

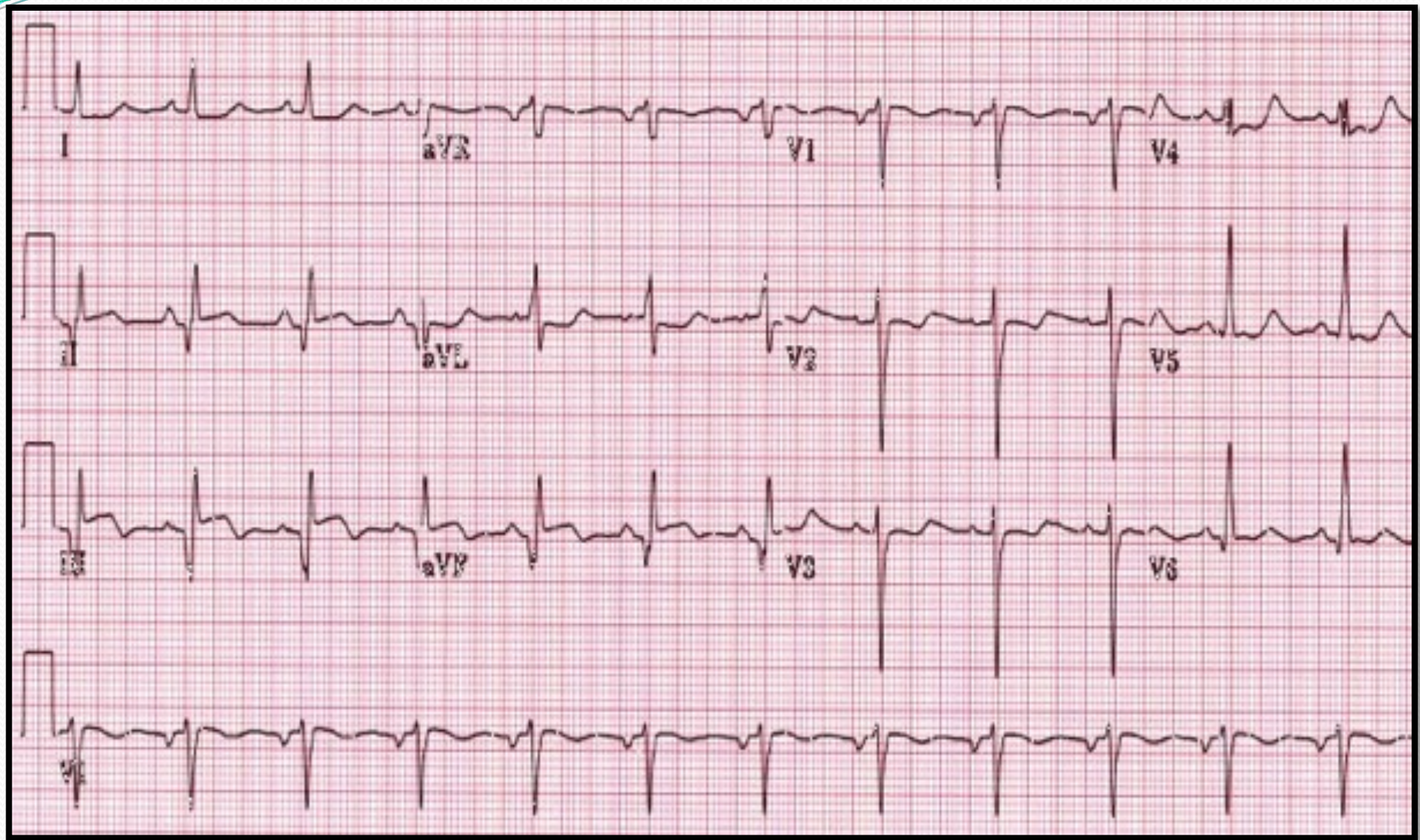
Des ECG à ne pas méconnaître lors d'une visite de non contre-indication au sport Focus sur les extrasystoles



Albin Behaghel

Certificat de non contre indication à la pratique sportive

- Pratique du sport en compétition < 35 ans
- **ECG**
 - entre 12 et 20 ans / tous les 3 ans
 - puis tous les 5 ans de 20 ans à 35 ans
 - < 12 ans
 - Peu de demandes
 - ECG présente des particularités liées à l'âge
 - Anomalies génétiques pas encore exprimées
 - > 35 ans
 - Maladie coronaire prépondérante = discuter ETT d'effort
 - Tous les 3 ans
 - Pathologies génétiques à expression variables dans le temps
- **Avis cardio (ETT,EE ...)**
 - Examen clinique ou ECG anormal
 - Atcd familiaux de MS ou cardiopathie



