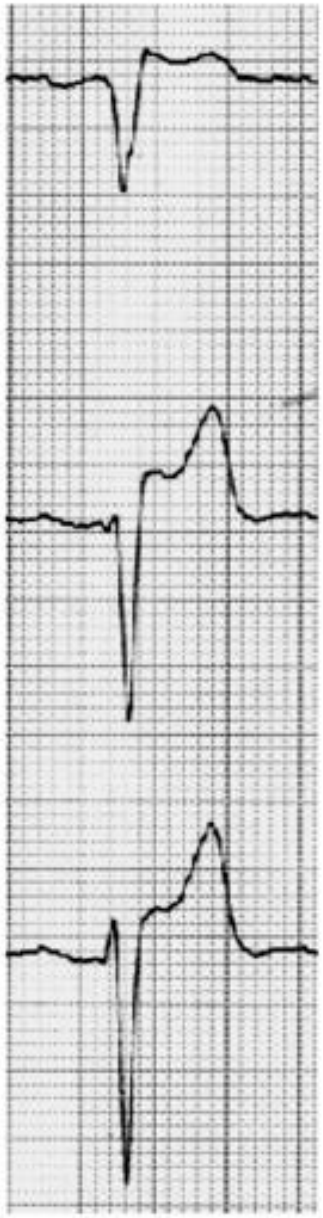
Tipo 1



Tipo 2



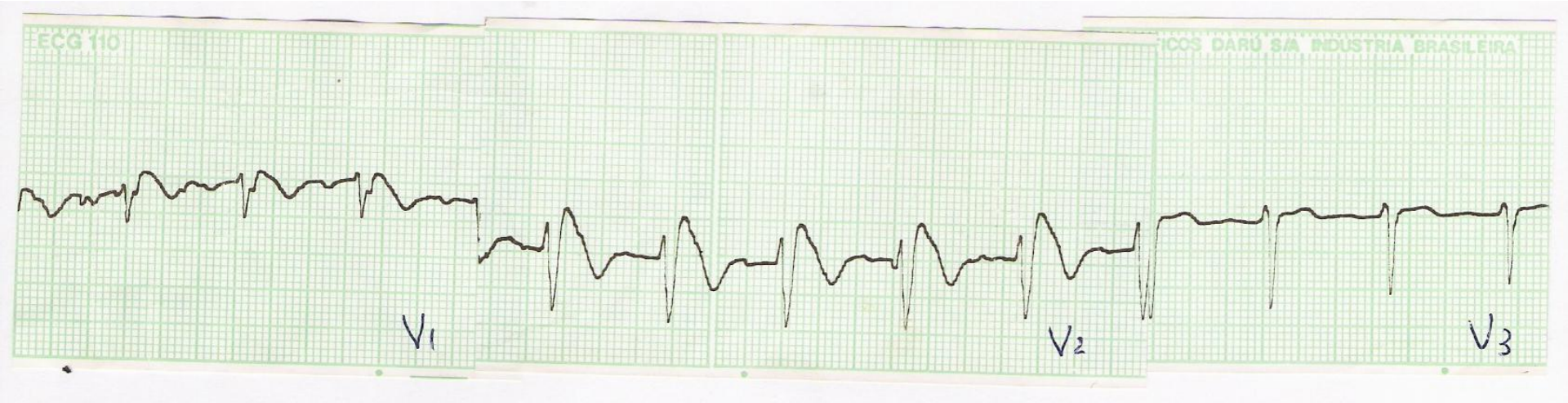
Tipo 3

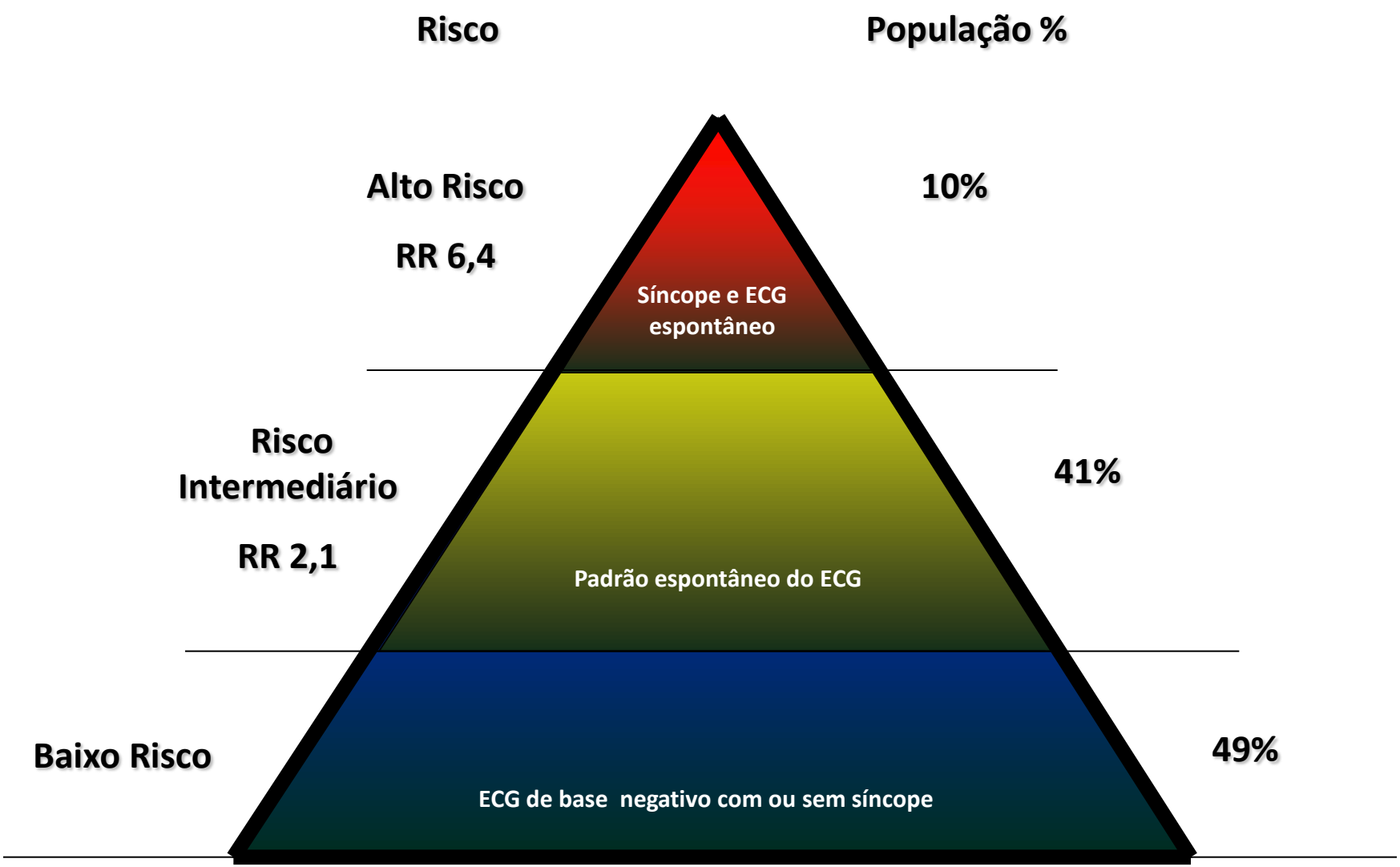
Teste farmacológico

- Tranformação em ECG tipo I
- Monitorização de ECG
- Material de ressucitação cardiopulmonar
- Farmacos utilizados
  - Procainamida
  - Flecainida
  - Ajmalina

Eur Heart J, 2001; 22 (4): 1397-9

ECG Brugada –V1- V3

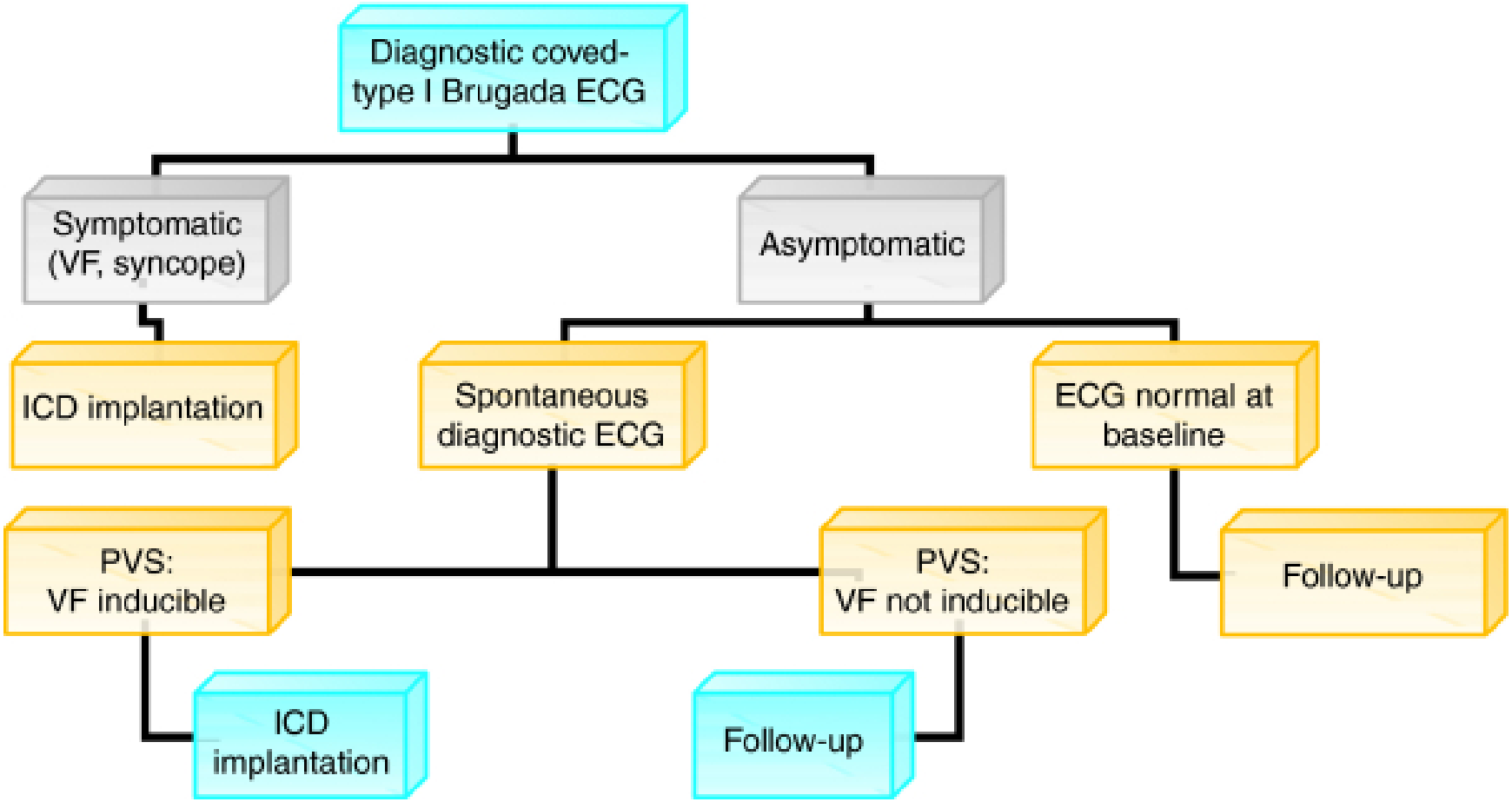



Risco
População %
Alto Risco
RR 6,4
10%
Síncope e ECG espontâneo
Risco Intermediário
RR 2,1
41%
Padrão espontâneo do ECG
Baixo Risco
49%
ECG de base negativo com ou sem síncope

Estratificação de risco Síndrome de Brugada

	I	IIa	IIb
Estratificação de Risco	TV/FV	•História fam MS •Síncope	•TV ou FV no estudo eletrofisiológico
Prevenção Primária	CDI (em pacientes com síncope e TV)	-	•CDI (em paciente assintomático indutivel no EEF)
Prevenção Secundária	CDI	-	-

Europace 2002; 4:3-18


Diagnostic coved-type I Brugada ECG
Symptomatic (VF, syncope)
Asymptomatic
ICD implantation
Spontaneous diagnostic ECG
ECG normal at baseline
PVS: VF inducible
PVS: VF not inducible
Follow-up
ICD implantation
Follow-up

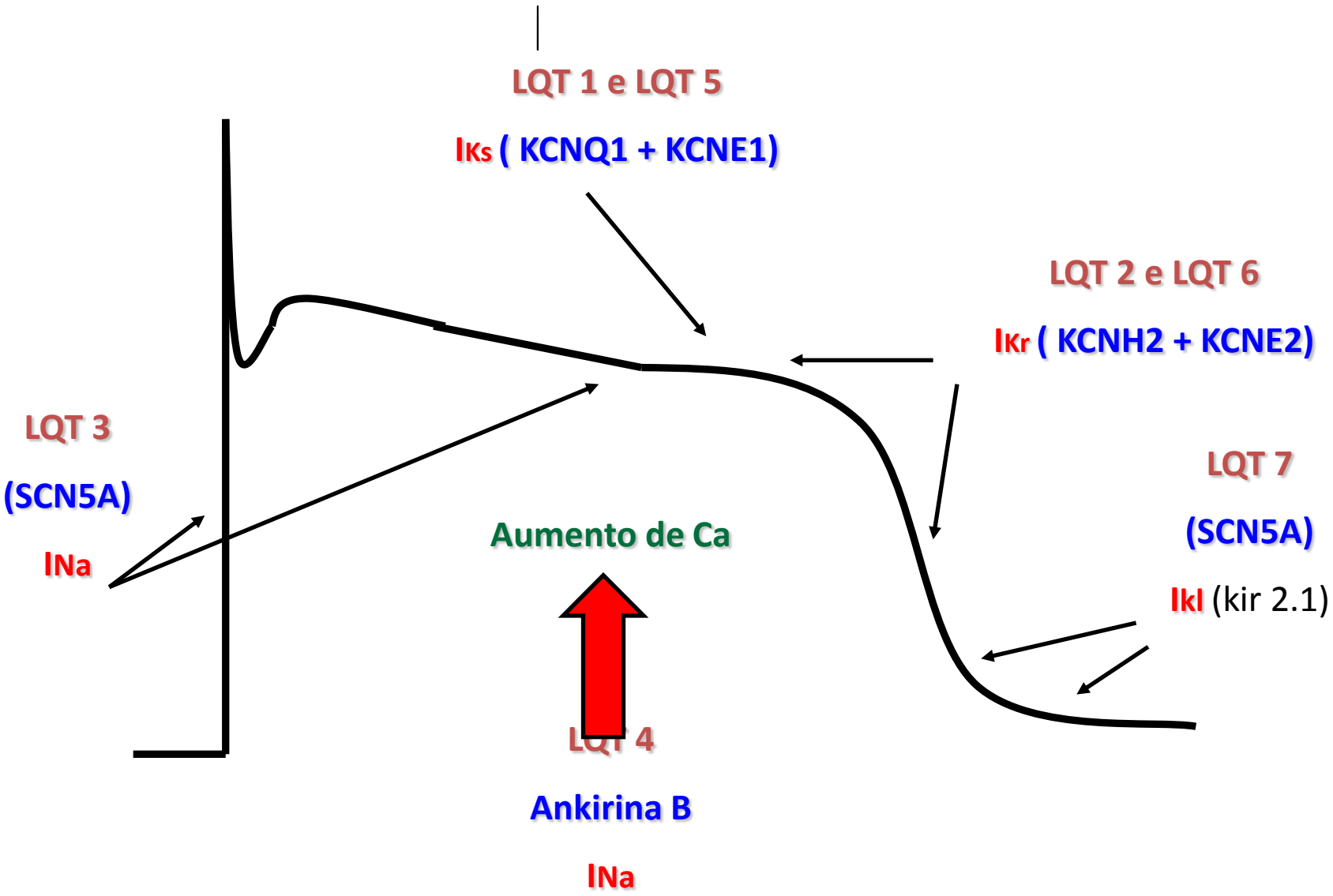
- **Síndromes eletrogenéticas**
  - **Brugada**
  - **QT longo**
  - **TV catecolaminérgica**
  - **QT curto**

Critérios diagnósticos Síndrome do QT longo (Schwartz)