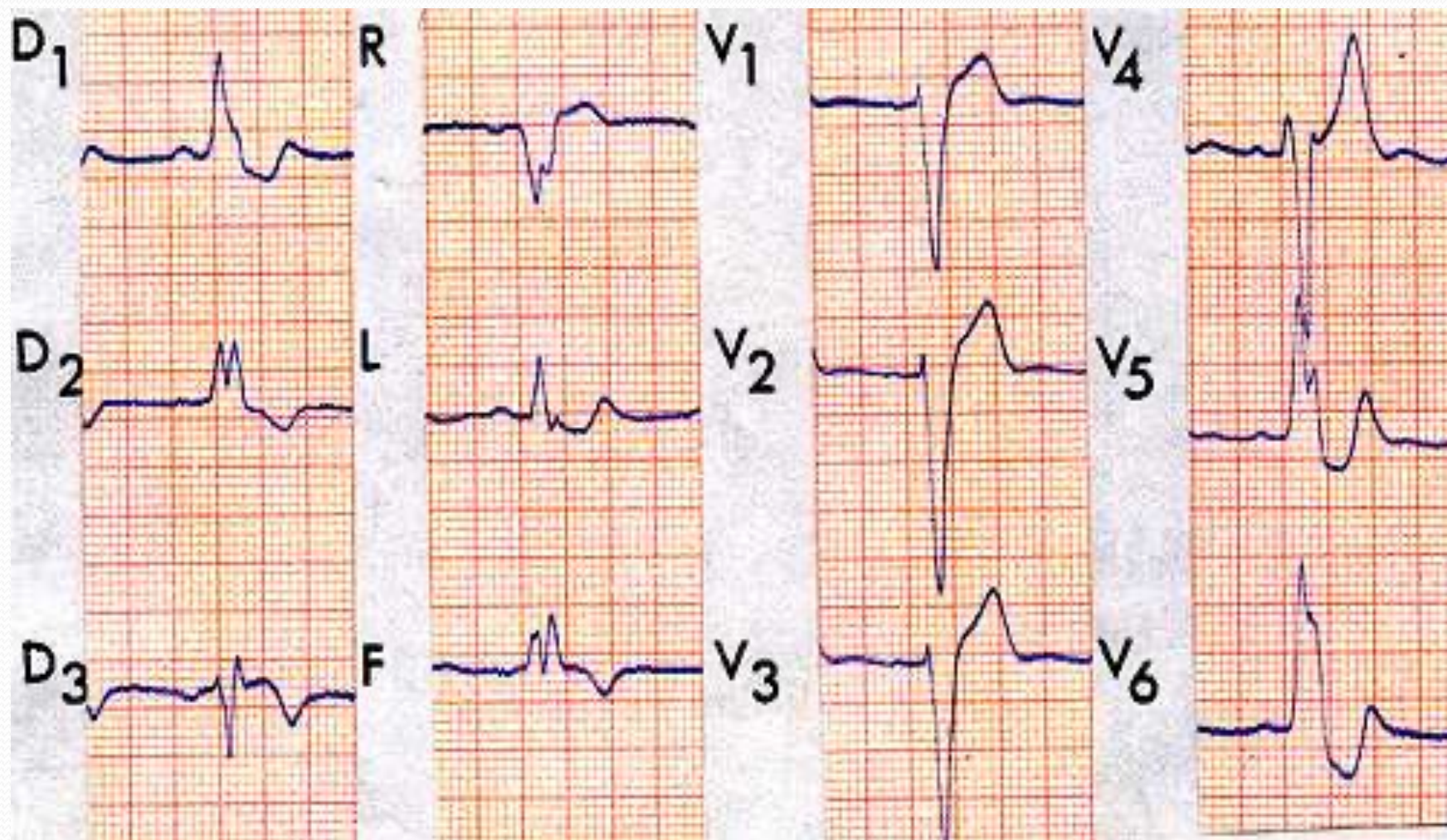
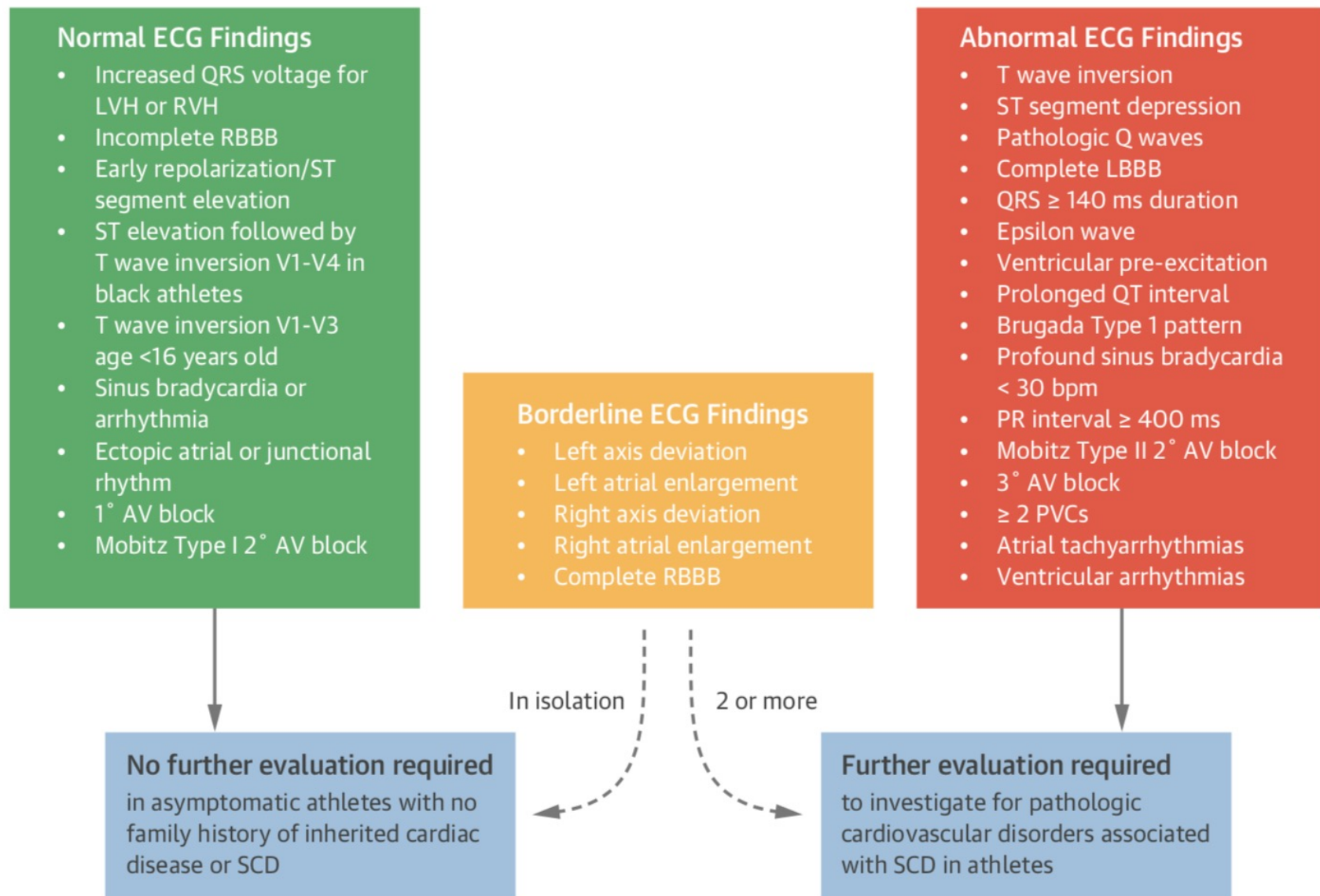
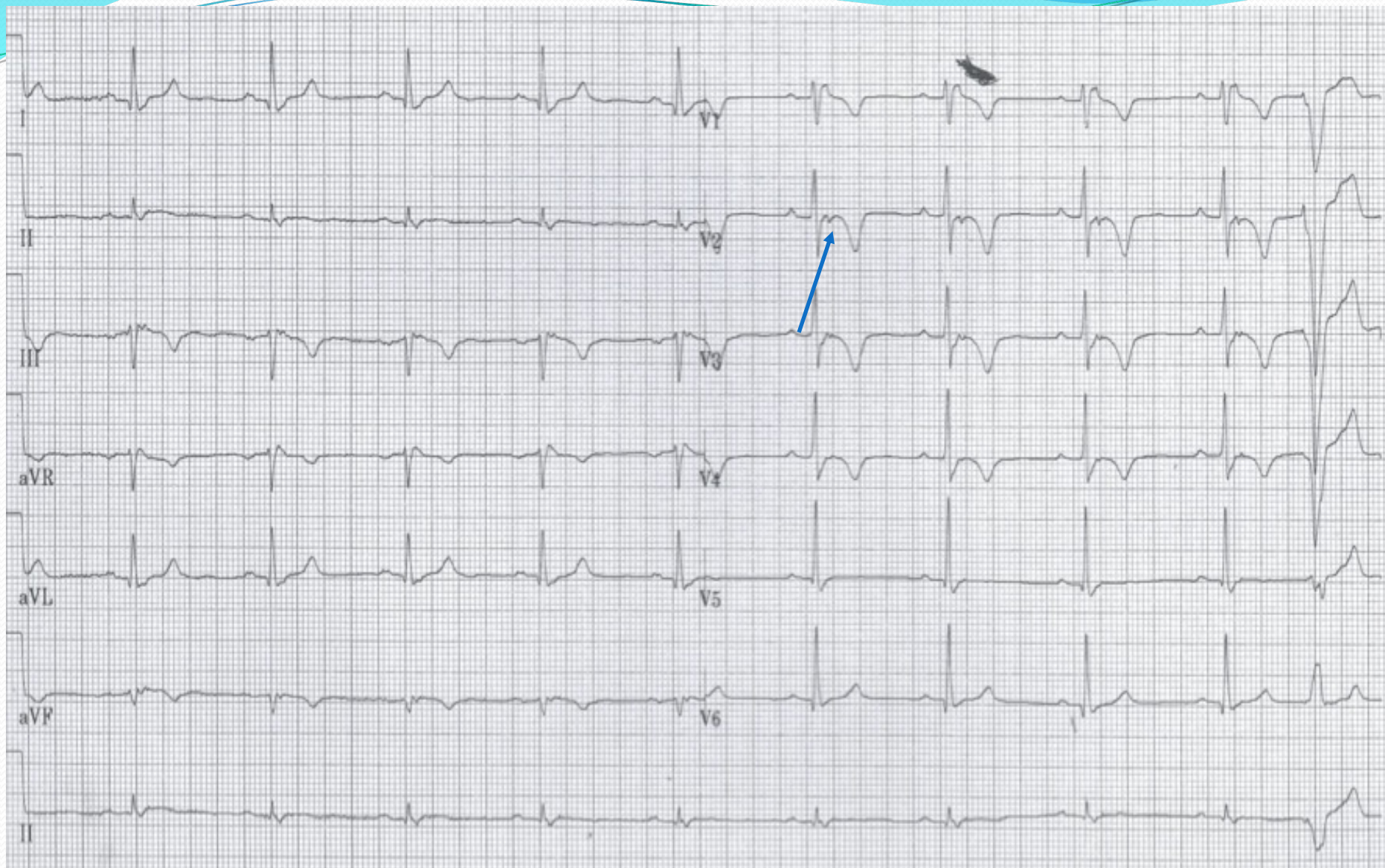
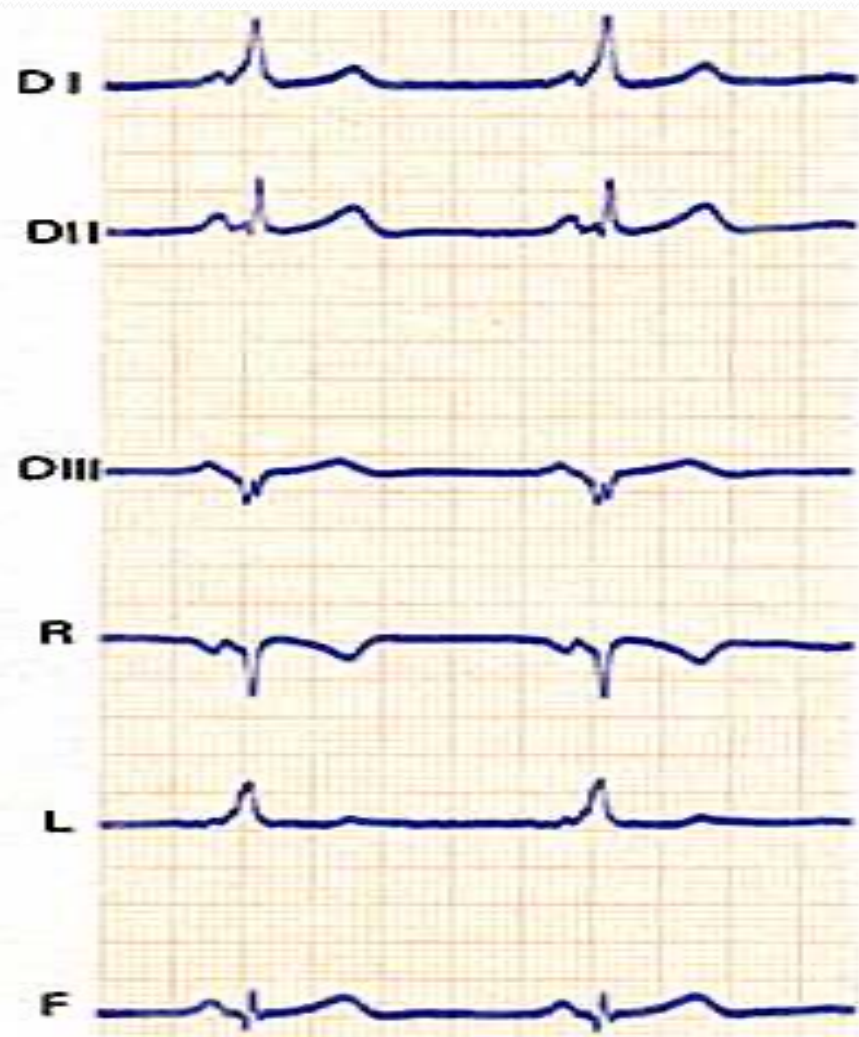


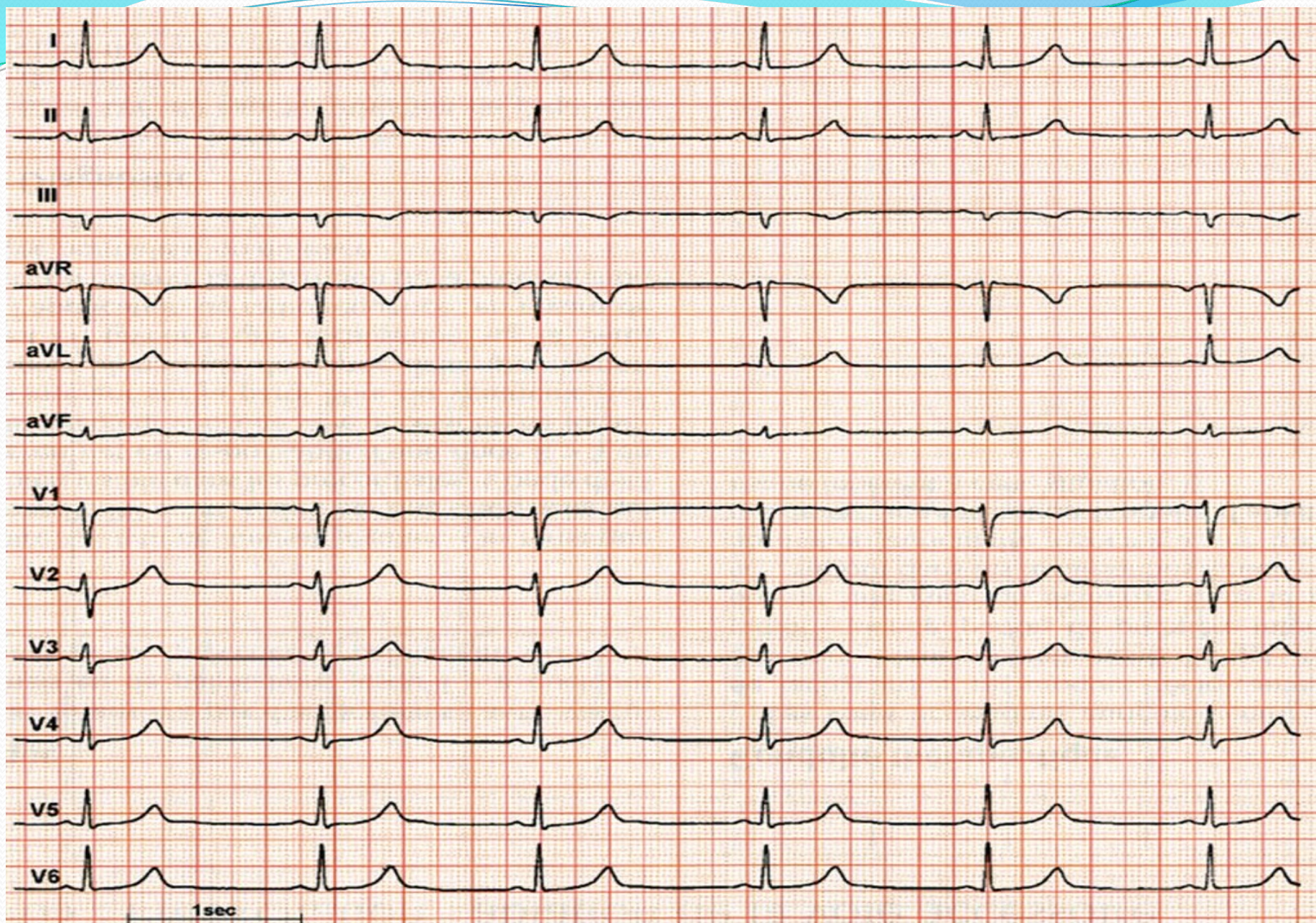
FIGURE 1 International Consensus Standards for Electrocardiographic Interpretation in Athletes



AV = atrioventricular block; LBBB = left bundle branch block; LVH = left ventricular hypertrophy; RBBB = right bundle branch block; RVH = right ventricular hypertrophy; PVC = premature ventricular contraction; SCD = sudden cardiac death.

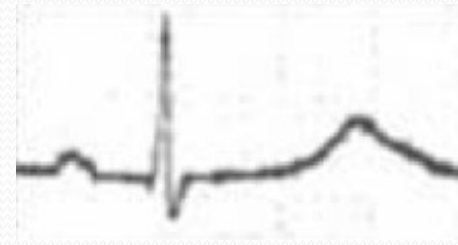
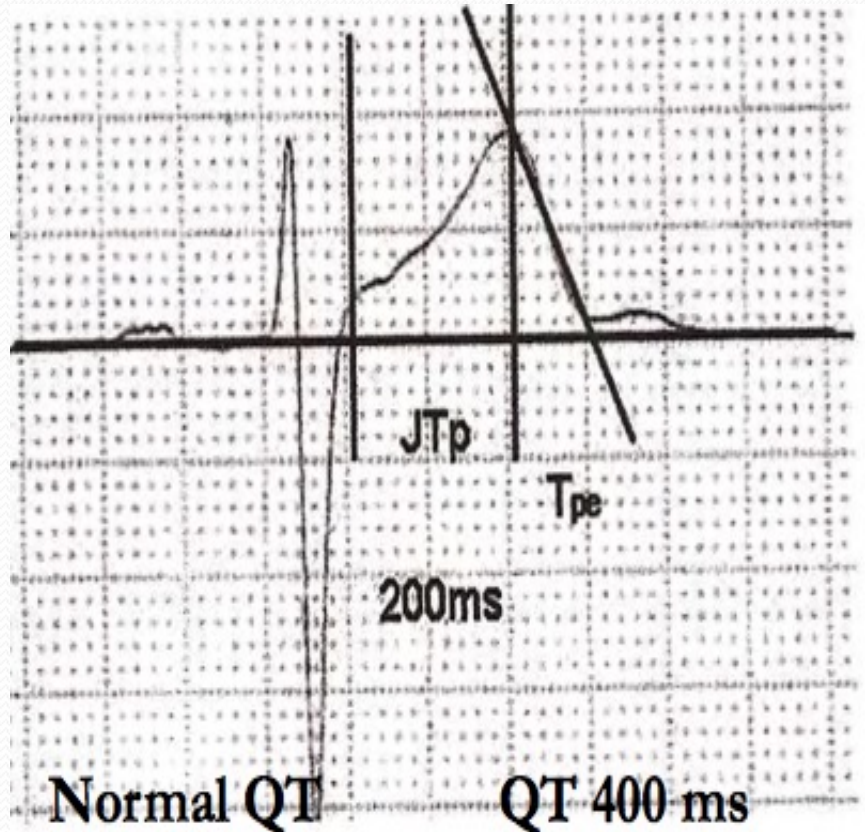






QT

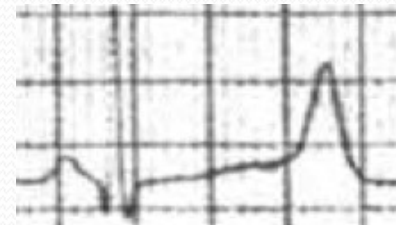
- $QT_c = QT_m / \sqrt{RR}$



LQT1



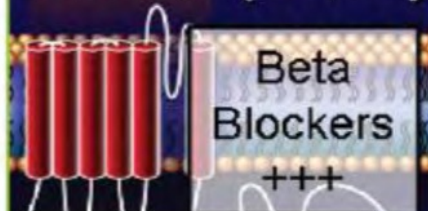
LQT2



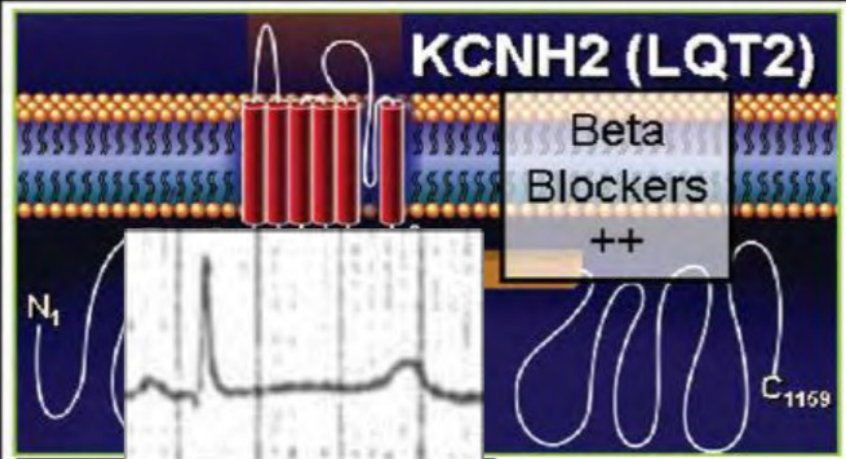
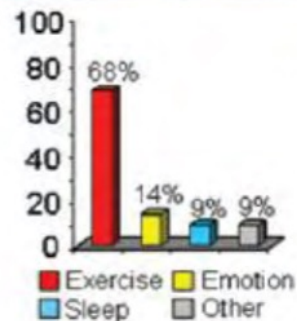
LQT3



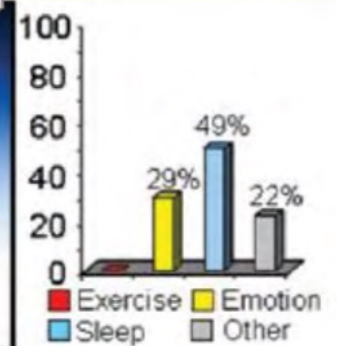
KCNQ1 (LQT1)



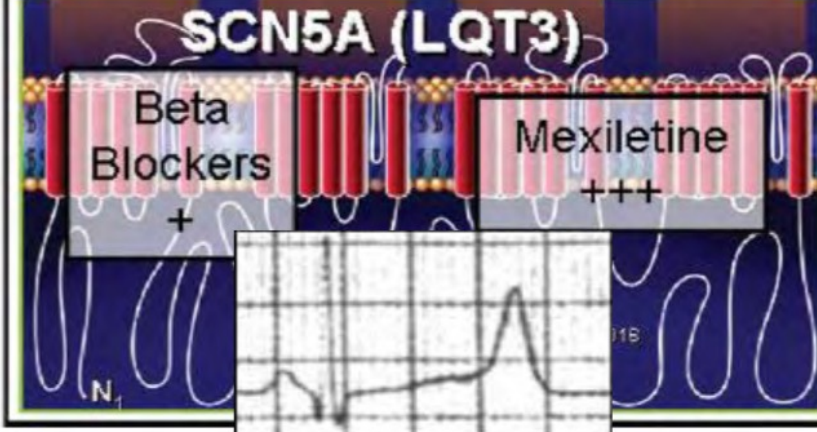
Swimming
Exertion



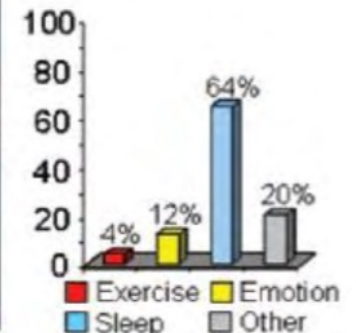
Auditory Triggers Postpartum Period

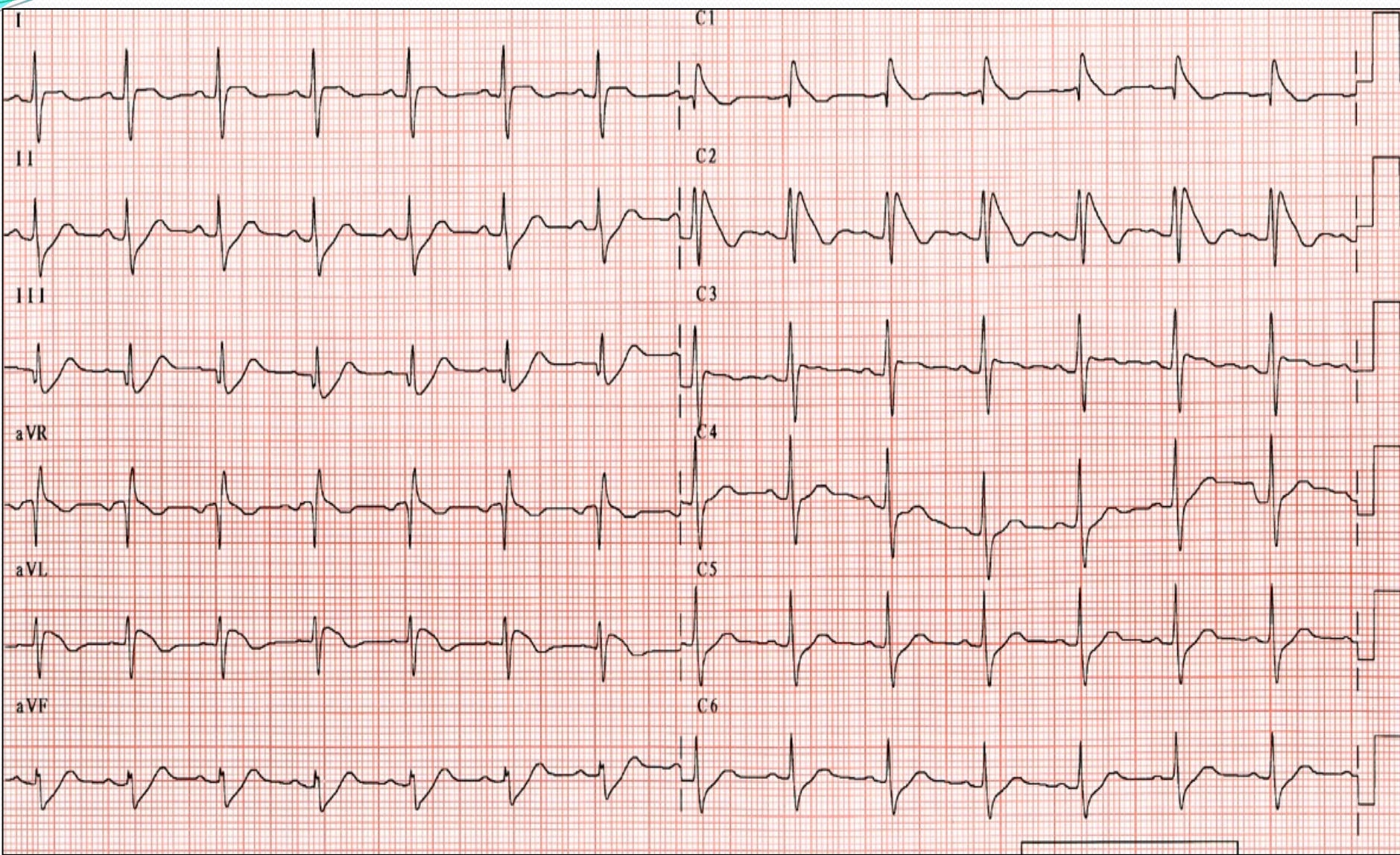


SCN5A (LQT3)