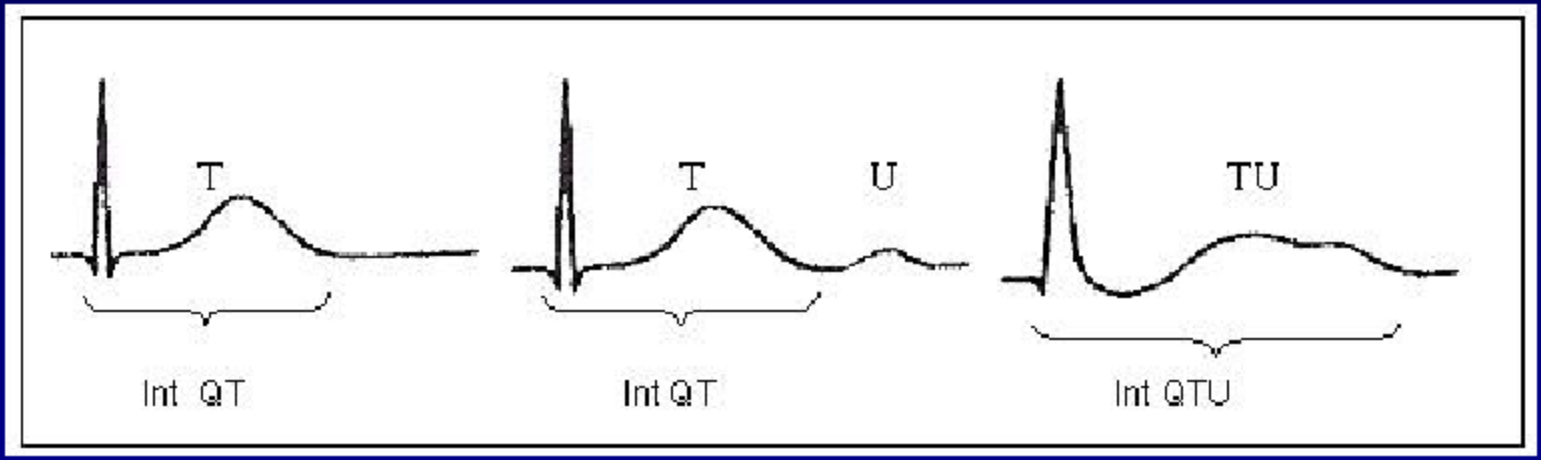
	Pontuação
QTc	
>480 ms	3
460 – 470 ms	2
450 ms (masculino)	1
Torsade pointes	2
Alternância de ondas T (TWA)	1
Baixa frequência cardíaca	0,5
Síncope	
Com estresse	2
Sem estresse	1
Surdez congênita	0,5
Membros da familia com LQTS	1
Morte cardíaca inexplicada na família (imediatos) antes dos 30 anos	0,5

<1 = baixa probabilidade; 2-3 = probabilidade intermediária; >4 alta probabilidade

J Intern Med 2006; 259:39-47


LQT 1 e LQT 5
IKs (KCNQ1 + KCNE1)
LQT 2 e LQT 6
IKr (KCNH2 + KCNE2)
LQT 3
(SCN5A)
INa
Aumento de Ca
LQT 7
(SCN5A)
IkI (kir 2.1)
LQT 4
Ankirina B
INa

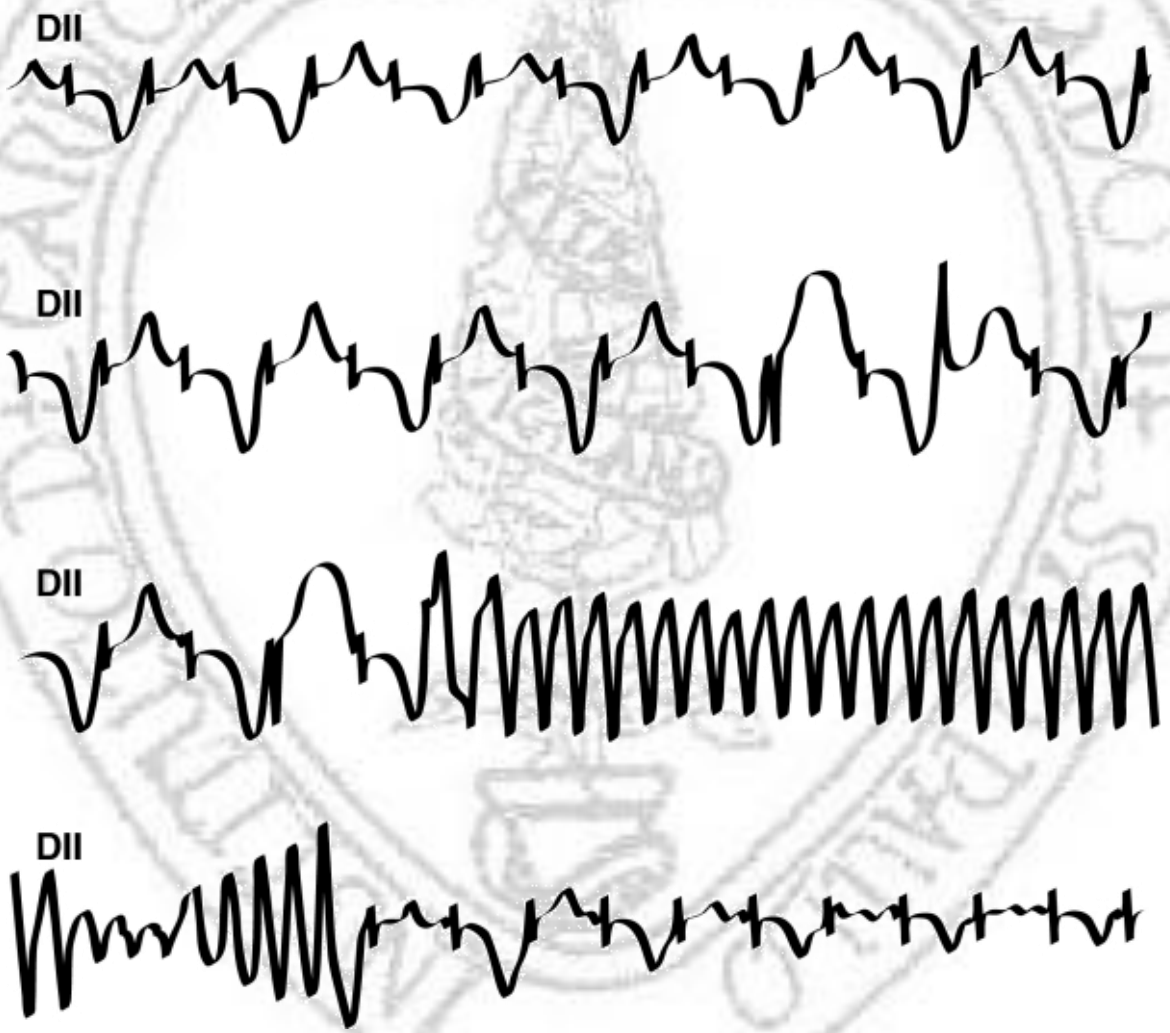
SINDROME DE QT PROLONGADO



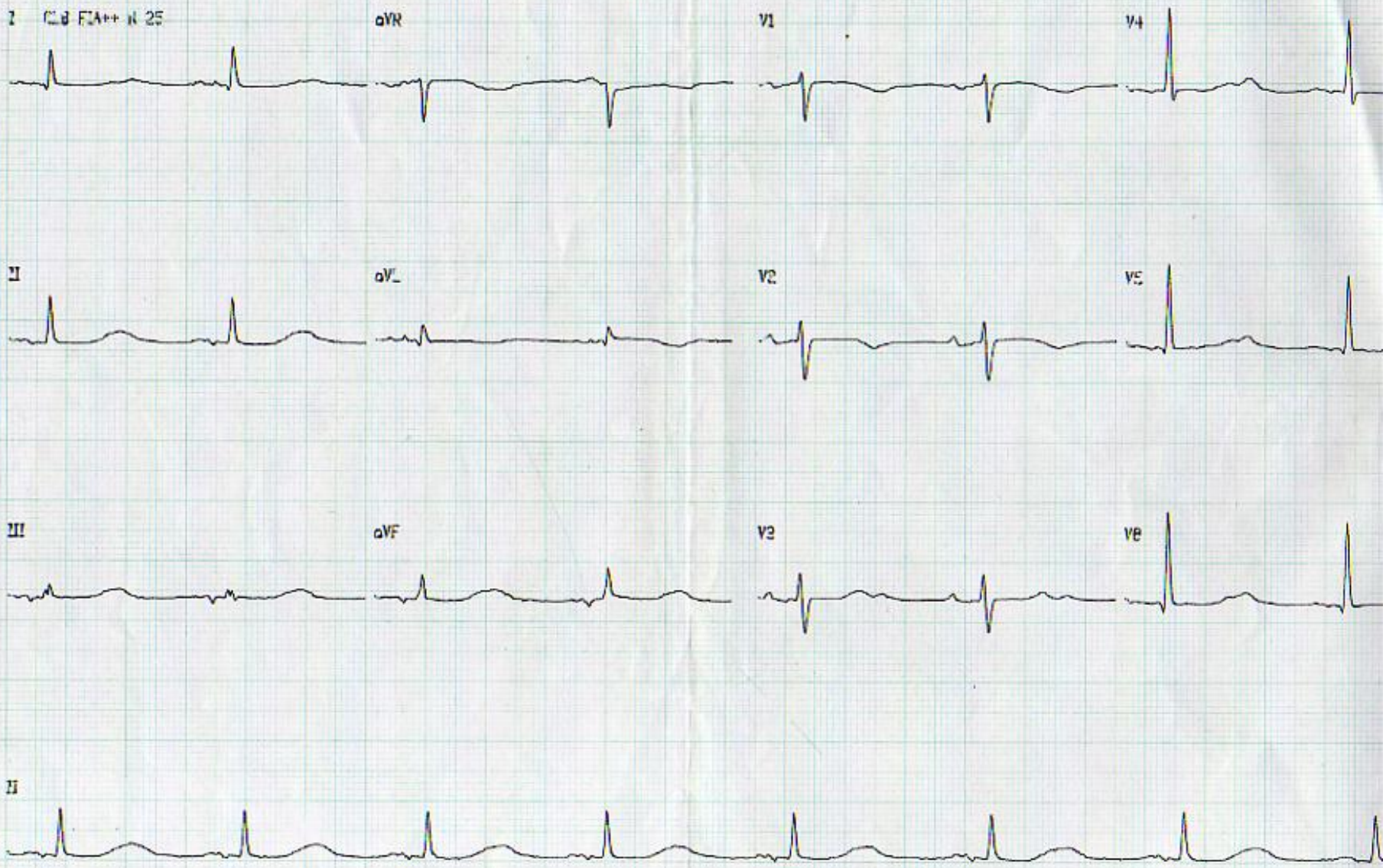
$$QTc = \frac{QT}{\sqrt{RR}}$$

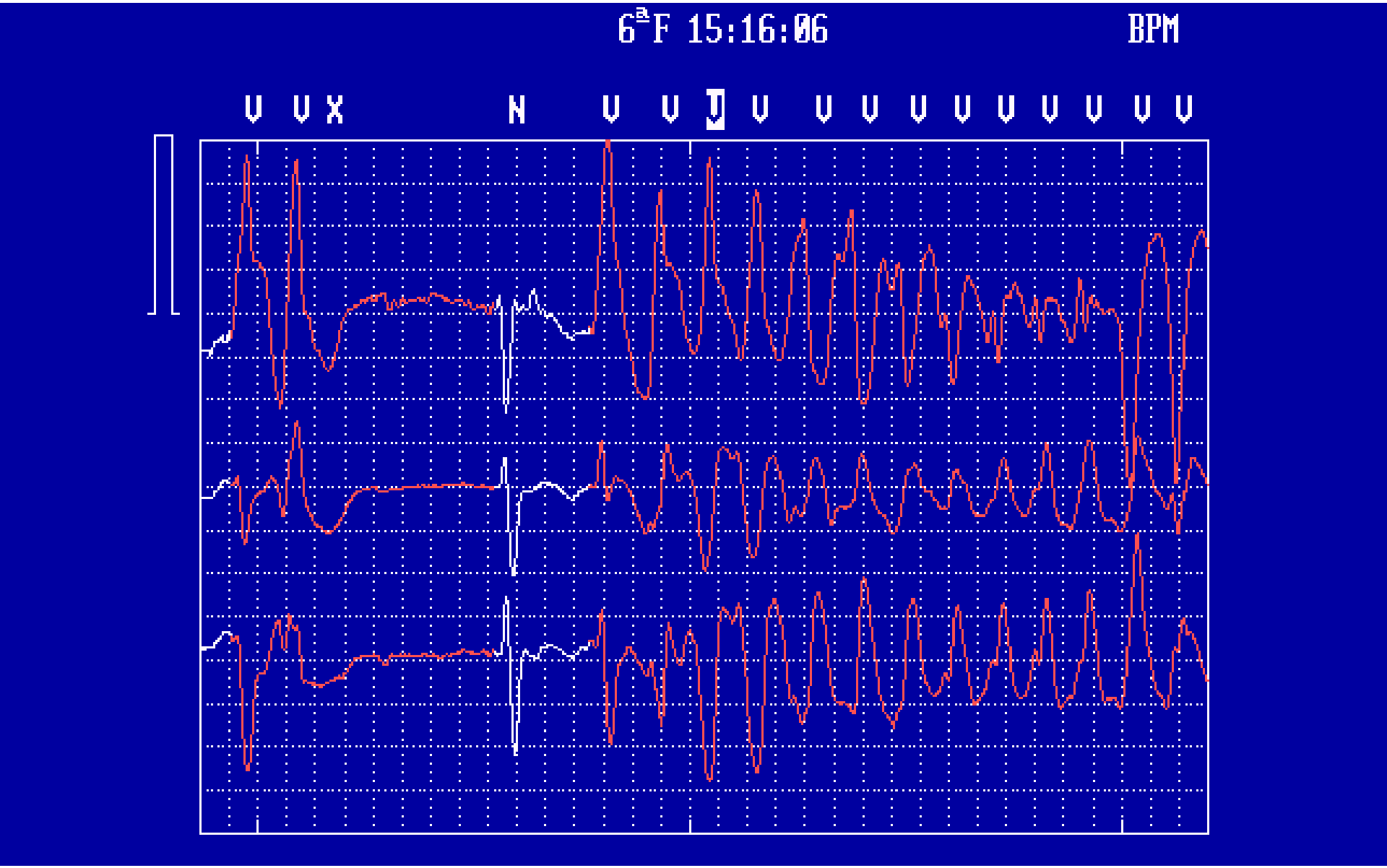
Normal < 440 mseg.

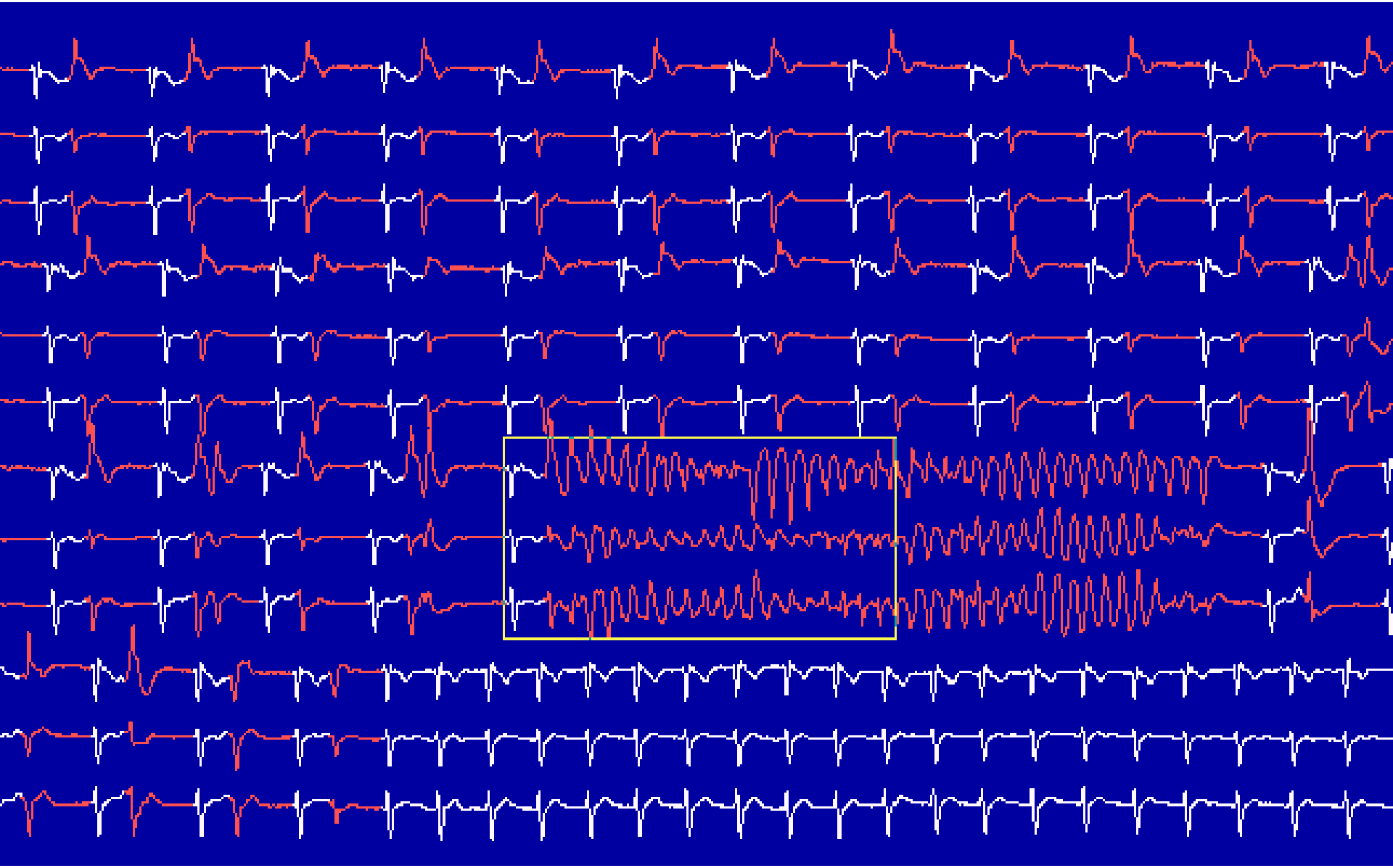
Alternancia de onda T no QT longo



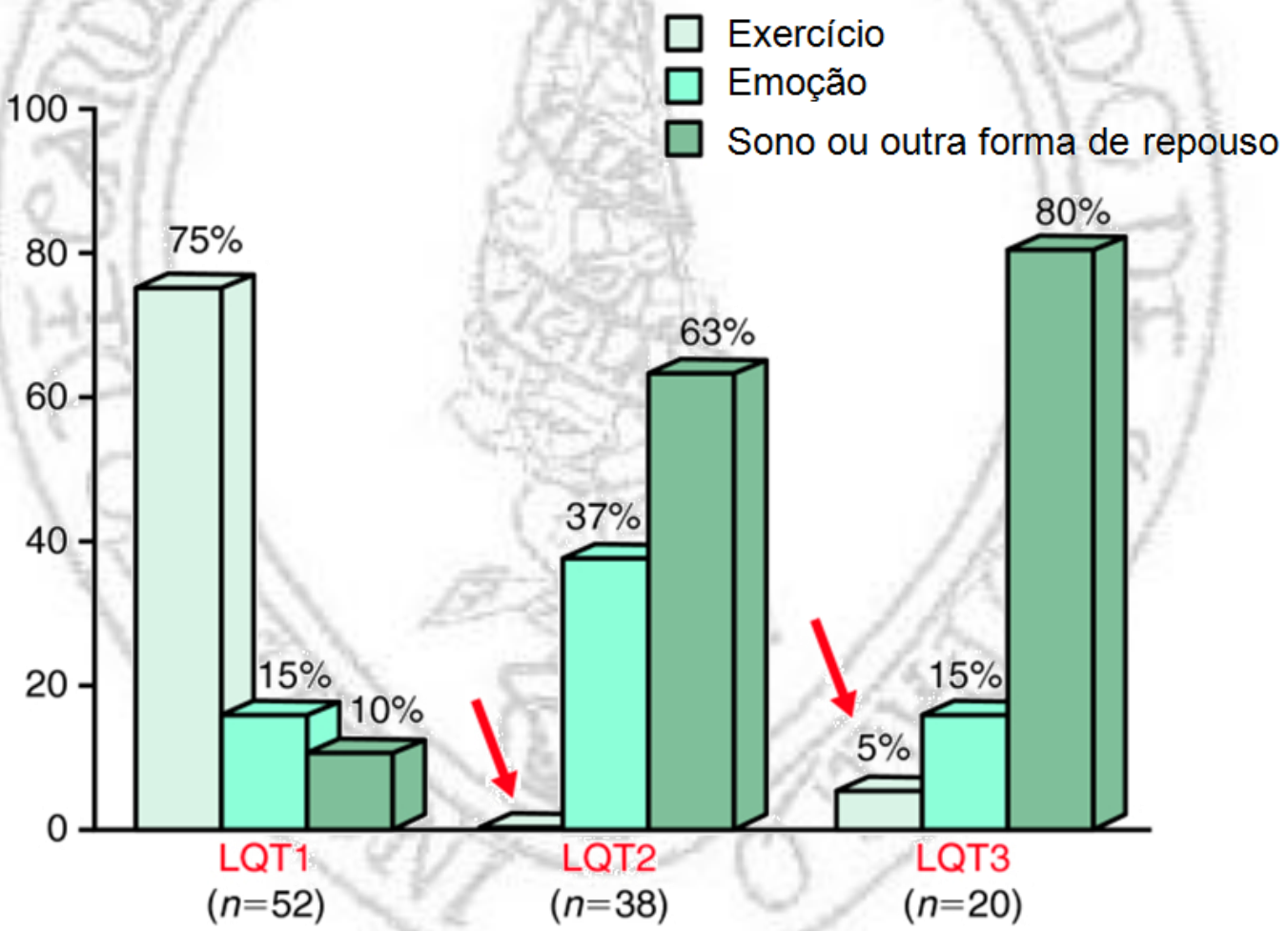
Europ Paediatr Cardiol 8:28-36, 1972.


aVR
V1
V4
aVL
V2
V5
aVF
V3
V6
II

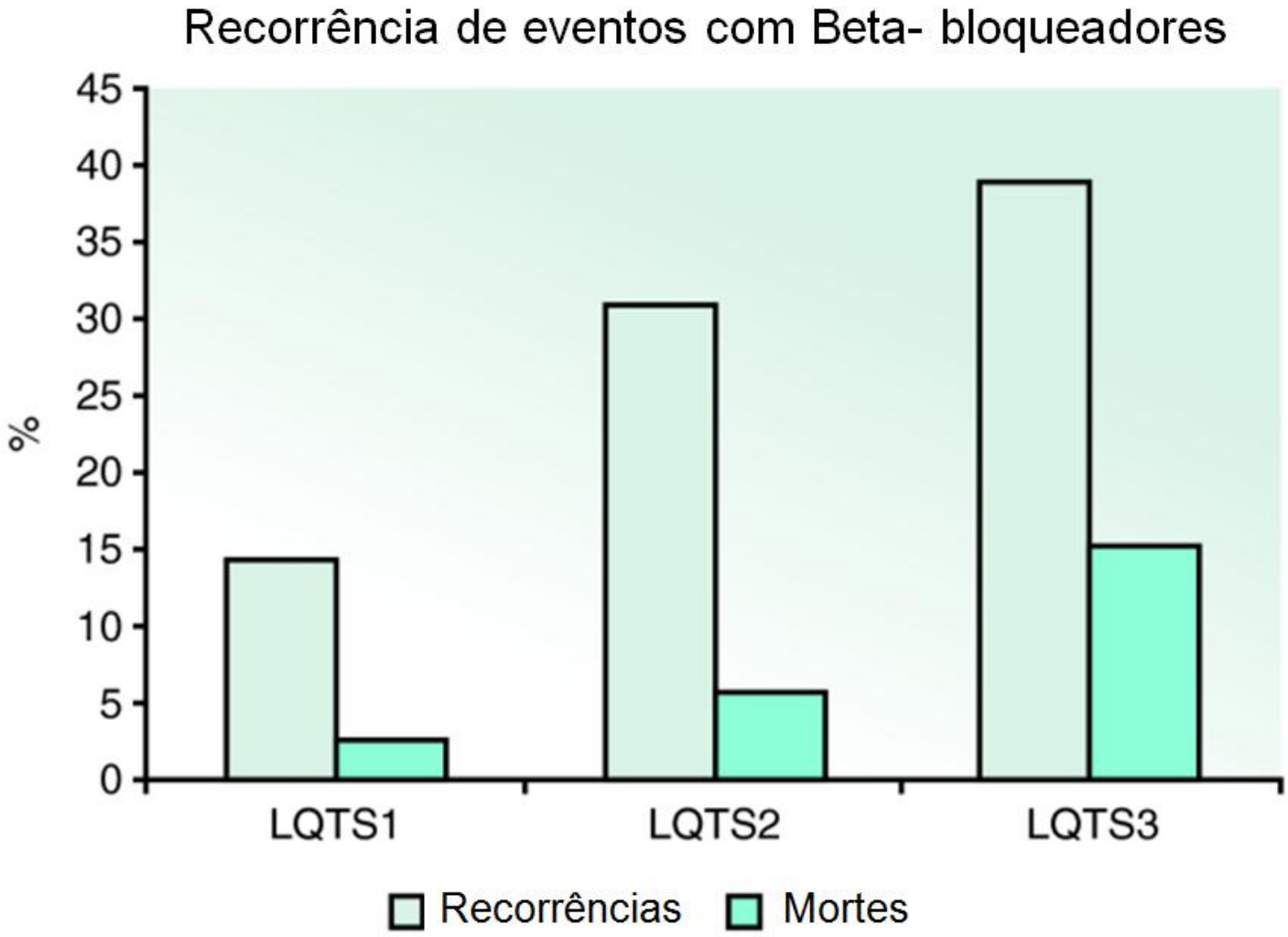

6ªF 15:16:06
BPM
V V X N V V J V V V V V V V V V V



Gatilho para eventos súbitos na LQTS



Circulation 103:89-95, 2001



JAMA 2004; 292:1341-1344

J Med Genet 2003; 40:141-145.

- Síndromes eletrogenéticas
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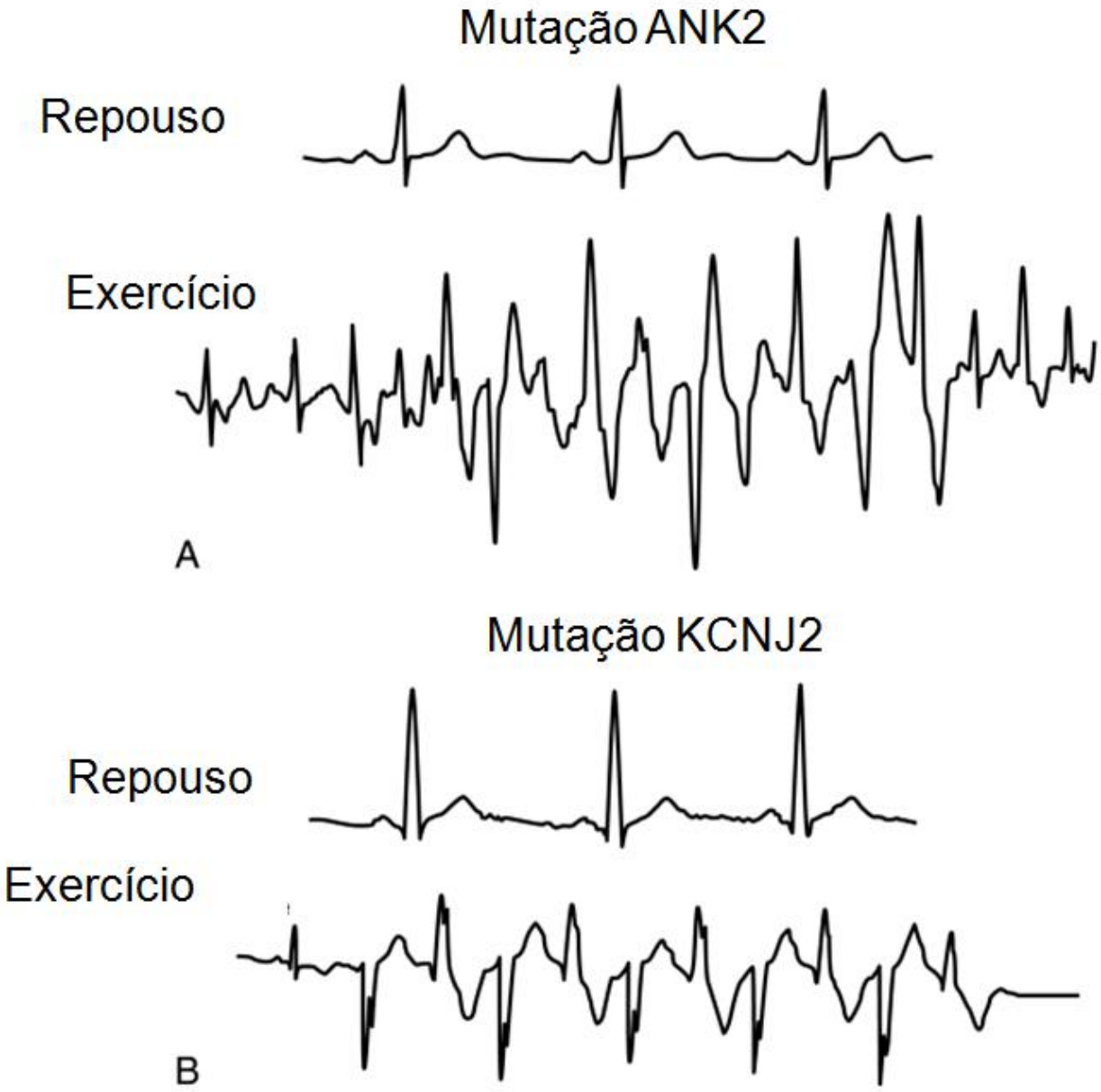
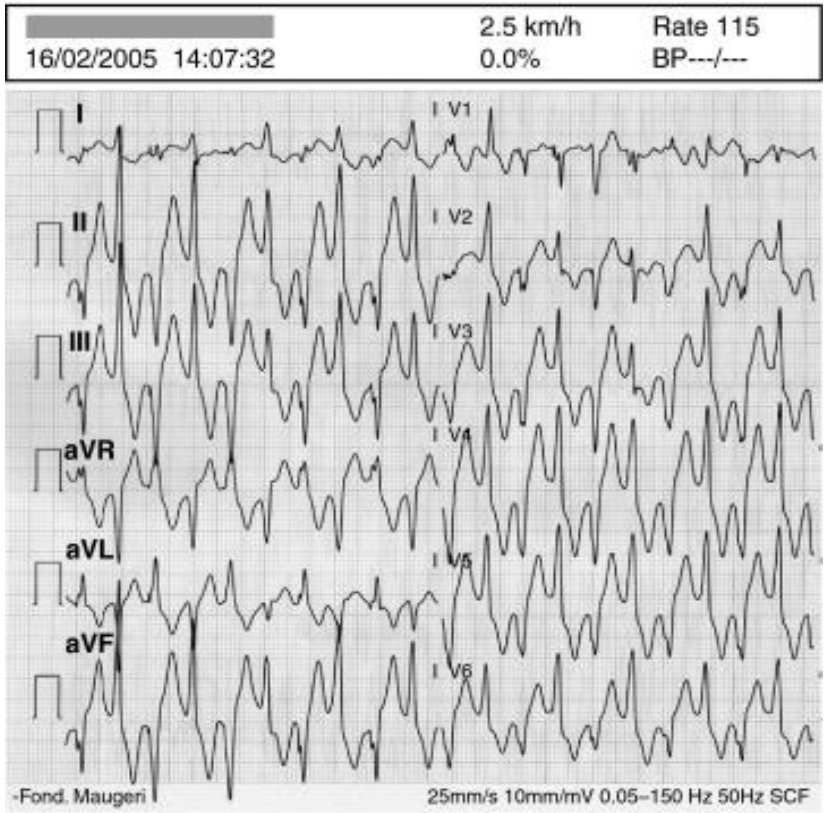
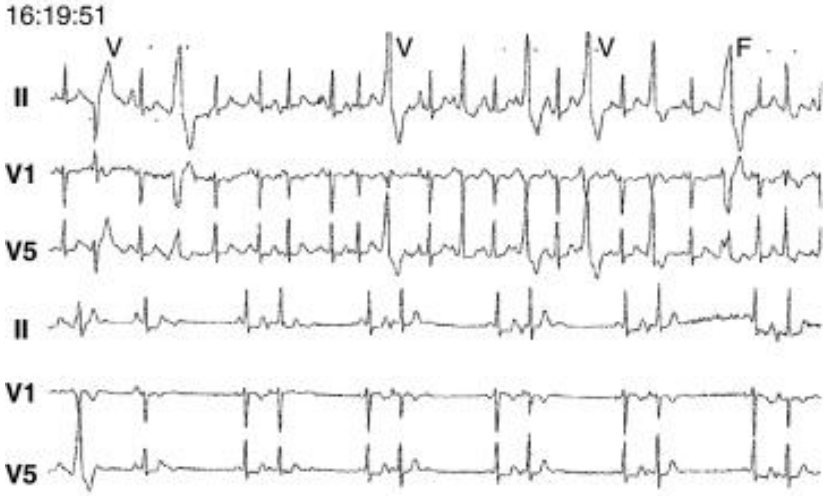


Heart Rhythm 2:1218-1223, 2005.