Sleep / Rest





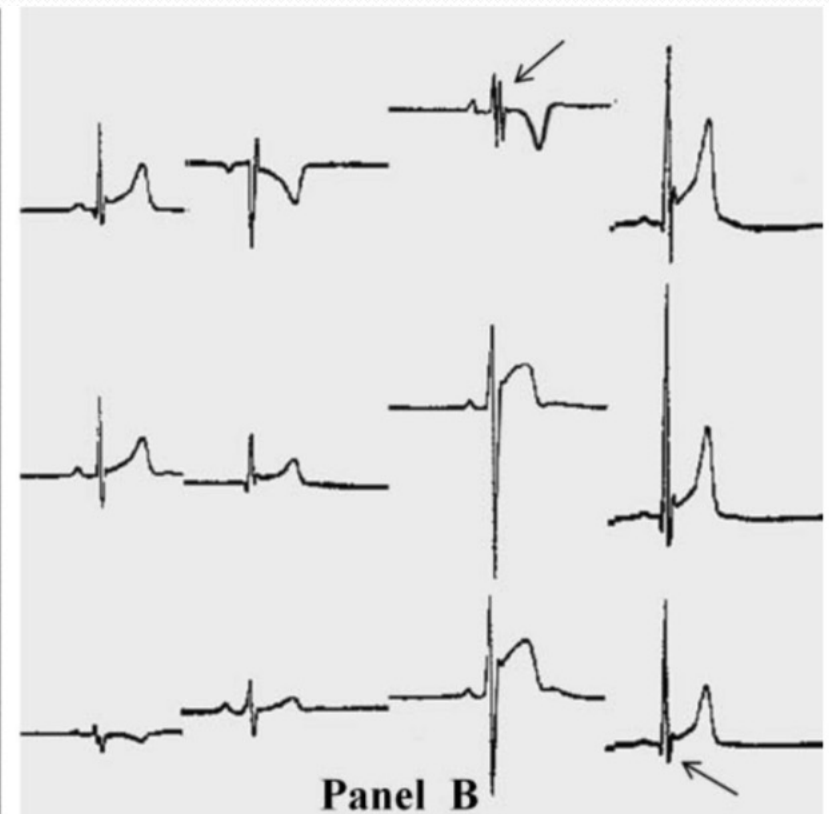
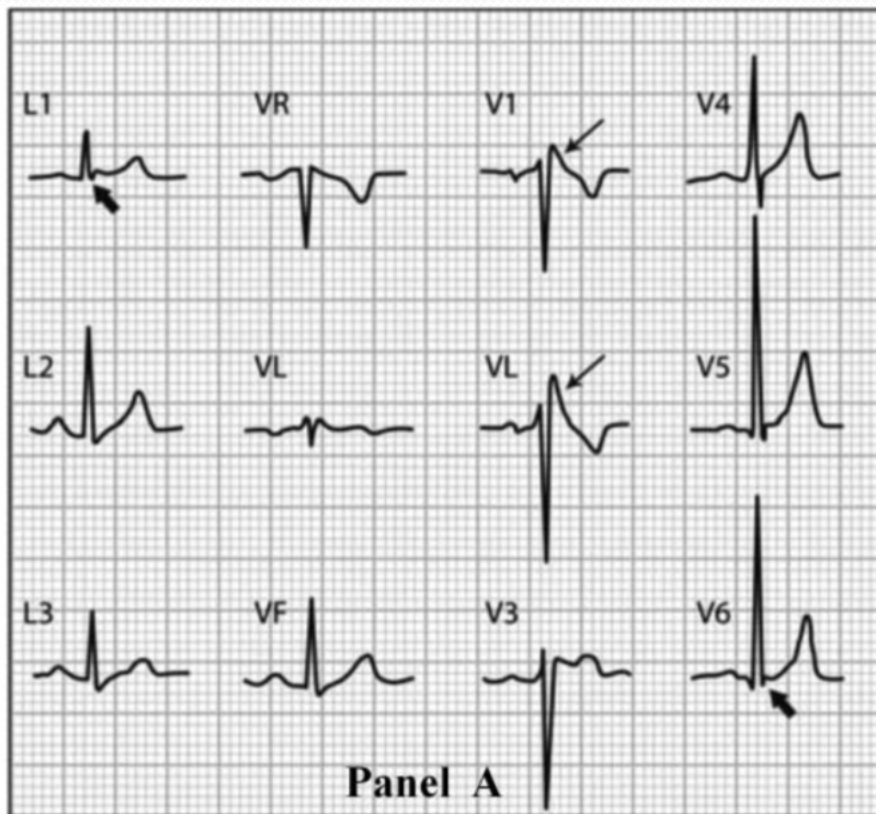


Figure 10 (A) Brugada-ECG pattern mimicking IRBBB. The 'J wave' (arrows) of Brugada-ECG is confined to right precordial leads (V1 and V2) without reciprocal 'S wave' (of comparable voltage and duration) in leads I and V6 (arrowheads). (B) IRBBB in a trained athlete. The RV conduction interval is mildly prolonged (QRS duration=115 ms) with a typical rSR' pattern in V1 (arrow). Note also the reciprocal 'S wave' in V6 (arrow).

- ESV malignes

Terrain : cardiopathie, patient âgé

- Morphologie : ESV écrasées, larges > 140 ms, polyphasiques, polymorphes
- En salves, doublets, triplets, phénomène R/T, nombreuses > 30/h
- Majorées /effort ou en récupération (+/- précédées d'une ischémie)

- ESV bénignes

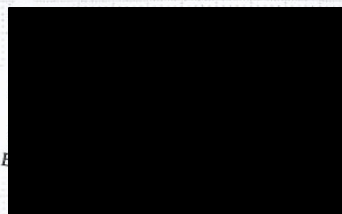
- Terrain : pas de cardiopathie, patient jeune

- Morphologie : ESV amples, peu larges, monomorphes, monophasiques, infundibulaire (retard gauche, axe droit)
- Isolées, rares, couplage long et fixe
- Majorées au repos, disparaissant à l'effort
- Si surviennent à l'effort = effort important, non répétitives, non reproductibles

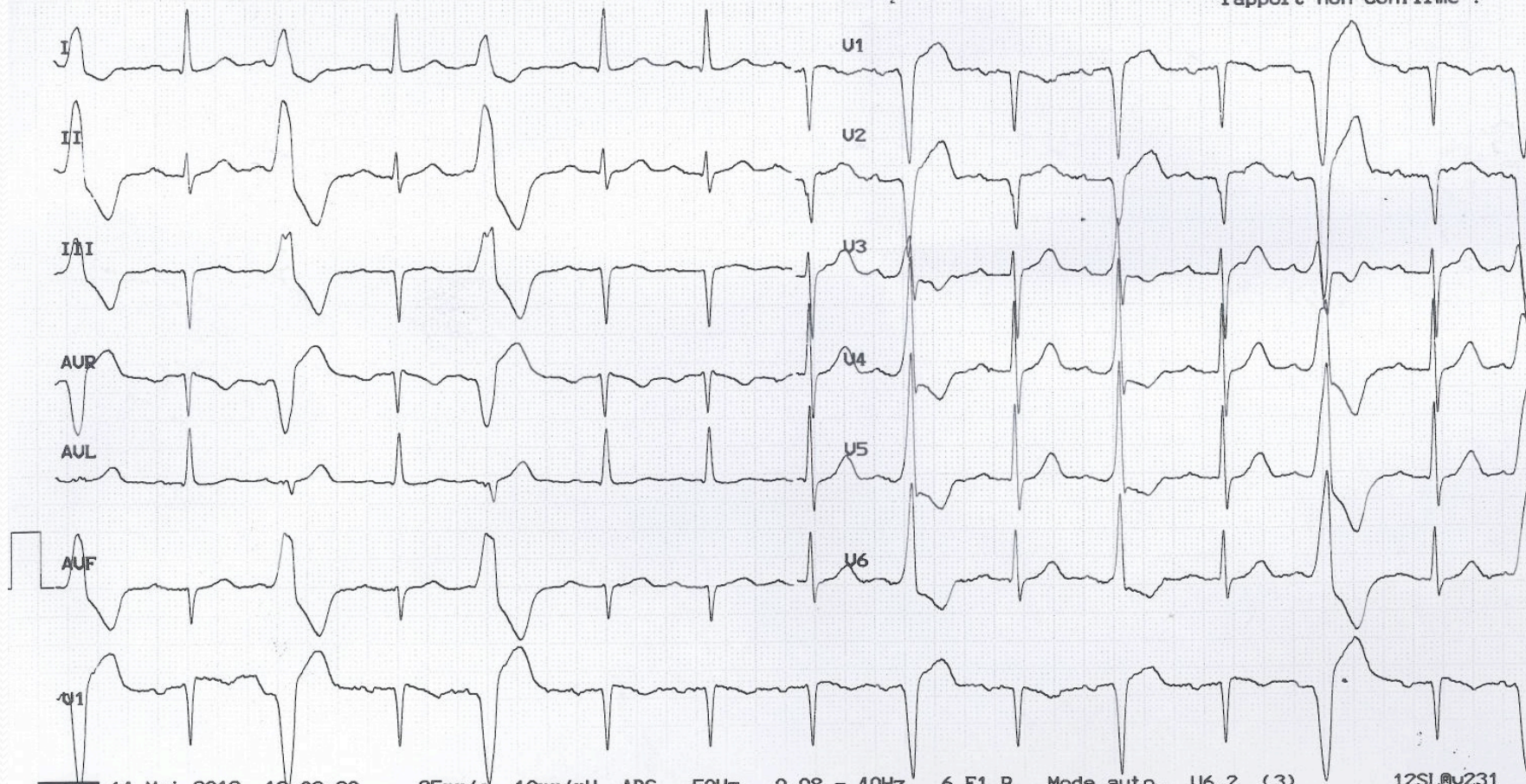
Résultats mesures:

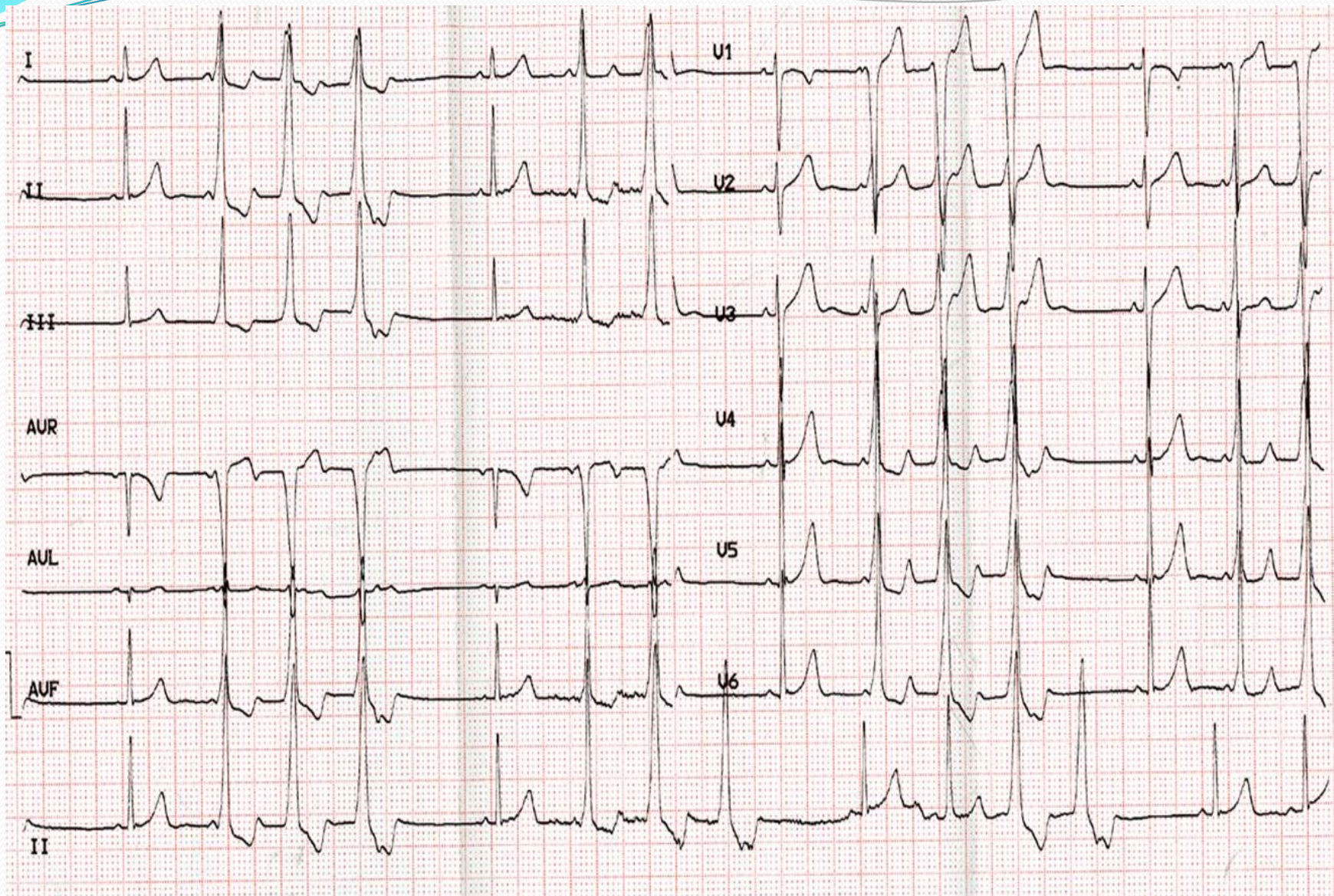
IRS : ms
 IT/QTcB : / ms
 Q : ms
 : ms
 IR/PP : / ms
 /QRS/T : / / degrés