2.5 km/h
Rate 115
16/02/2005 14:07:32
0.0%
BP---/---
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
-Fond. Maugeri
25mm/s 10mm/mV 0.05–150 Hz 50Hz SCF


16:19:51
V
V
V
F
II
V1
V5
II
V1
V5

- Síndromes eletrogenéticas
  - Brugada
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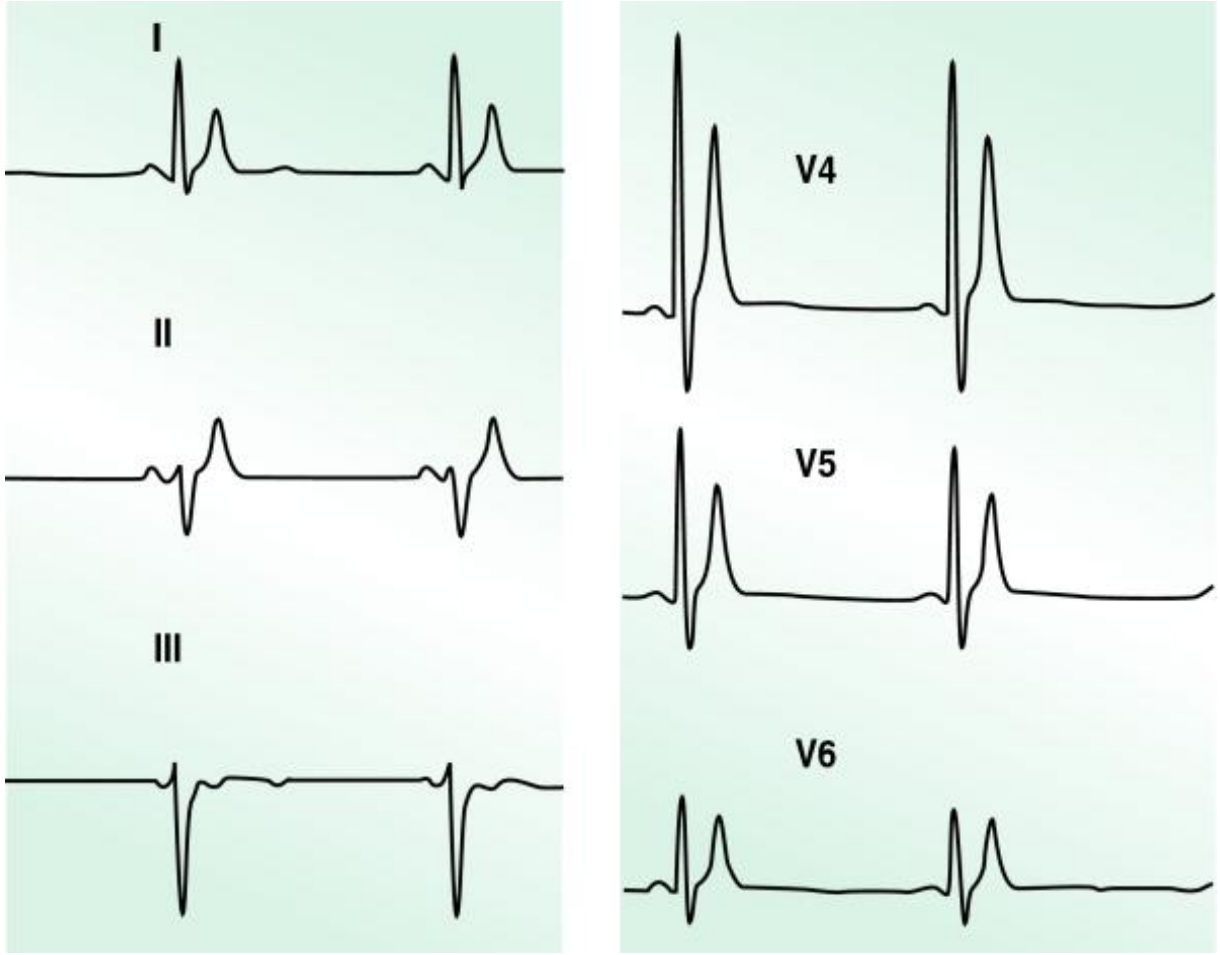
Síndrome do QT curto

- Asoociado a FV, TV e fibrilação atrial
- Associação com morte súbita berço
- Mutação no gene KCNH2
- Alterações nos canais de K
  - Redução na inativação da corrente de K
  - Interferência na fase 2 do potencial de ação
  - Encurtamento do QT
- PCR ocorre em repouso ou no estresse
- Tres formas clínicas
  - SQT1, SQT2, SQT3

Diagnóstico = QTc < 320 ms



As arritmias de nosso dia a dia

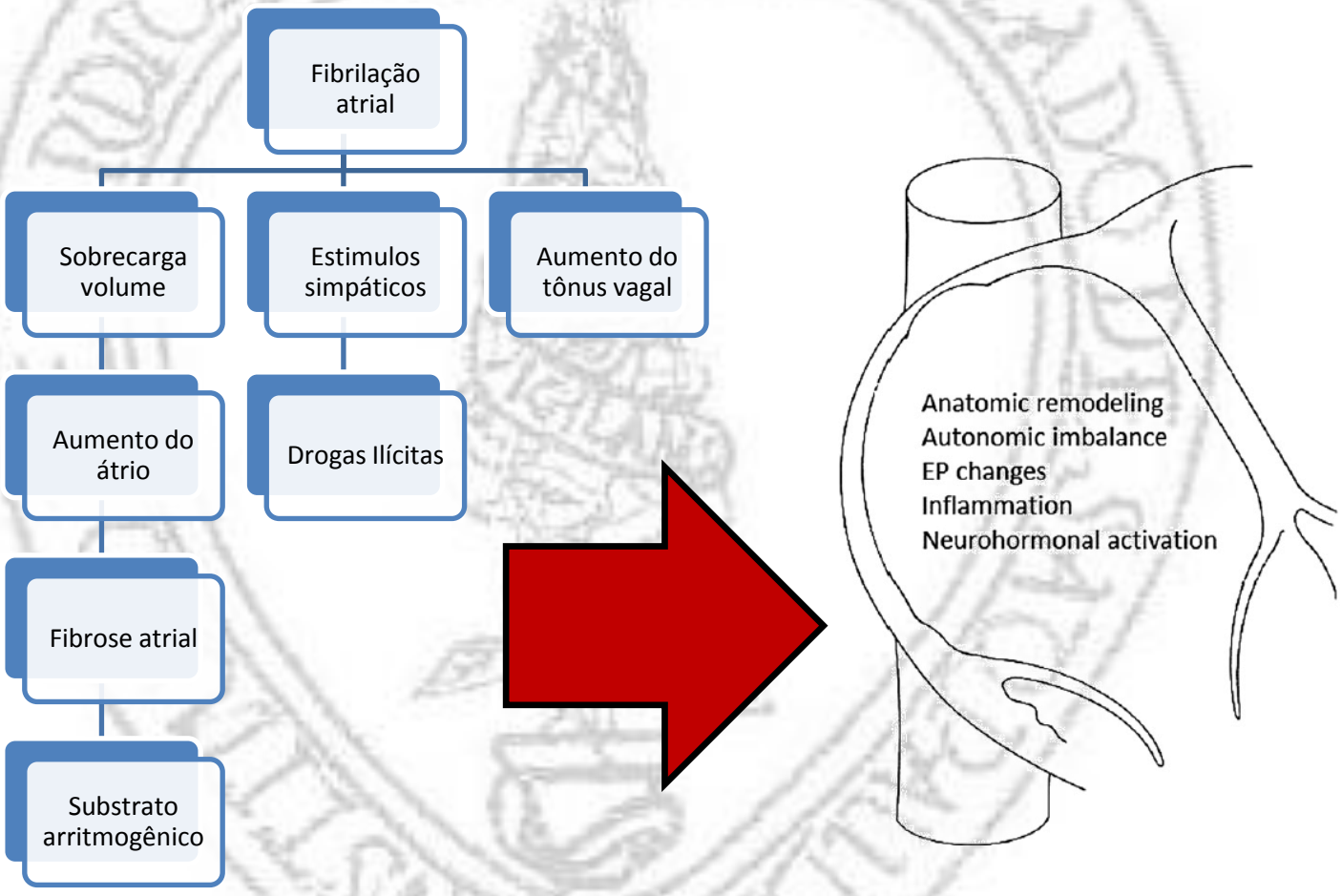
- **Arritmias de nosso dia a dia**

  - **Fibrilação atrial**
  - **WPW**
  - **Arritmias ventriculares**

- **Arritmias de nosso dia a dia**
  - **Fibrilação atrial**
  - **WPW**
  - **Arritmias ventriculares**

Atrial Fibrillation in Athletes

Mohit K. Turagam, MD[a,*], Poonam Velagapudi, MD, MS[b], and Abraham G. Kocheril, MD, FACC, FACP, FHRS[b]



Card Electrophysiol Clin 5 (2013) 115–121

(Am J Cardiol 2012;109:296–302)

Fibrilação atrial em atletas

Estudo	Idade Média	Esporte	Atletas	Controles	FA atletas	FA controles	RR
Karjalainen	47±5	Orientação esportiva	262	373	5,3	0,9	5,5
Molina	39±9	maratona	252	305	5	0,7	9,9
Baldesberger	66±7	ciclismo	134	62	10	0	NR
Elosua	41±13	Esportes de resistência	51	109	32	14	2,87
Mont	48±11	Esportes de resistencia	107	107			7,31

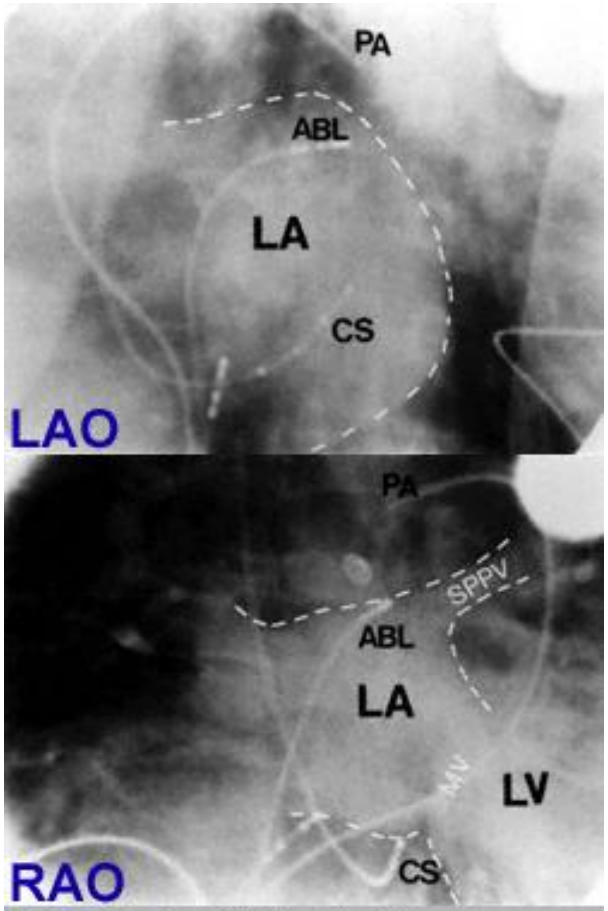
Atrial Fibrillation in Athletes

Mohit K. Turagam, MD[a,*], Poonam Velagapudi, MD, MS[b], and Abraham G. Kocheril, MD, FACC, FACP, FHRS[b]

(Am J Cardiol 2012;109:296–302)

Ablação da Fibrilação Atrial – isolamento de veias pulmonares

Ablação RF de FA guiada pela fluoroscopia



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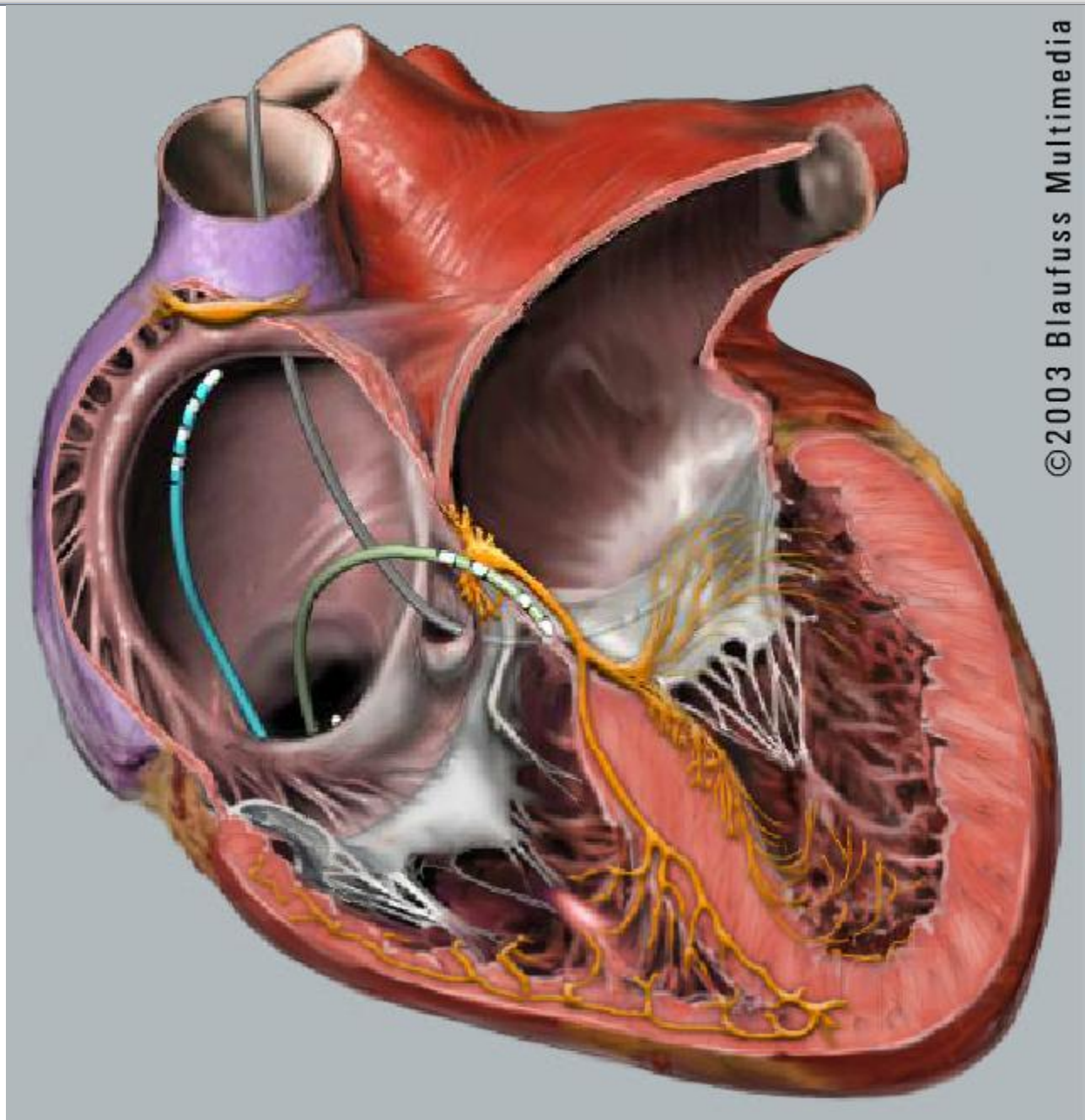

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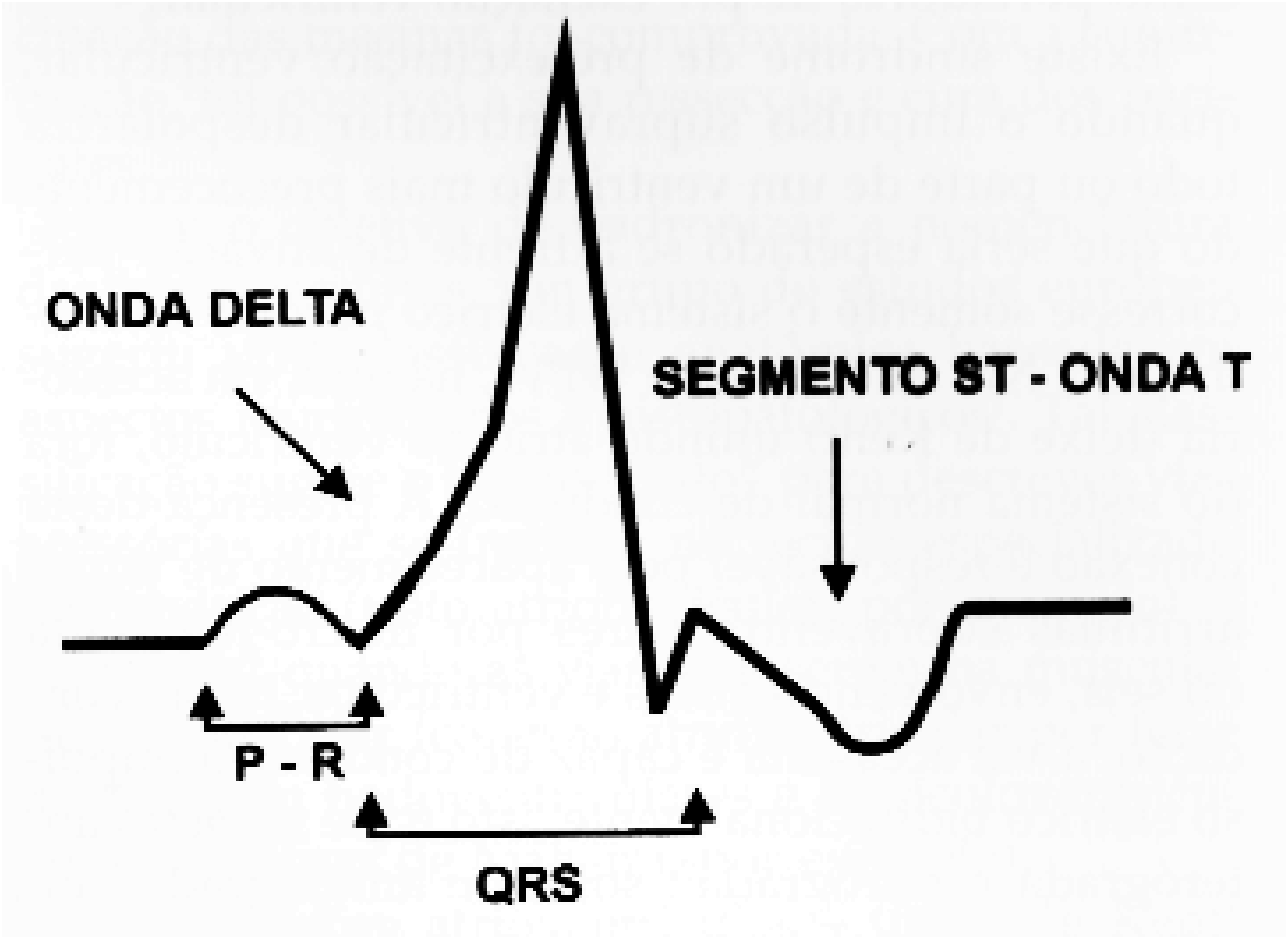
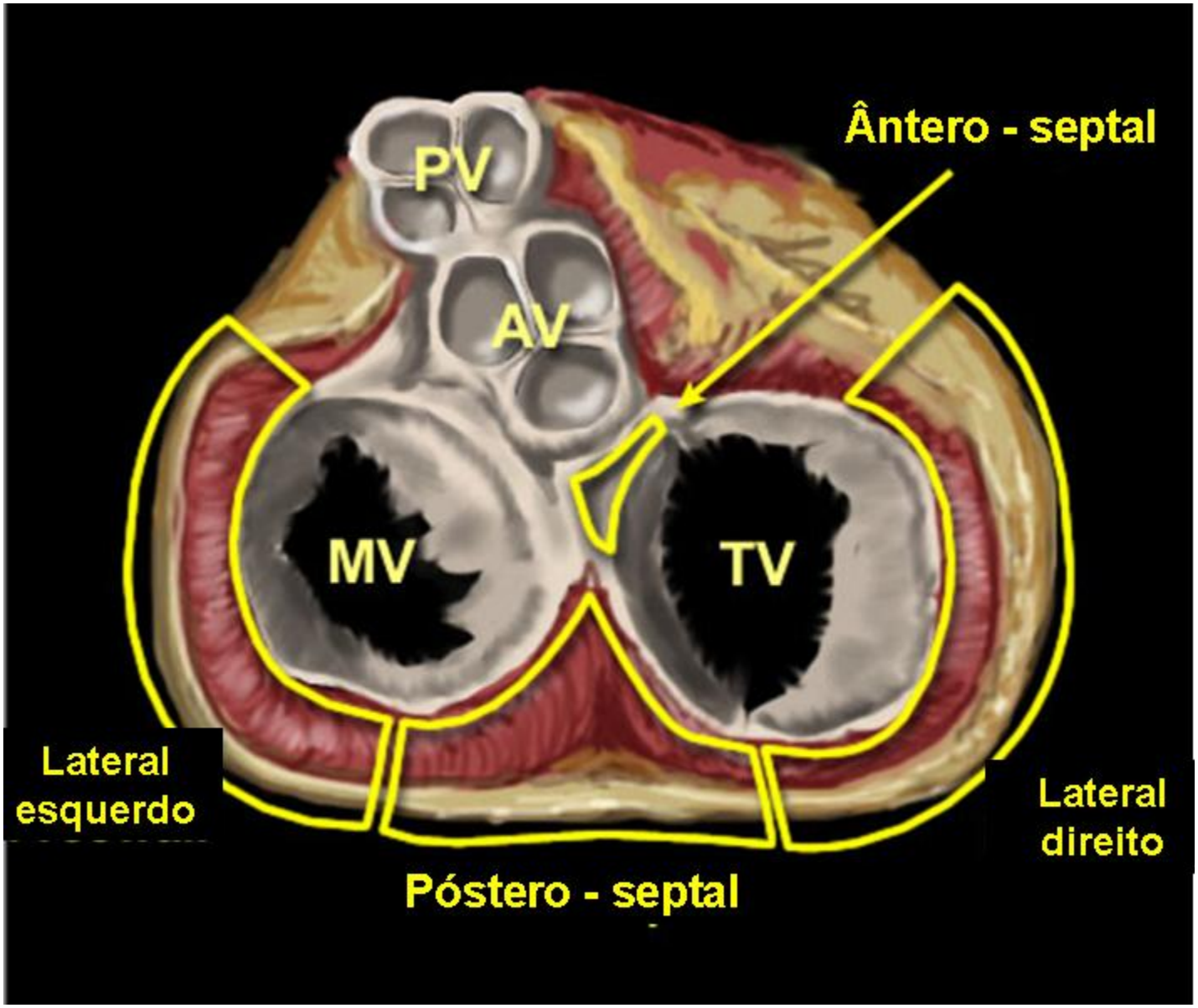
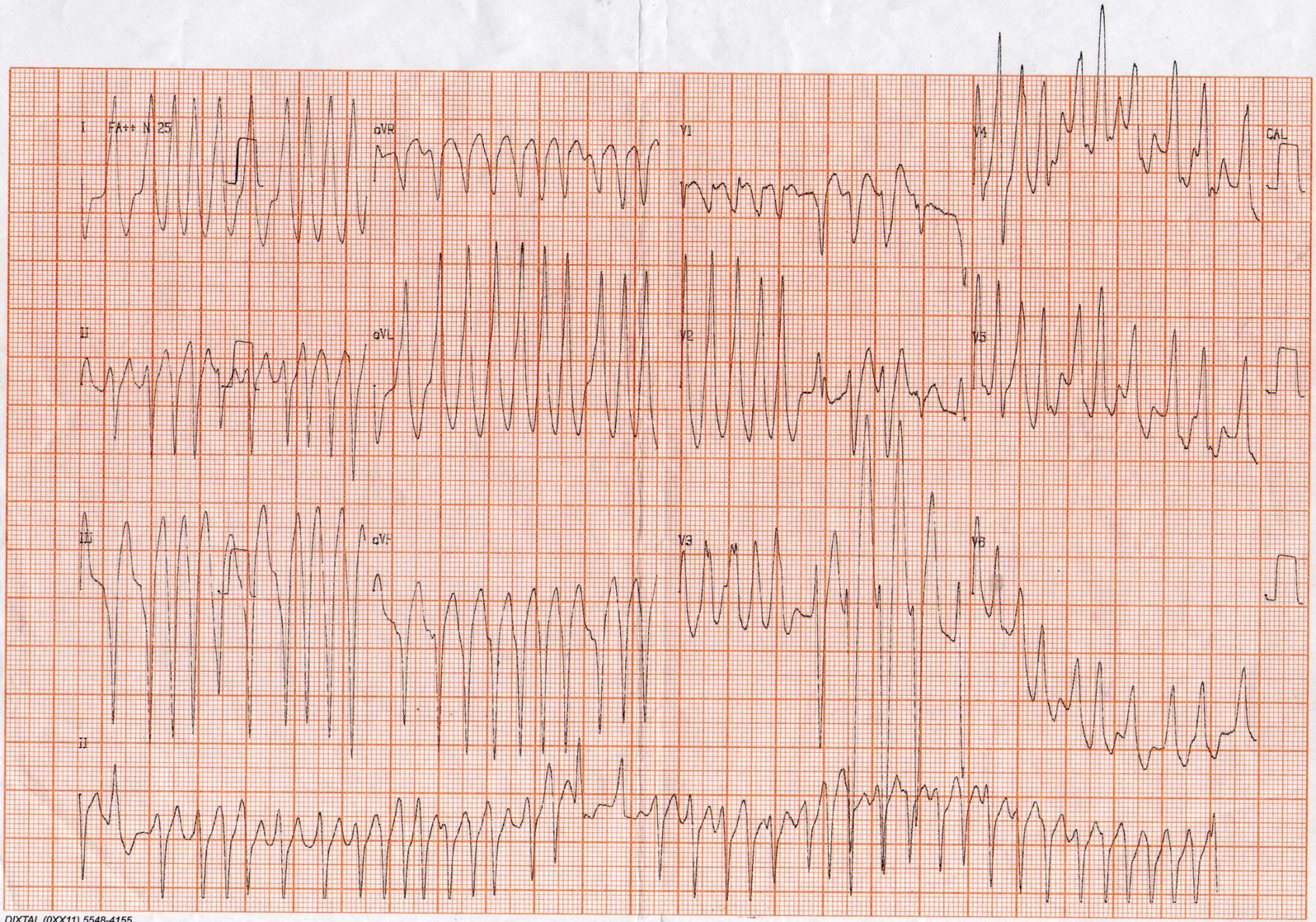
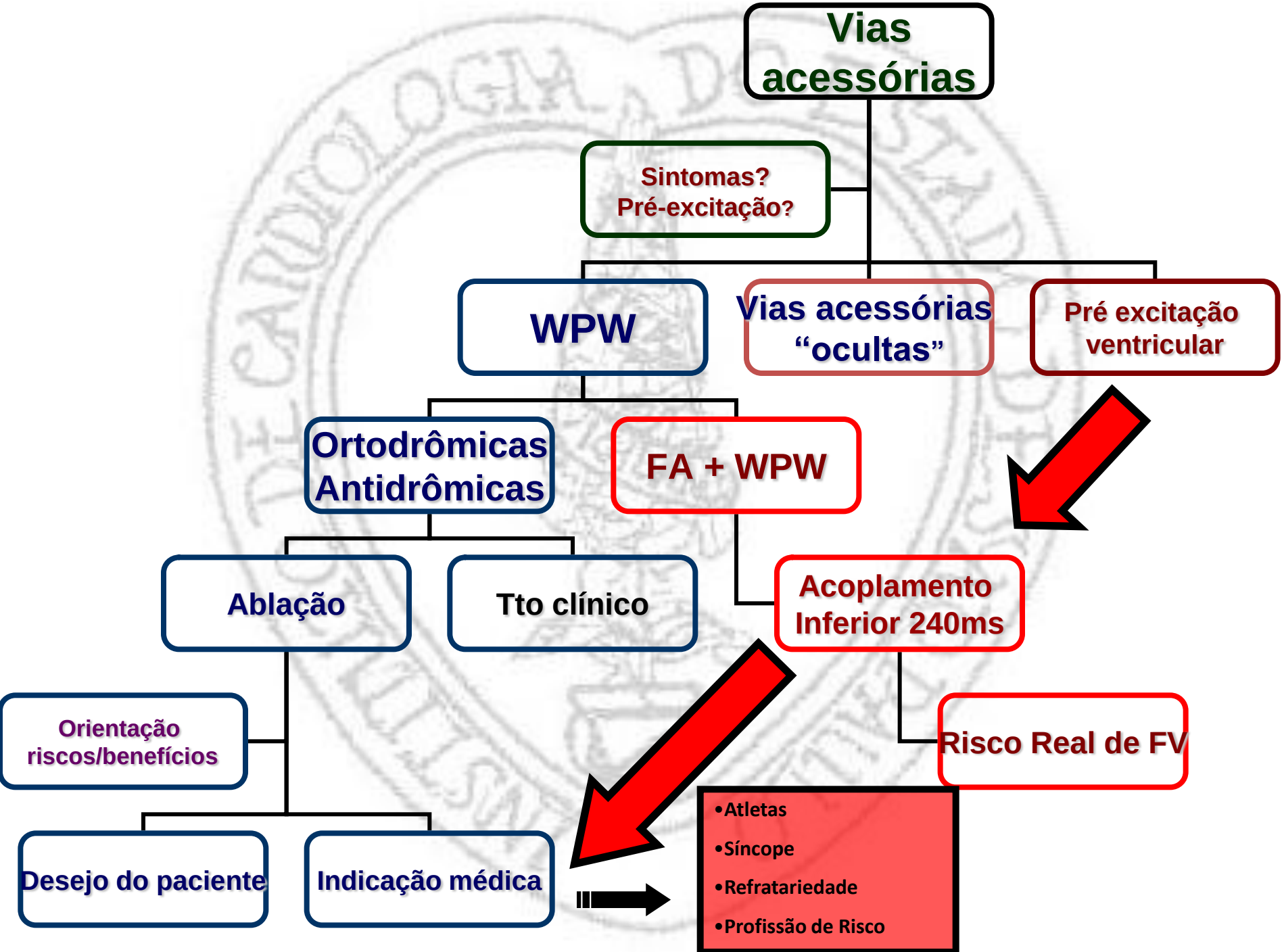
- **Arritmias de nosso dia a dia**
  - **Fibrilação atrial**
  - **WPW**
  - **Arritmias ventriculares**