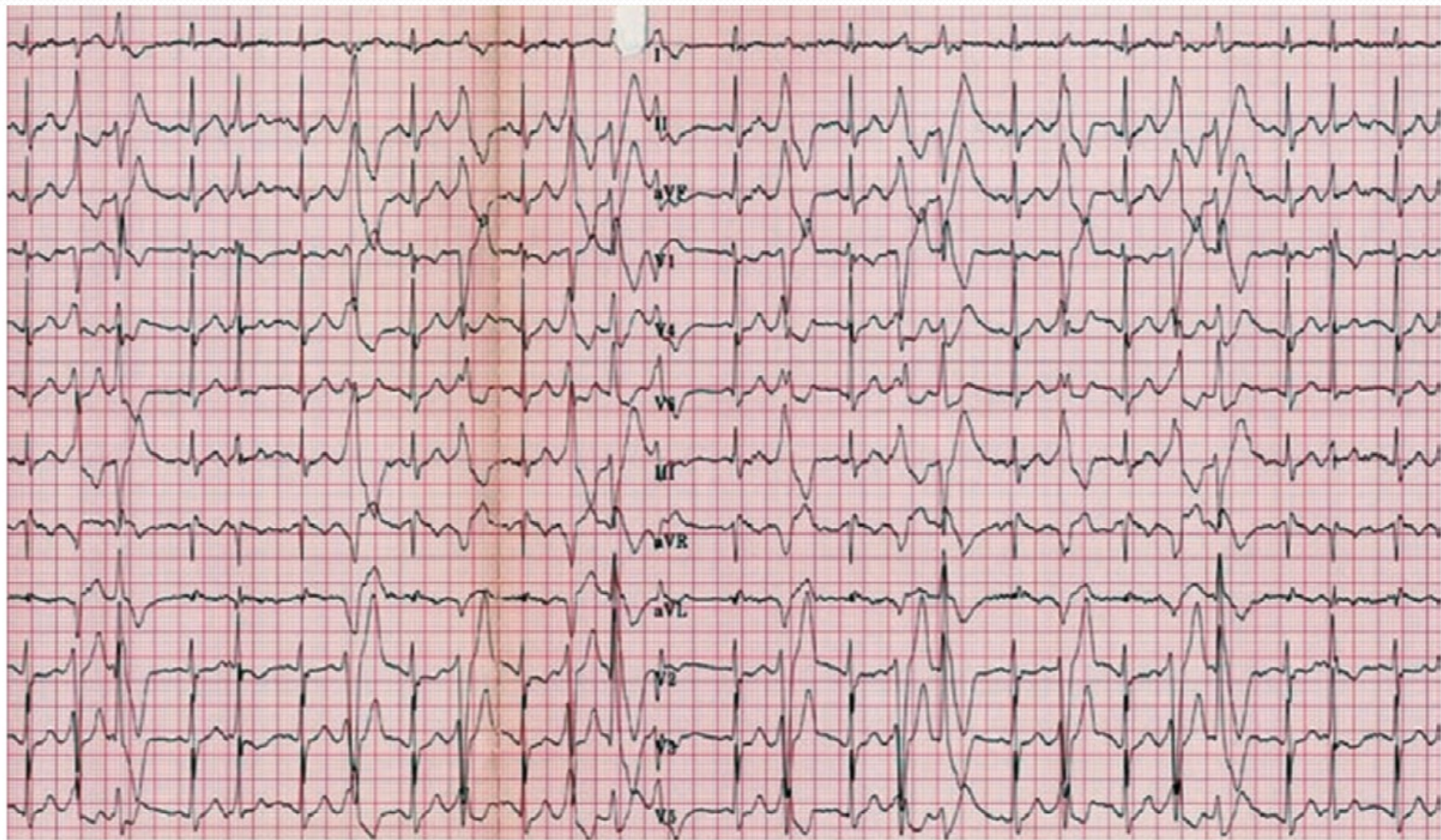
Interprétation:



rapport non confirmé .



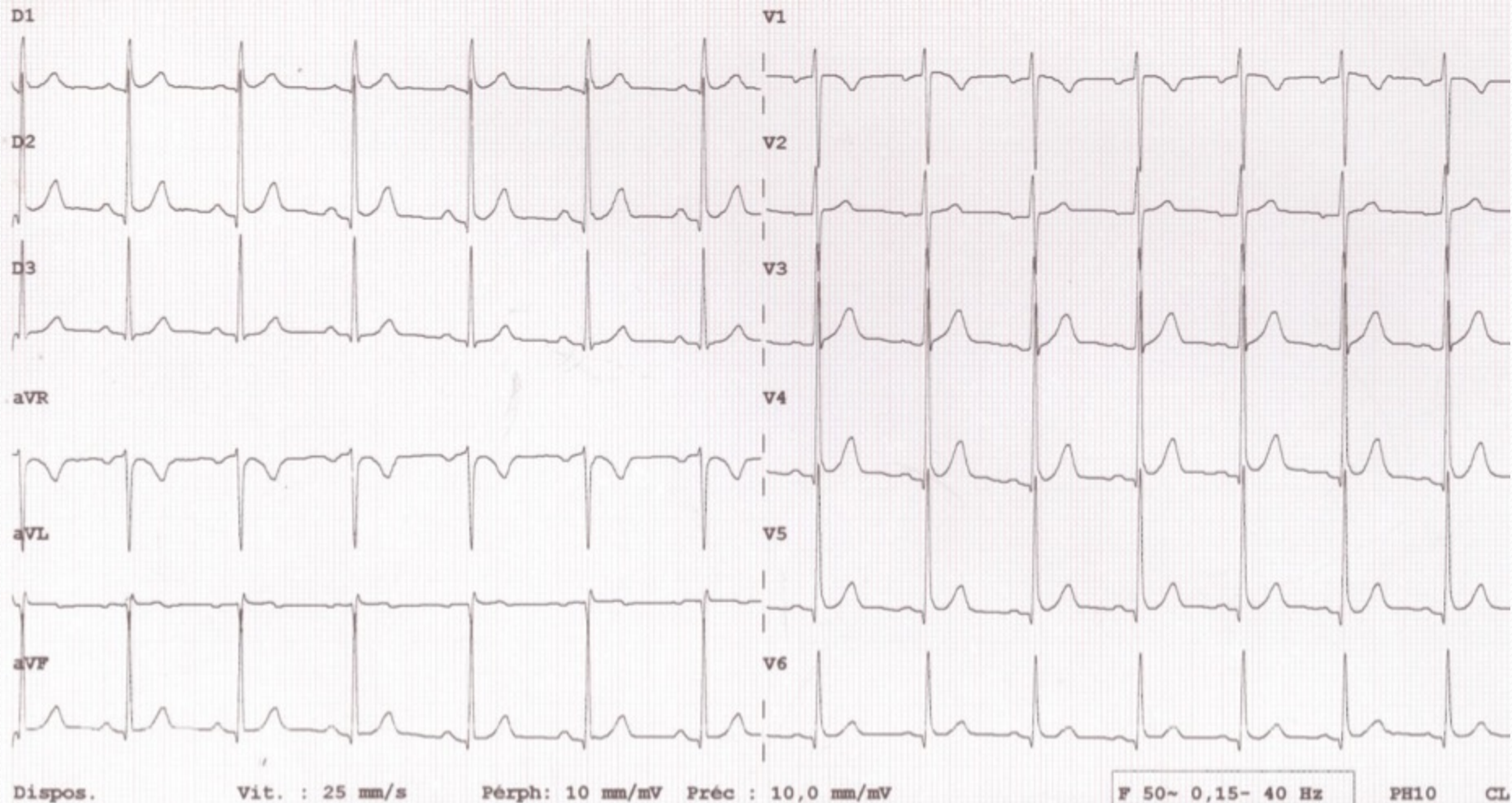




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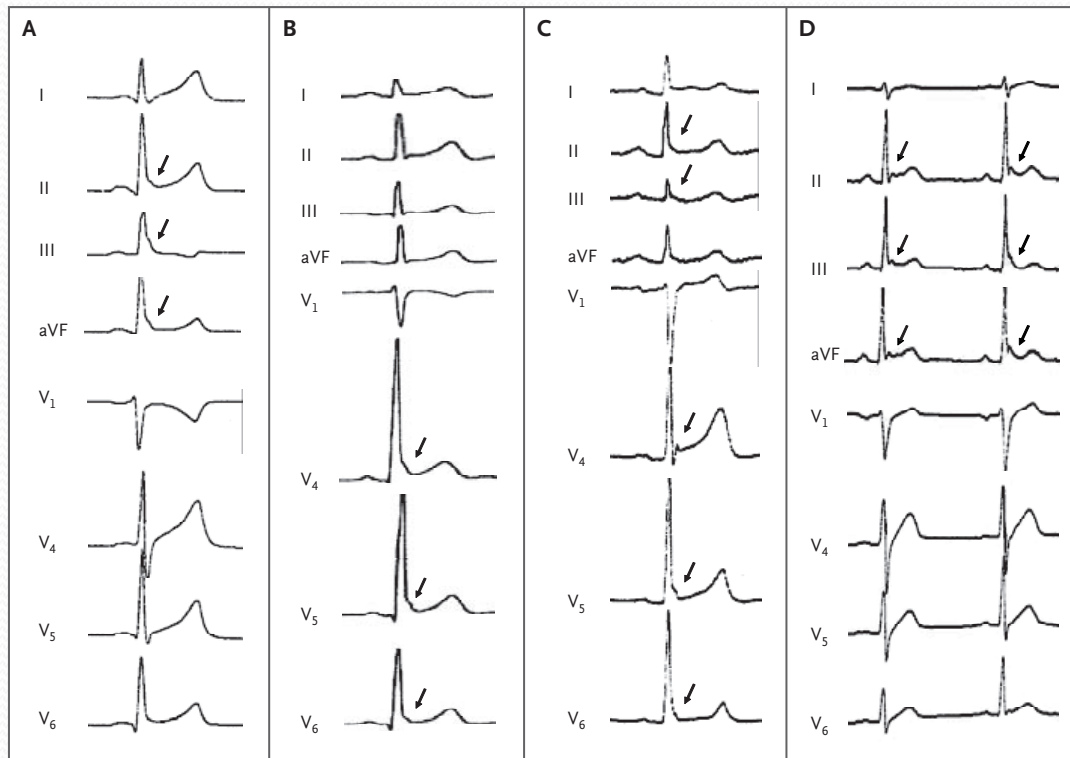