ONDA DELTA
SEGMENTO ST - ONDA T
P - R
QRS


Ântero - septal
PV
AV
MV
TV
Lateral
esquerdo
Lateral
direito
Póstero - septal



DIXTAL (0XX11) 5548-4155
DIXTAL (0XX11) 5548-4155

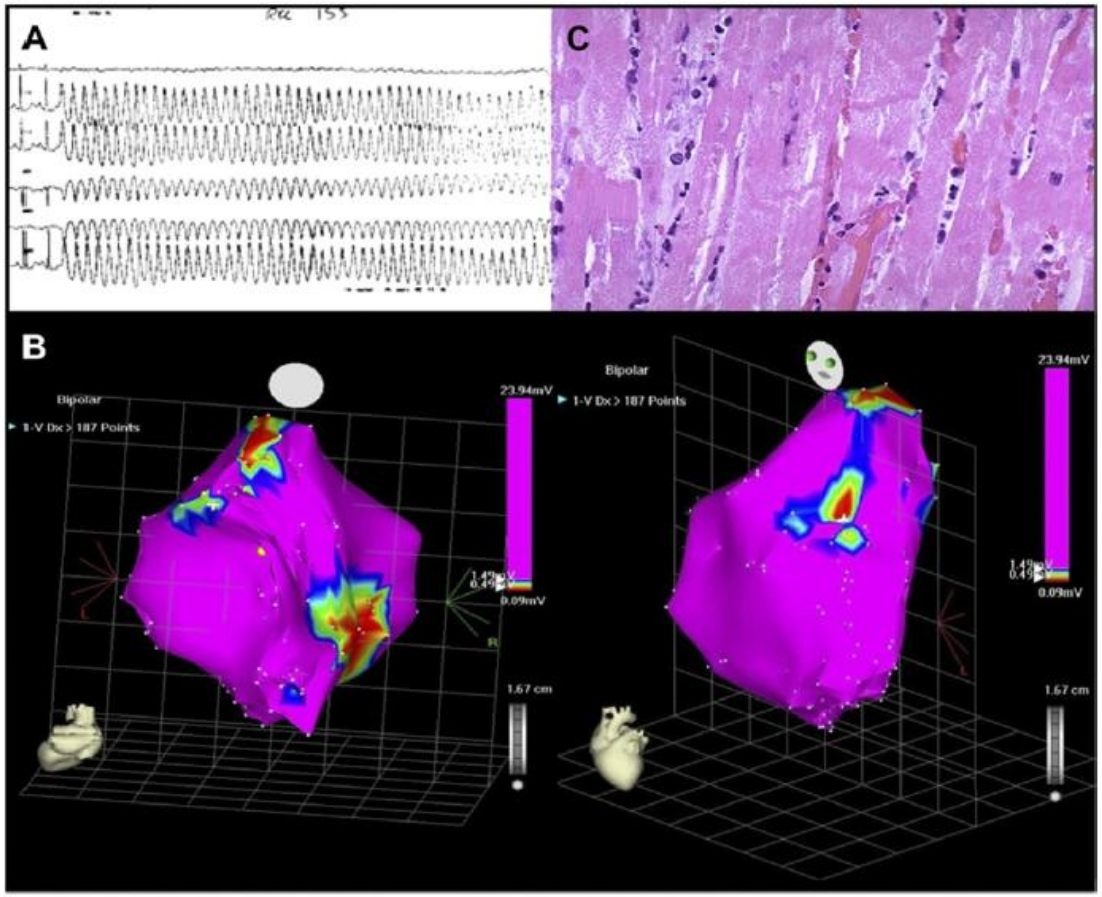

Vias acessórias
Sintomas?
Pré-excitação?
WPW
Vias acessórias "ocultas"
Pré excitação ventricular
Ortodrômicas
Antidrômicas
FA + WPW
Ablação
Tto clínico
Acoplamento Inferior 240ms
Orientação riscos/benefícios
Risco Real de FV
Desejo do paciente
Indicação médica
•Atletas
•Síncope
•Refratariedade
•Profissão de Risco

- Arritmias de nosso dia a dia
  - Fibrilação atrial
  - WPW
  - Arritmias ventriculares

Concealed cardiomyopathies in competitive athletes with ventricular arrhythmias and an apparently normal heart: role of cardiac electroanatomical mapping and biopsy

Antonio Dello Russo, MD, PhD,* Maurizio Pieroni, MD, PhD,† Pasquale Santangeli, MD,§
Stefano Bartoletti, MD,*‖ Michela Casella, MD, PhD,* Gemma Pelargonio, MD, PhD,†
Costantino Smaldone, MD,† Massimiliano Bianco, MD,‡ Luigi Di Biase, MD PhD,§¶ Fulvio Bellocci, MD,†
Paolo Zeppilli, MD,‡ Cesare Fiorentini, MD,*‖ Andrea Natale, MD, FACC, FHRS,§
Claudio Tondo, MD, PhD*

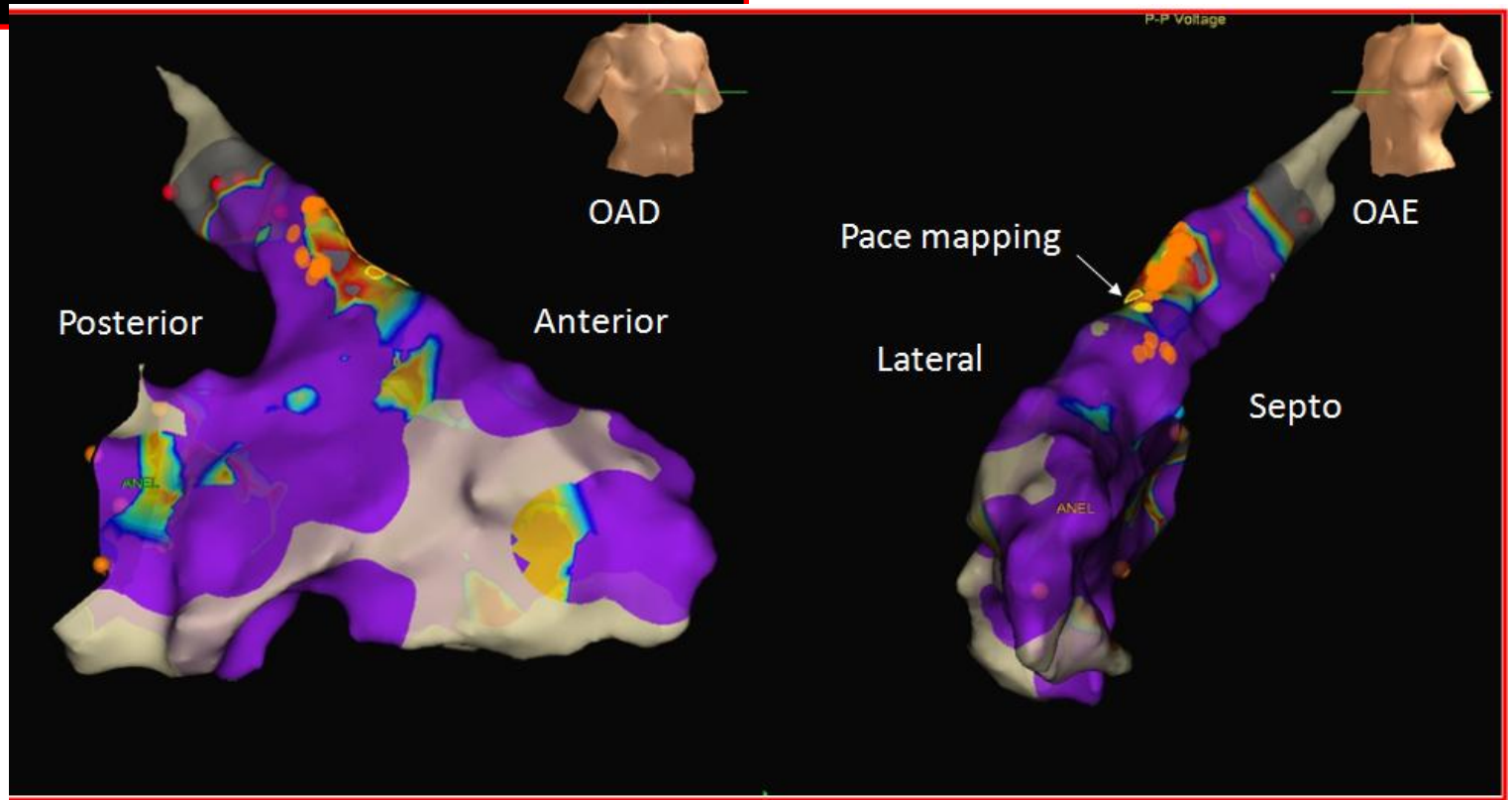
A



(Heart Rhythm 2011;8:1915–1922)

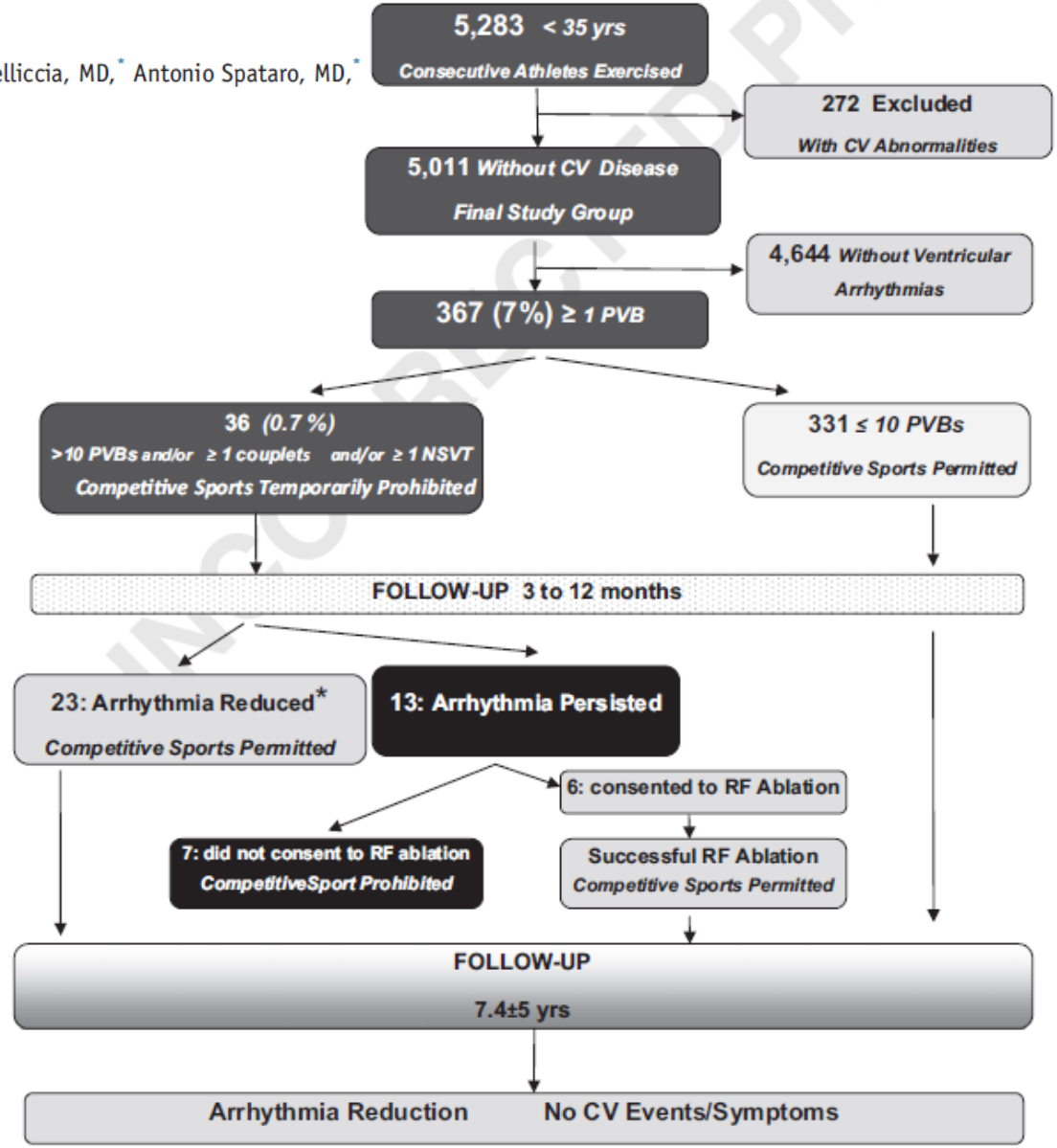
7) 75 bpm - Taquicardia Ventricular - (226 bpm)
1160
N
455
V
290
V
255
V
1150
N
480
V
280
V
255
V
260
V
1155
N
455
V
1140
1
2
3
x 1,0
(25 mm/s; 10 mm/mV)
16/6
20:14:25
26"
27"
28"
29"
30"

Arritmia idiopática de VD



Clinical significance of exercise-induced ventricular tachyarrhythmias in trained athletes without cardiovascular abnormalities

Luisa Verdile, MD,* Barry J. Maron, MD,† Antonio Pelliccia, MD,* Antonio Spataro, MD,* Massimo Santini, MD,* Alessandro Biffi, MD*



(Heart Rhythm 2014;0:-1–8)

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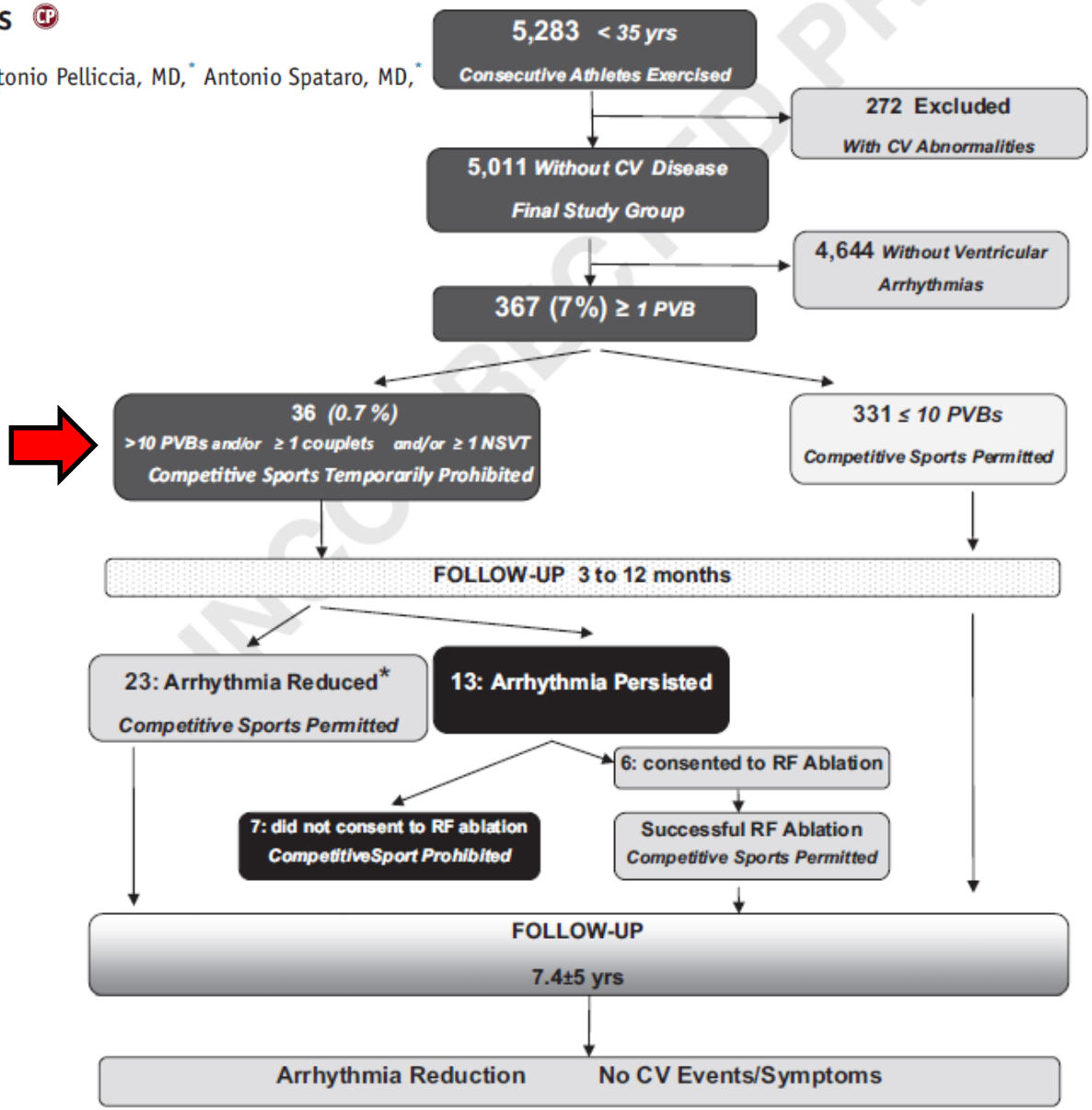
Complexidade no estudo foi igual a suspensão da atividade física



(Heart Rhythm 2014;0:-1–8)

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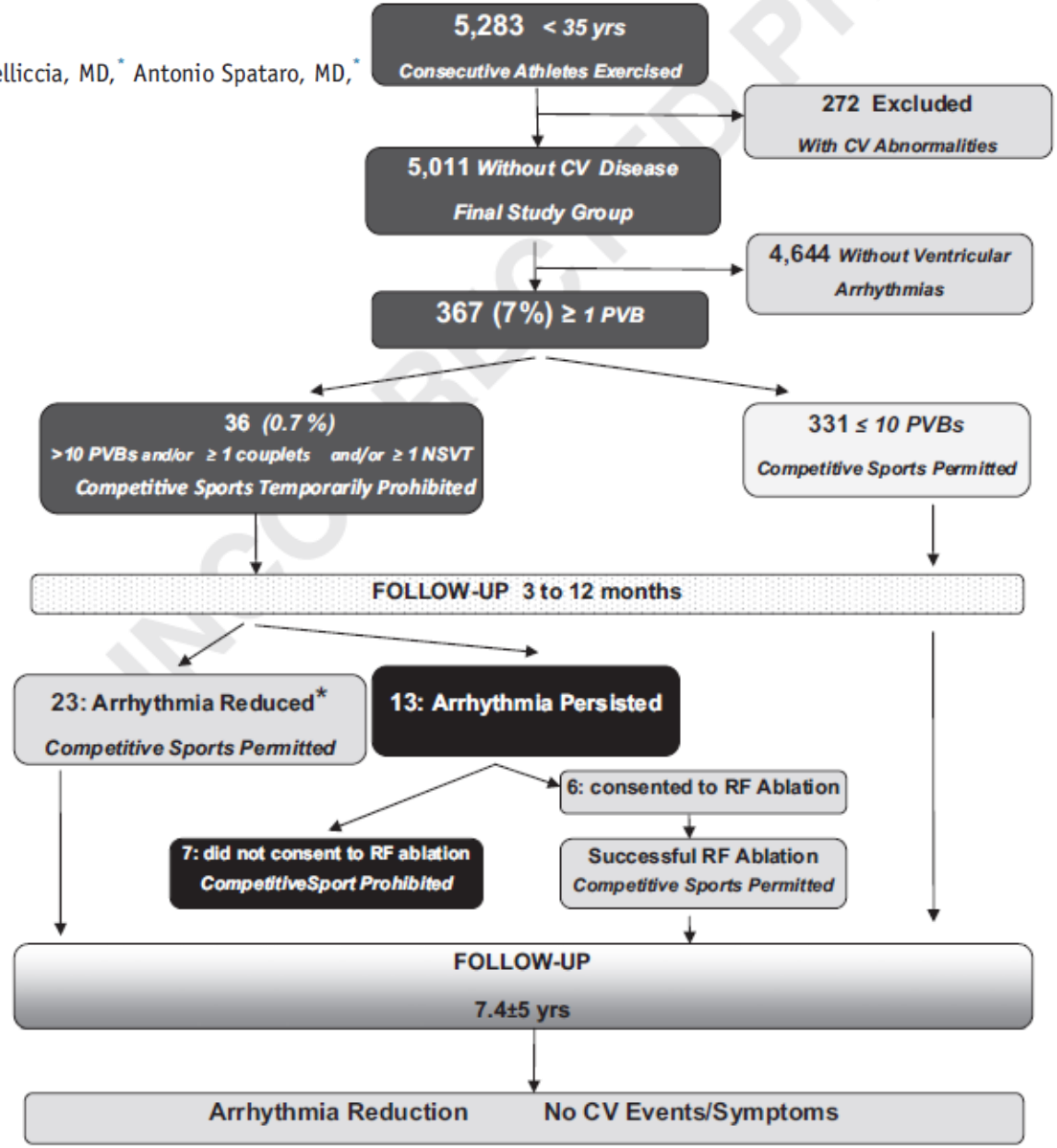
Tratamento invasivo indicado para os que mantinham arritmias



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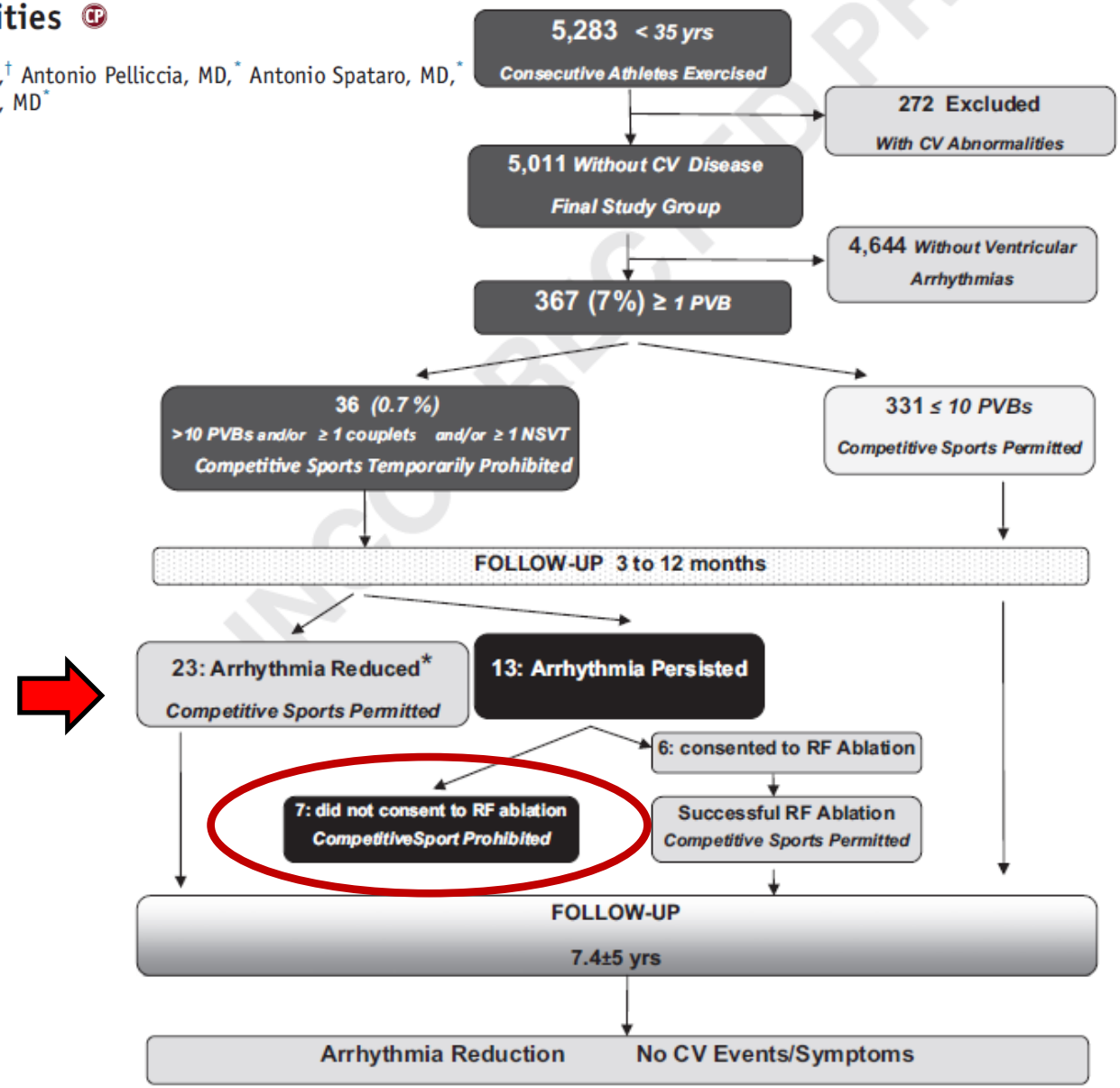
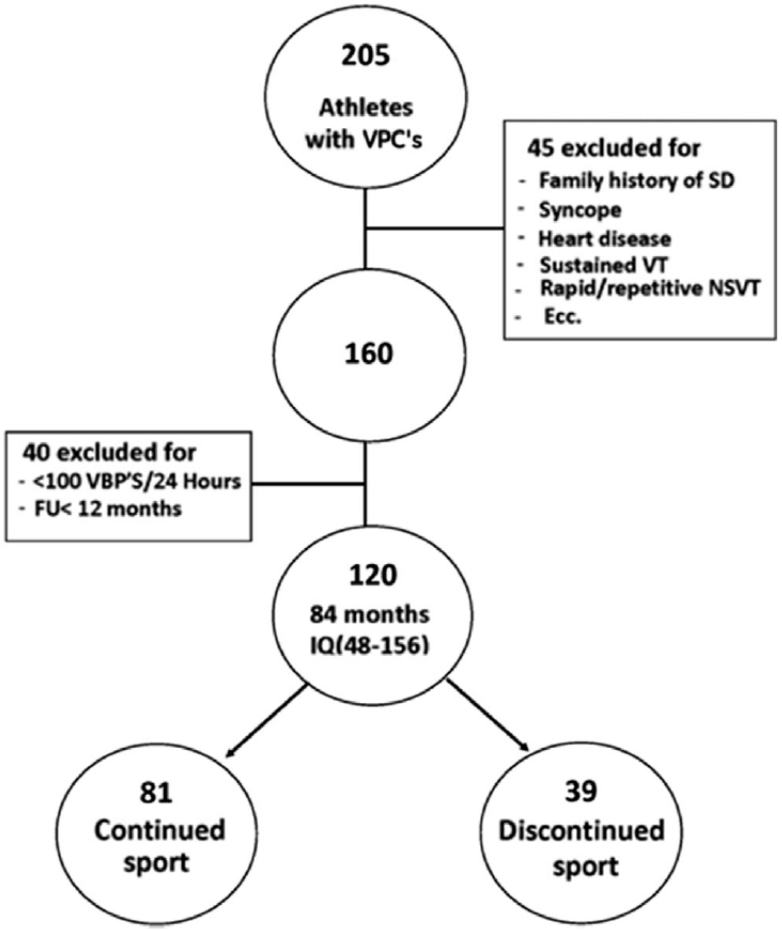
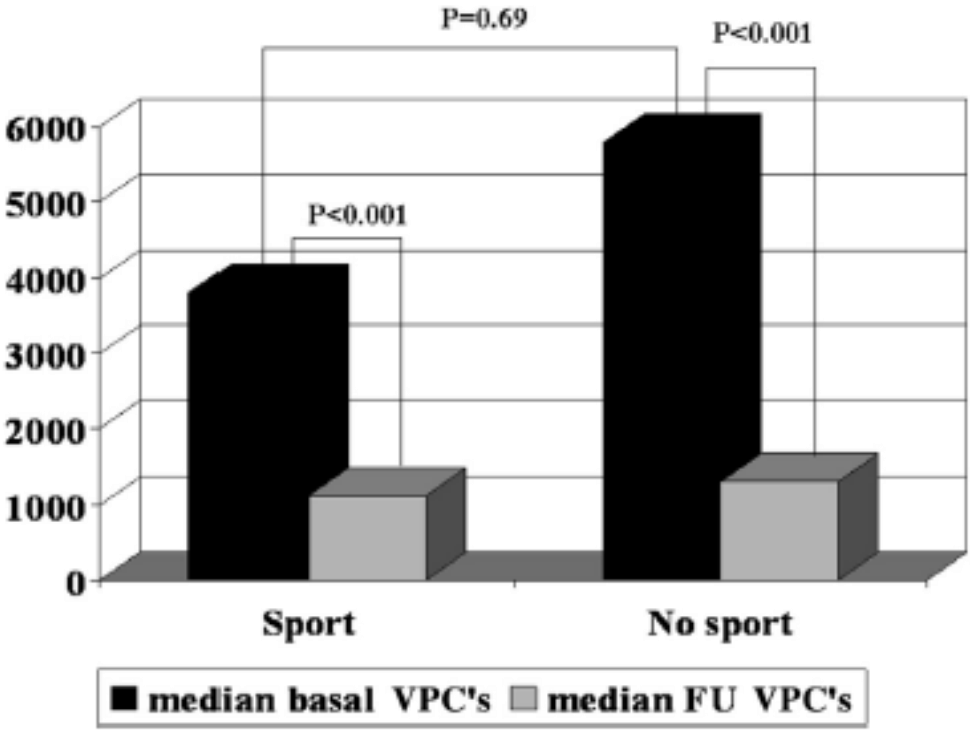


(Heart Rhythm 2014;0:-1–8)

Arritmia Ventricular e Atletas em coração normal

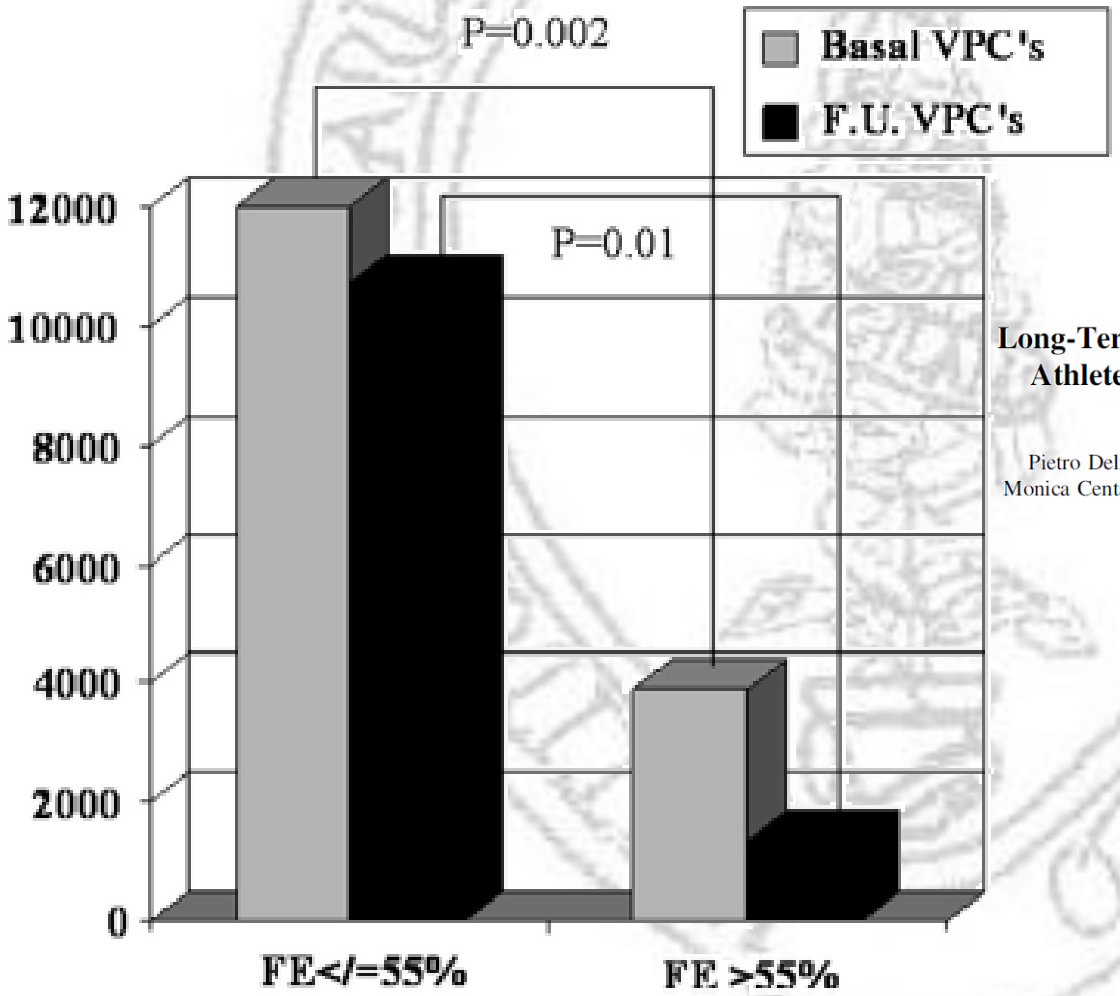




(Am J Cardiol 2013;112:1396–1402)