Sd de repolarisation précoce



Sd de repolarisation précoce

Définition: présence d'un sus-décalage du point J, d'au moins 1 mm, dans au moins 2 dérivations.(dérivations inférieures et latérales)



Fréquence

1-5 %
Jeunes
Sportifs
Race noire

Haïssaguerre M, Derval N, Sacher F et coll. Sudden cardiac arrest associated with early replarization. New Engl J Med 2008;358:2016-23

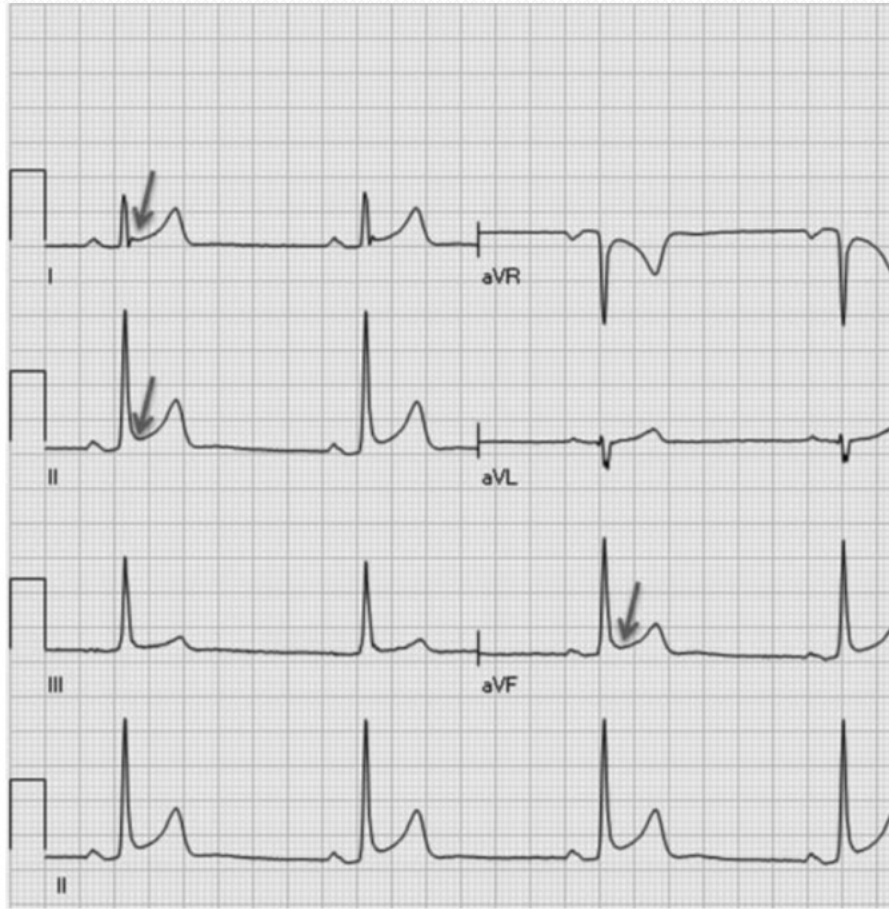
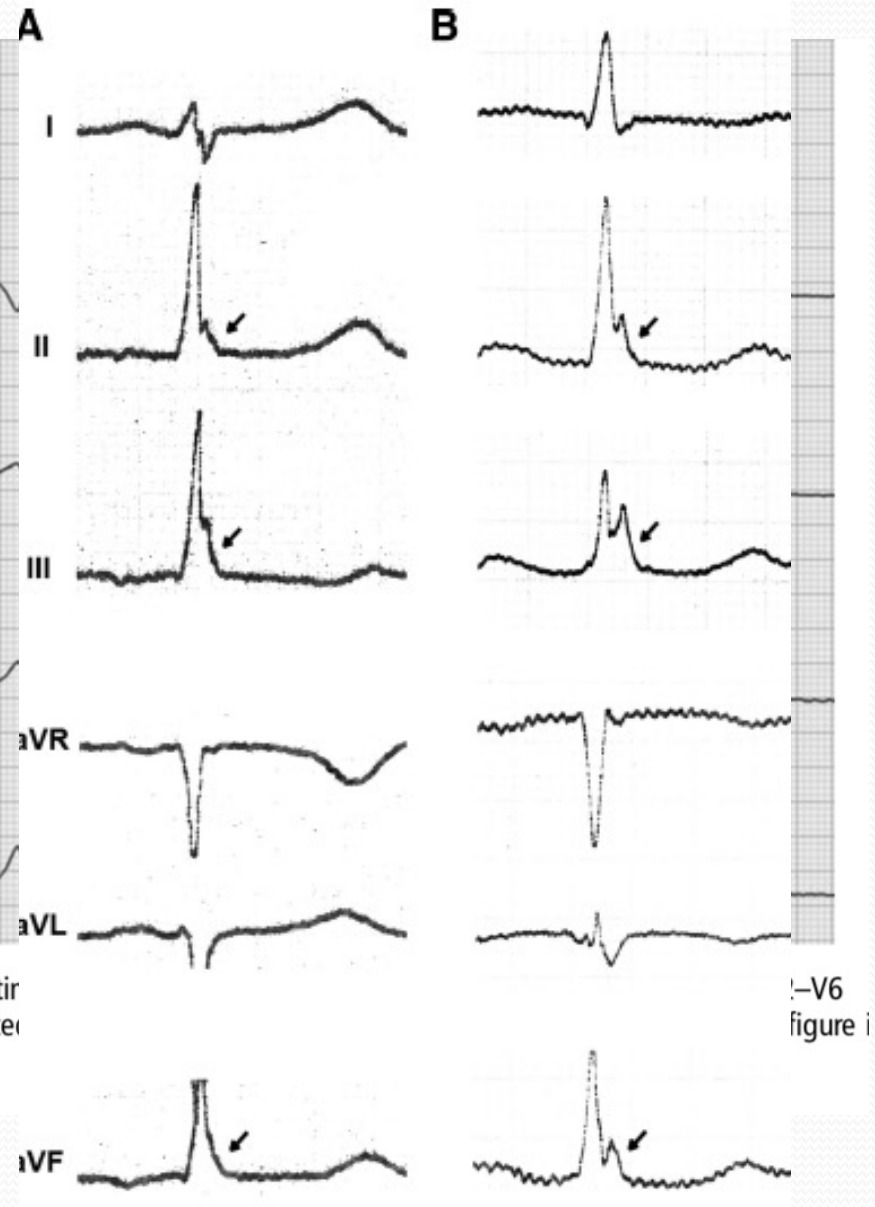
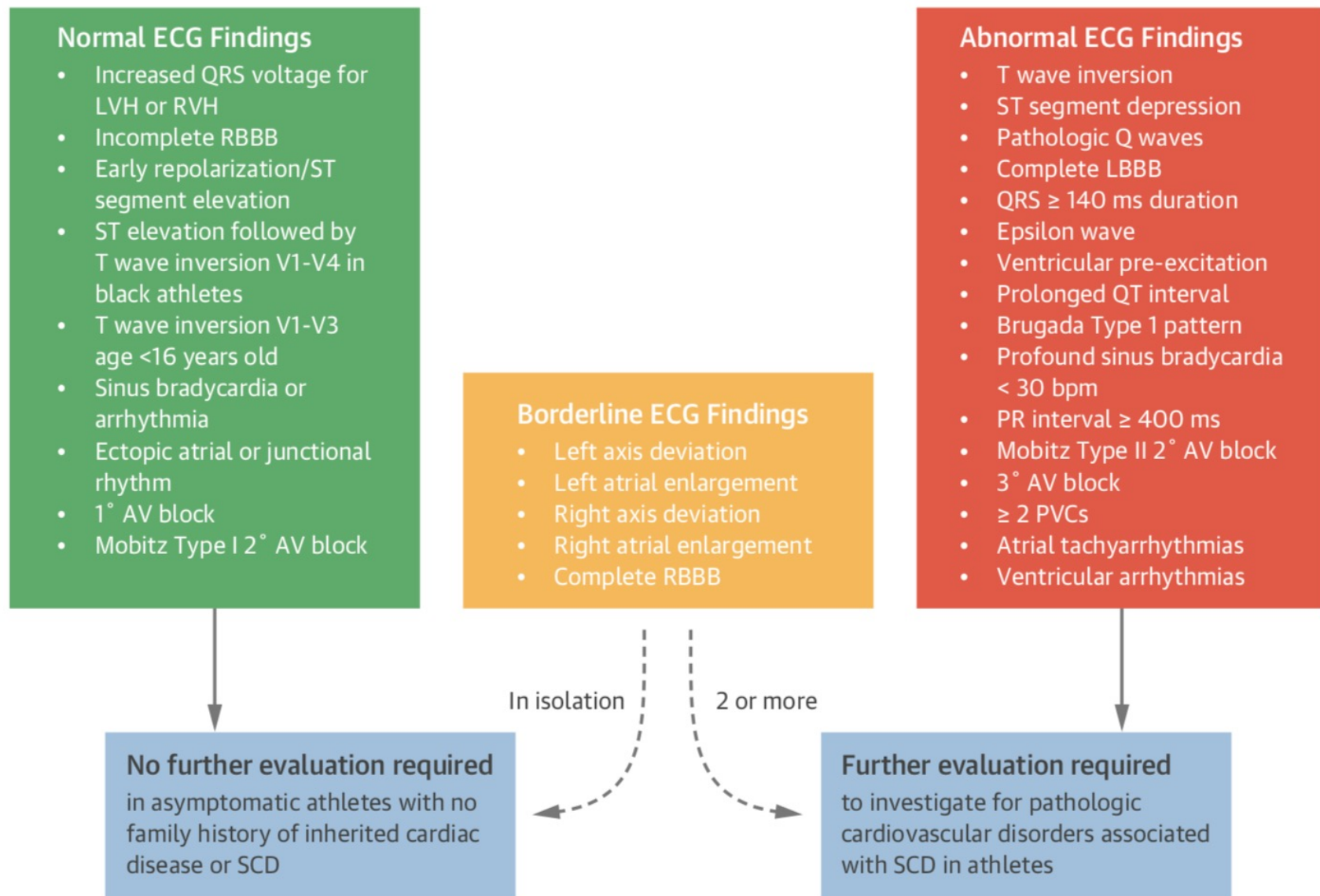


Figure 11 ECG from a 29-year-old asymptomatic soccer player demonstrating ST-segment depressions (arrows) and tall, peaked T waves (circles). These are common, training-related findings. Only reproduced in colour in the online version.



!-V6
figure i

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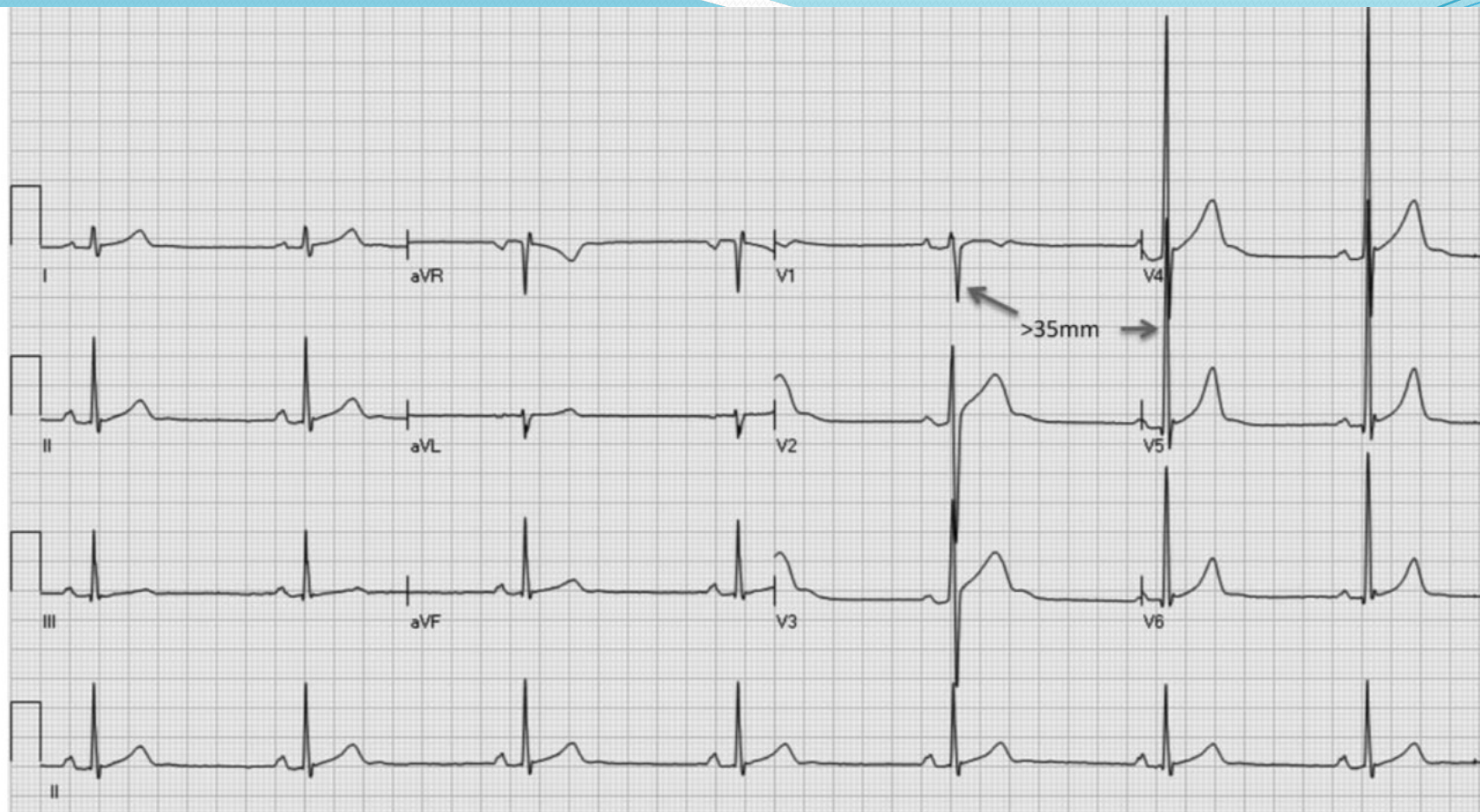


Figure 13 ECG from a 19-year-old asymptomatic soccer player demonstrating voltage criteria for left ventricular hypertrophy ($S-V1+R-V5>35$ mm). Note the absence of left atrial enlargement, left axis deviation, ST depression, T wave inversion, or pathological Q waves. Increased QRS amplitude without other ECG abnormalities is a common finding in trained athletes and does not require additional testing. This figure is only reproduced in colour in the online version.

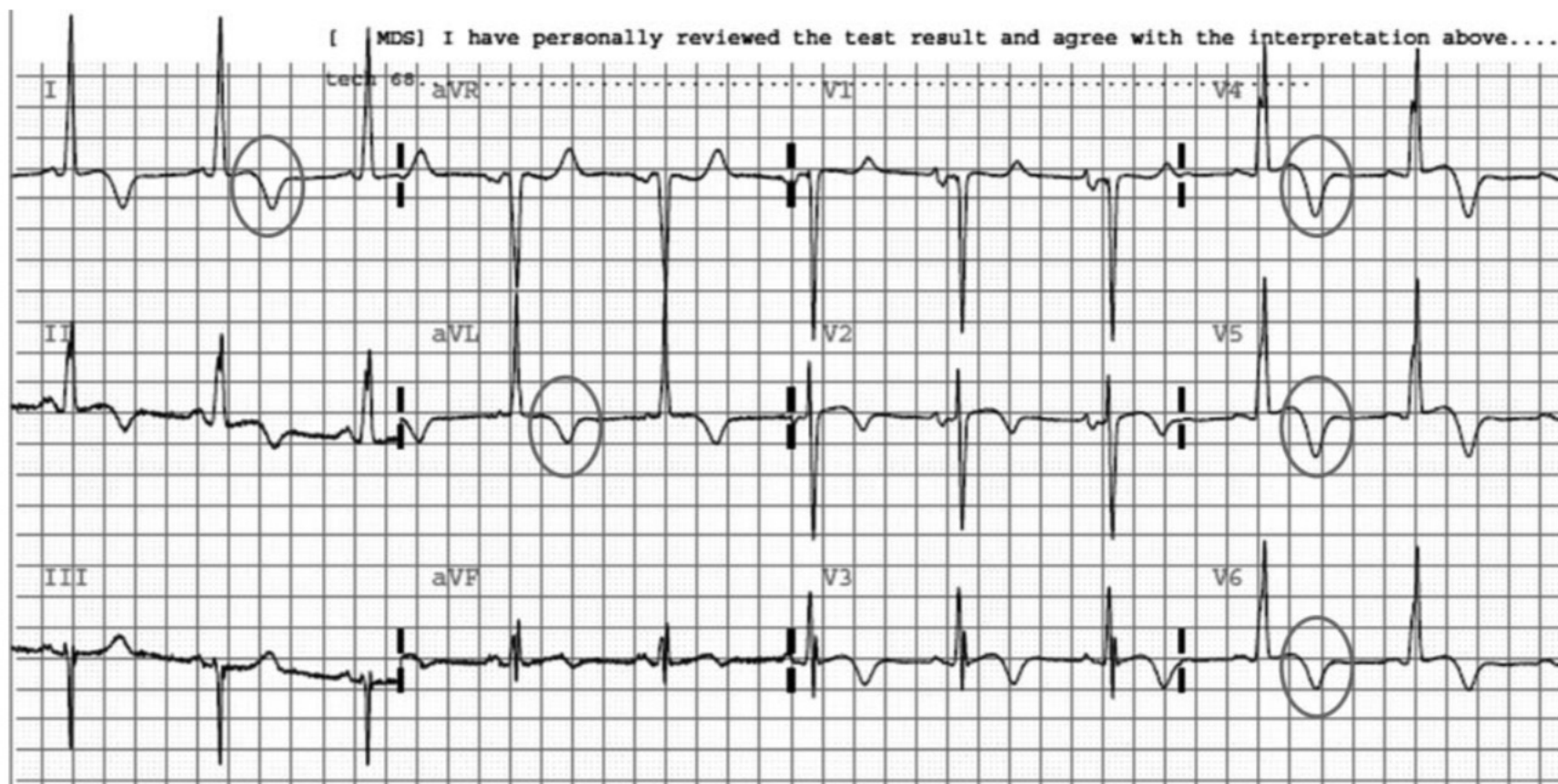


Figure 14 Abnormal ECG from a patient with hypertrophic cardiomyopathy. In addition to voltage criteria for left ventricular hypertrophy, note the deep T wave inversions extending to the lateral leads (I and aVL, V5–V6). These findings are abnormal, not related to regular training and require additional evaluation. This figure is only reproduced in colour in the online version.

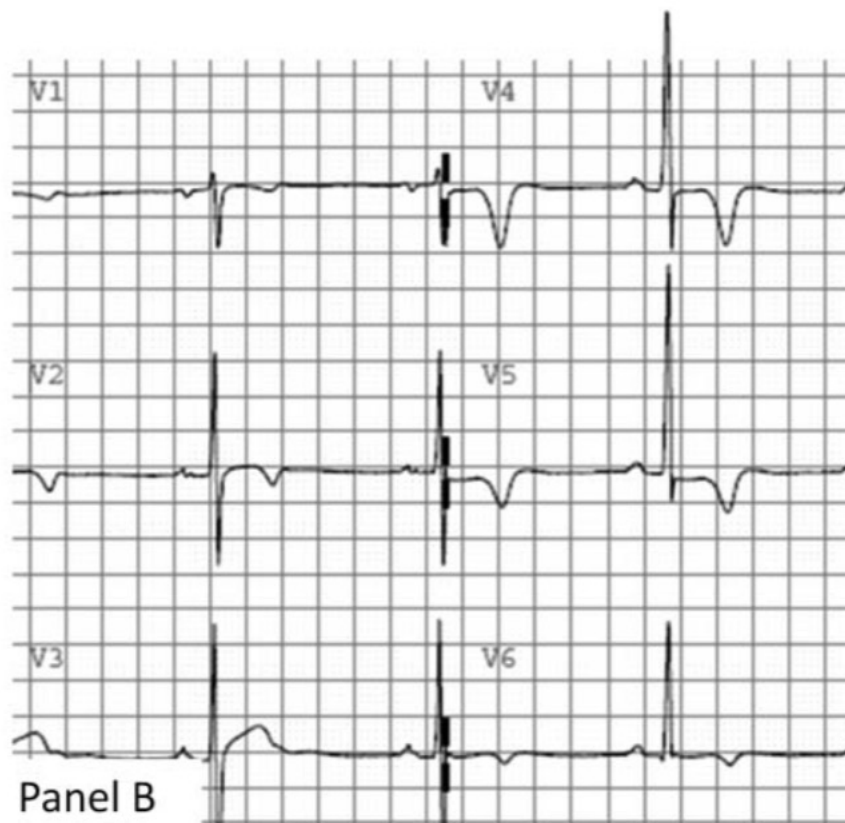


Figure 16 (A) Normal variant repolarisation changes in a black/African athlete characterised by domed ST segment elevation and T wave inversion in V1–V4. (B) Pathological T wave inversion and ST depression in the lateral leads. T wave inversion in V5–V6 is always an abnormal finding and requires additional testing to rule out cardiomyopathy. This figure is only reproduced in colour in the online version.