Arritmia Ventricular e Atletas em coração normal

Quando há queda da FEVE



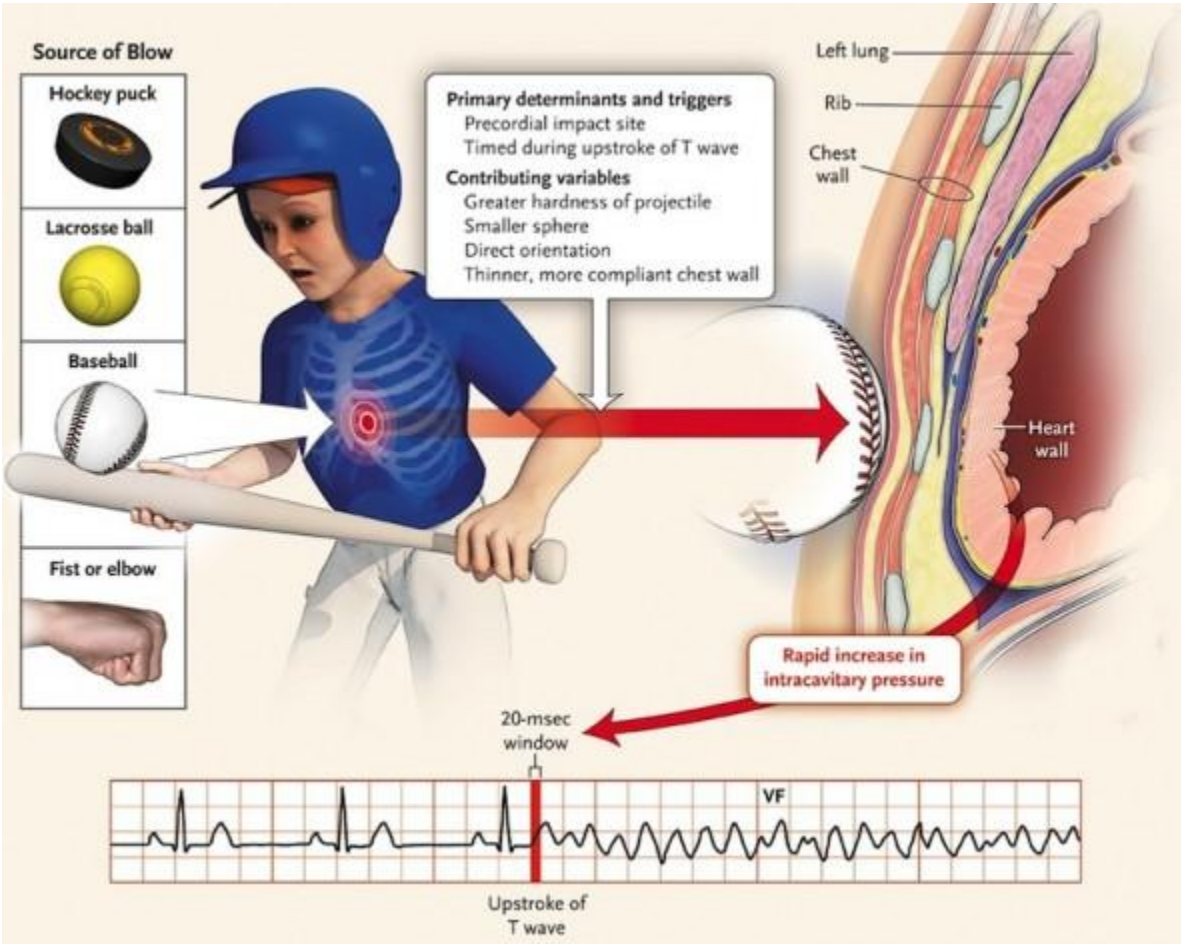
Long-Term Effect of Continuing Sports Activity in Competitive Athletes With Frequent Ventricular Premature Complexes and Apparently Normal Heart☆

Pietro Delise, MD[a,*], Nadir Sitta, MD[a], Emanuela Lanari, MD[a], Giuseppe Berton, MD[a], Monica Centa, MD[a], Giuseppe Allocca, MD[a], Arianna Cati, MD[a], and Alessandro Biffi, MD[b]

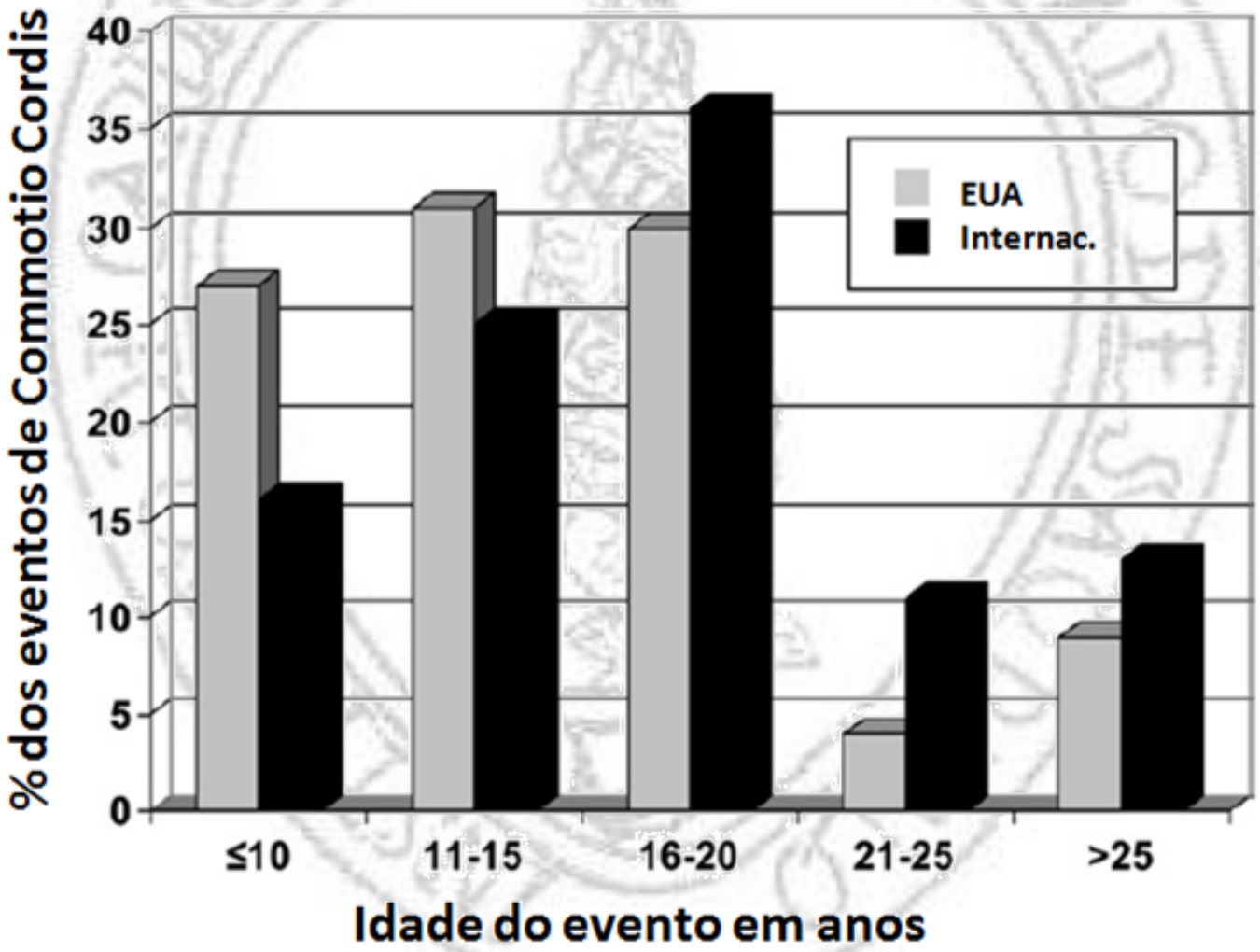
(Am J Cardiol 2013;112:1396–1402)

As arritmias e as mortes acidentais

Commotio cordis



Distribuição Commotio cordis por idade



(Heart Rhythm 2011;8:1969 –1971)

Global epidemiology and demographics of commotio cordis

Barry J. Maron, MD,* Aneesha Ahluwalia*, Tammy S. Haas, RN,* Christopher Semsarian, MBBS, PhD,†
Mark S. Link, MD, FHRS,‡ N. A. Mark Estes, III, MD, FHRS‡

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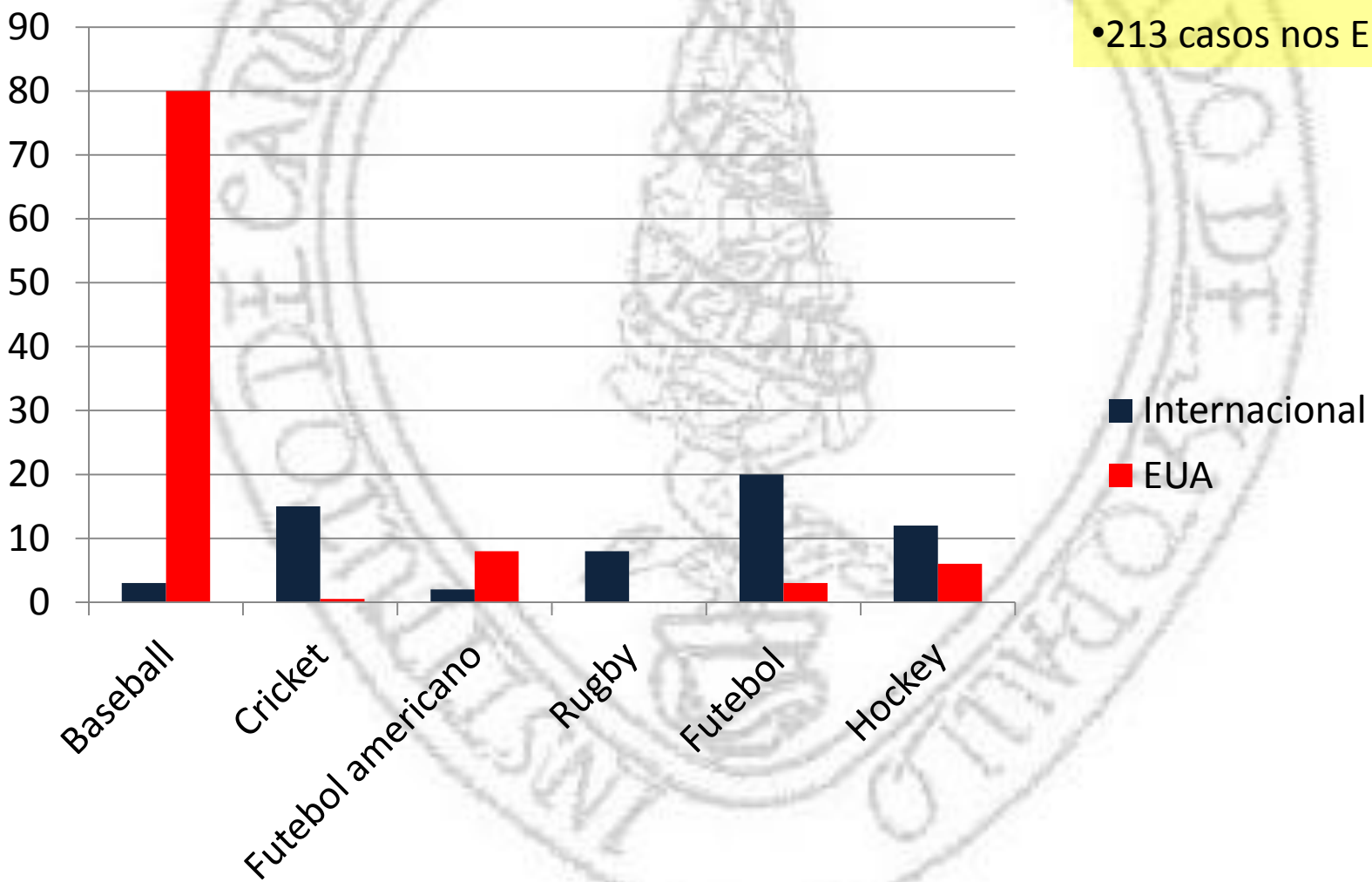
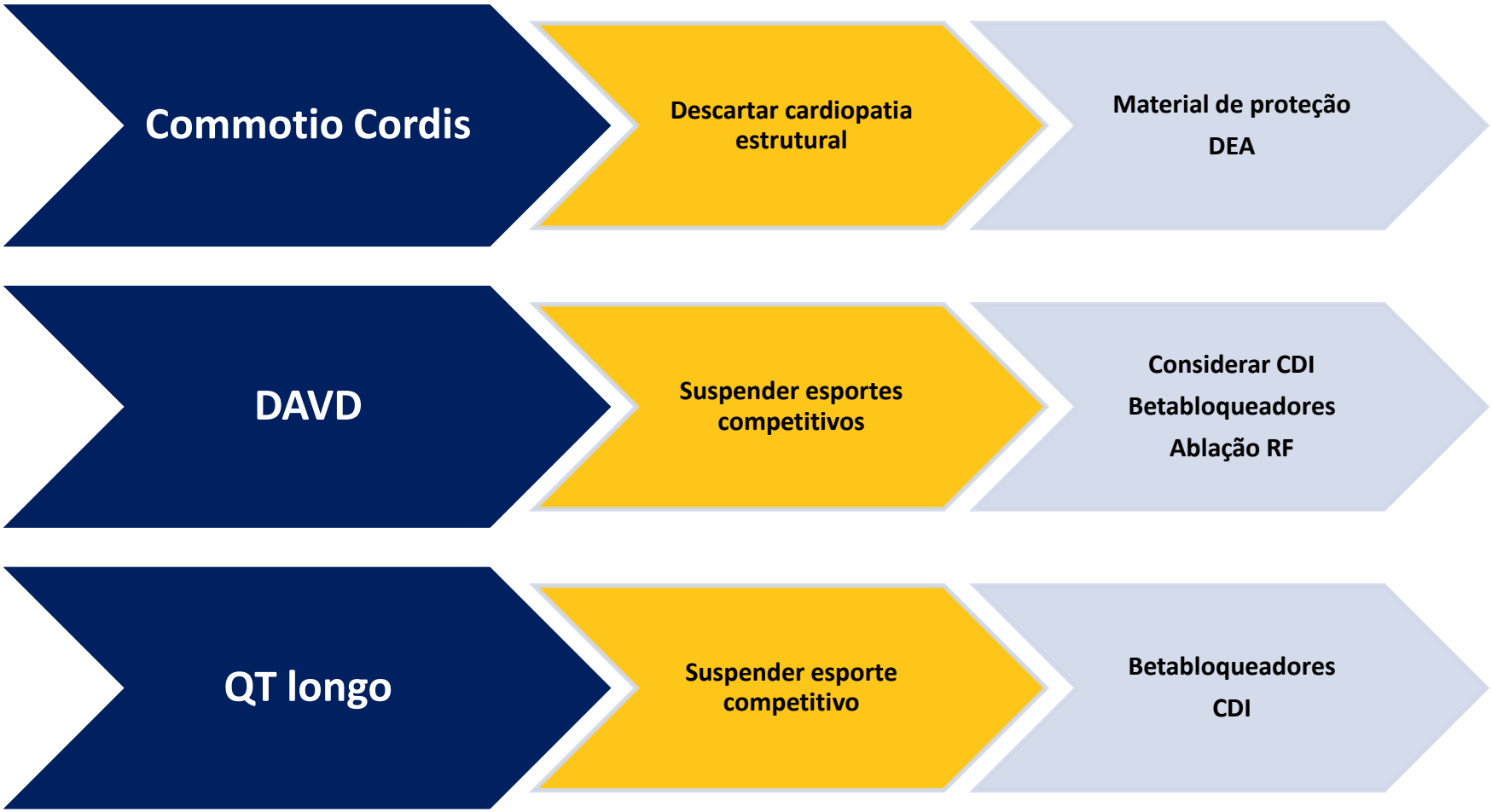
†Anges Ginges Centre for Molecular Cardiology, Centenary Institute, Sydney Medical School, University of Sydney and Department of Cardiology, Royal Prince Alfred Hospital, Camperdown, Australia; and
‡Division of Cardiology, Tufts Medical Center, Boston, Massachusetts.

- 60 casos internacional
- 213 casos nos EUA



(Heart Rhythm 2011;8:1969–1971)



The American Journal of Medicine (2010) 123, 1075-1081

TV idiopática	**Avaliação do padrão com exercício**	**Ablação RF**
FA e flutter atrial	**Esportes competitivos OK** **Avaliar resposta ventricular**	**Considerar ablação RF**
WPW	**Avaliar a via acessória**	**Ablação RF** **EEF para avaliar via**

The American Journal of Medicine (2010) 123, 1075-1081

Síndrome de Brugada	**Suspender esportes competitivos**	**Considerar CDI**
TV catecolaminérgica	**Suspender esportes competitivos**	**Considerar CDI** **Betabloqueadores**
QT Curto	**Suspender esporte competitivo**	**CDI**

The American Journal of Medicine (2010) 123, 1075-1081

Esporte e amigos

Obrigado!!!

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