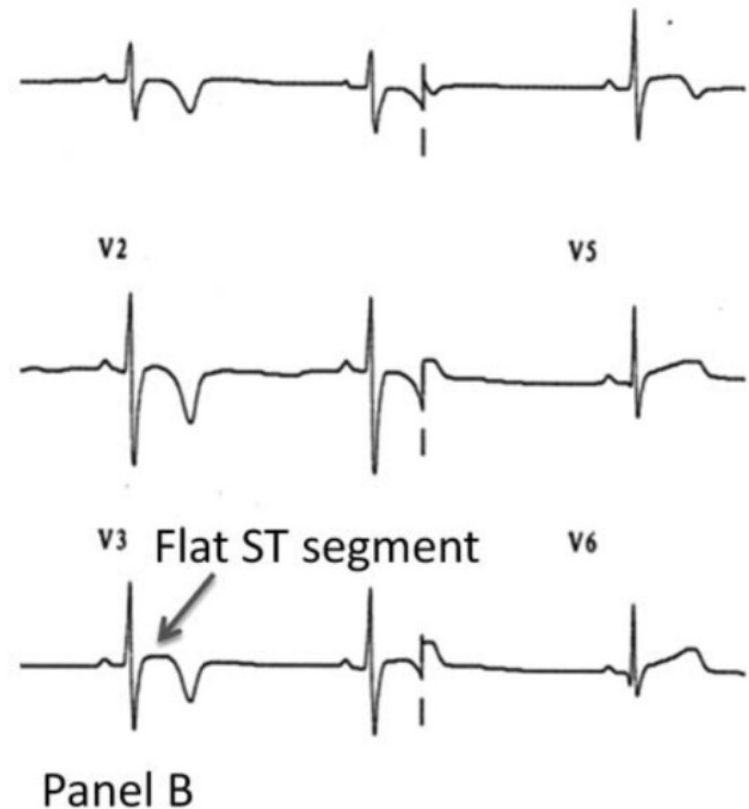
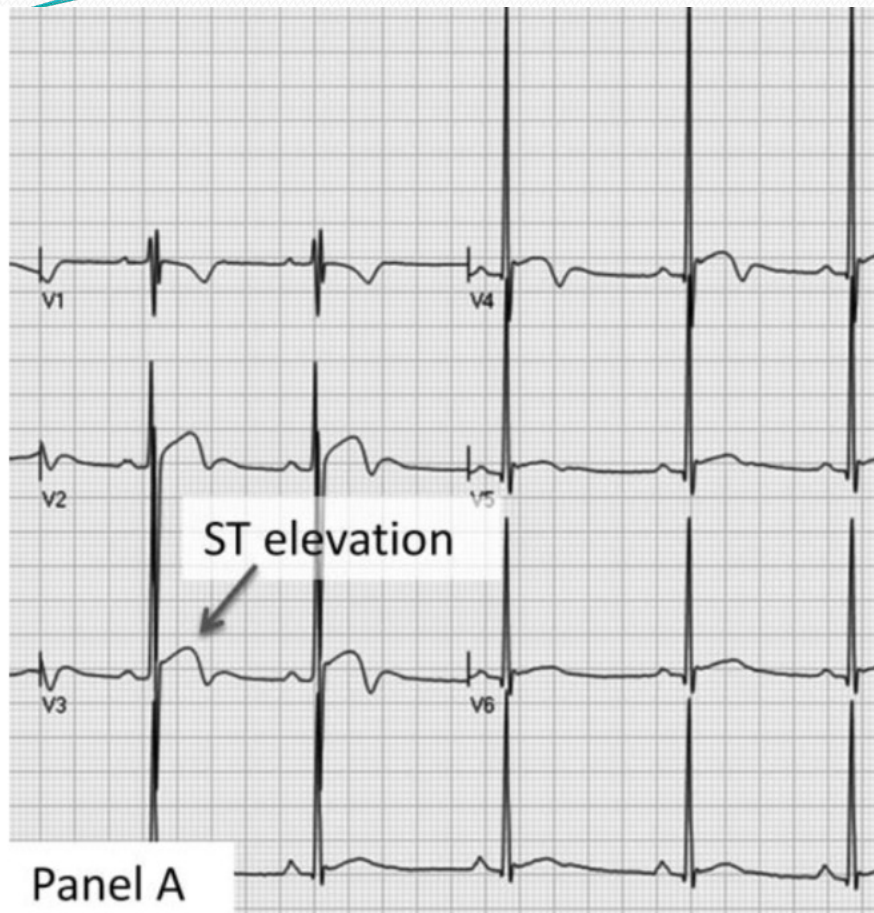
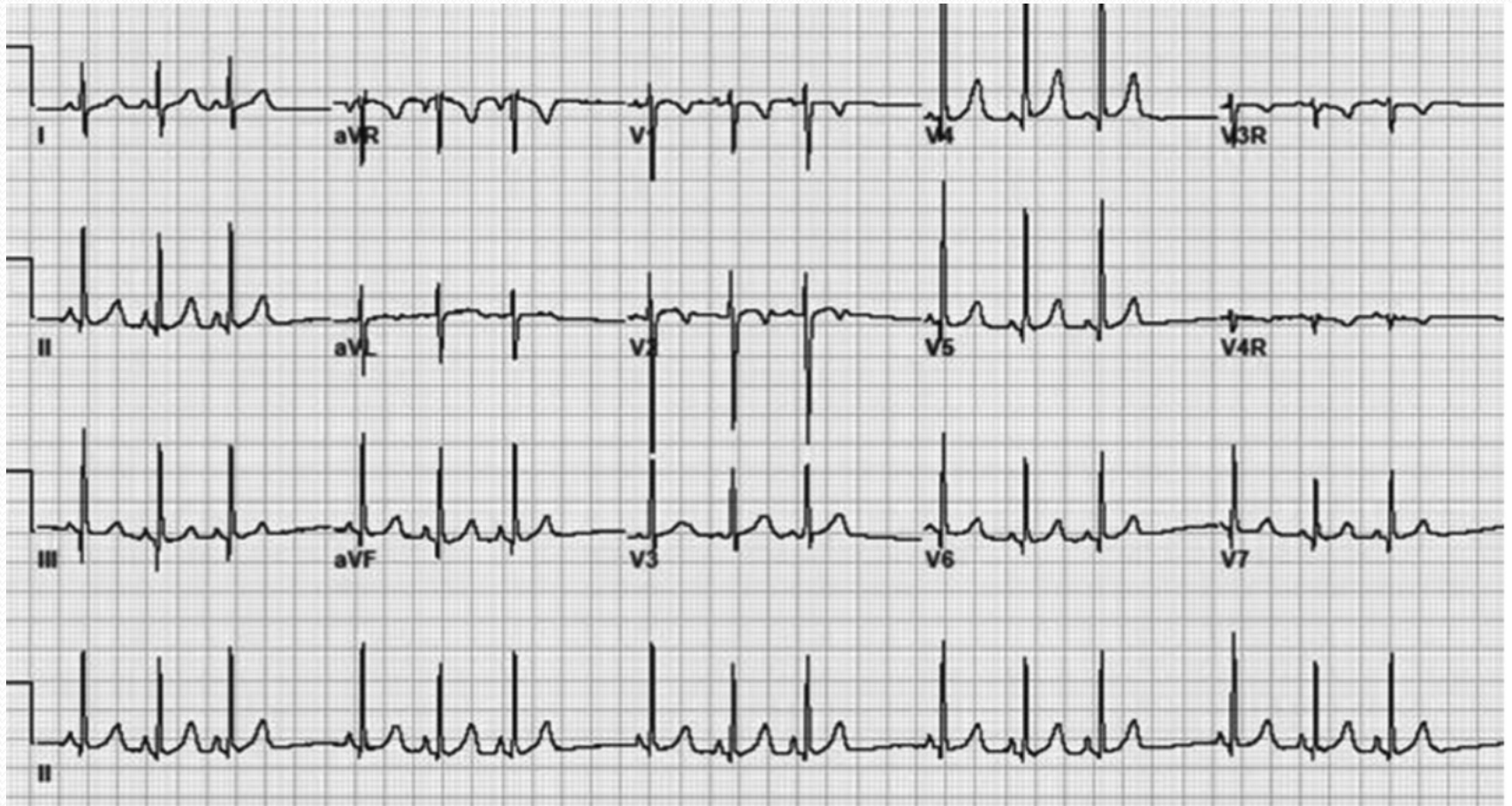
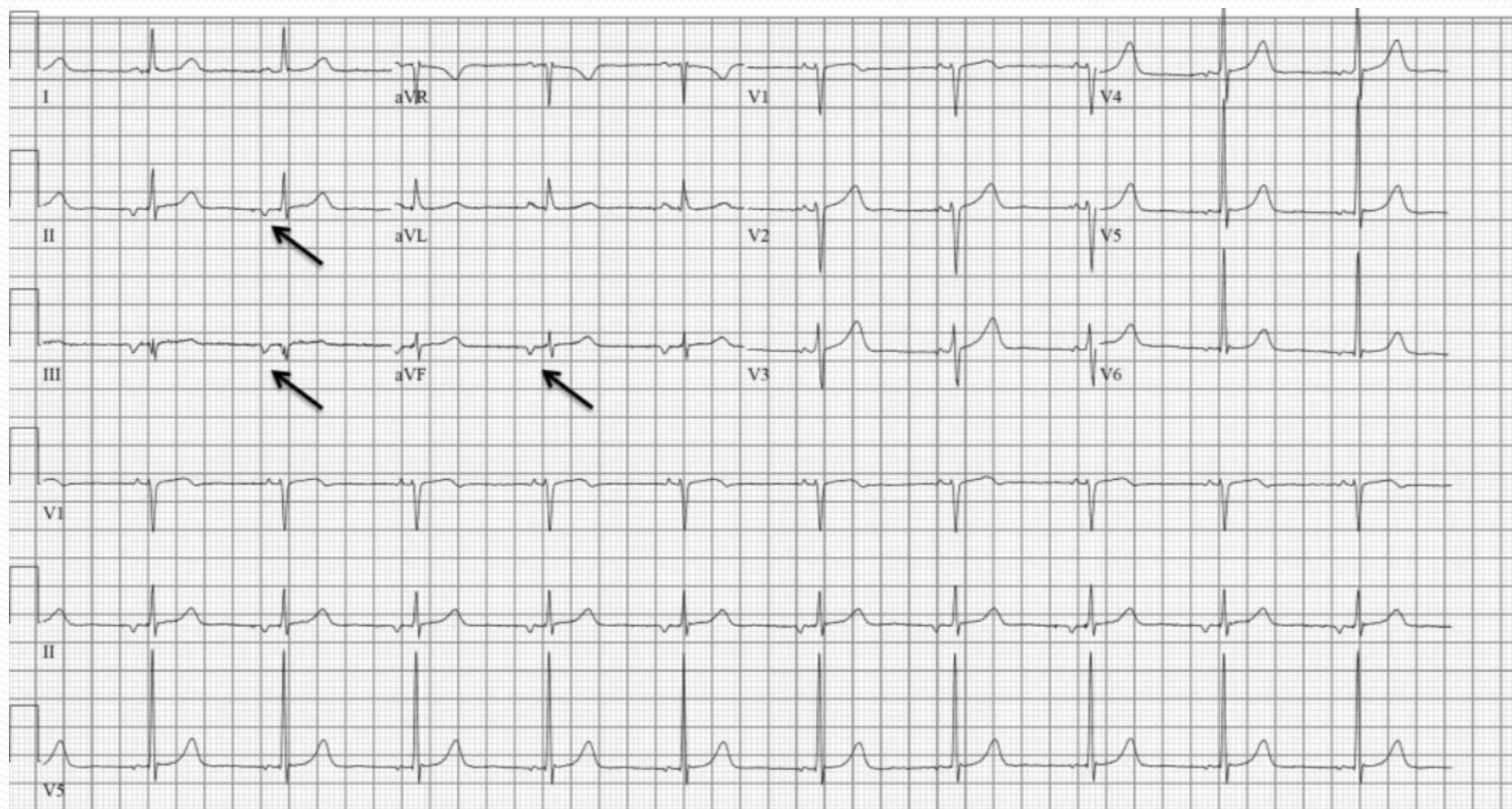
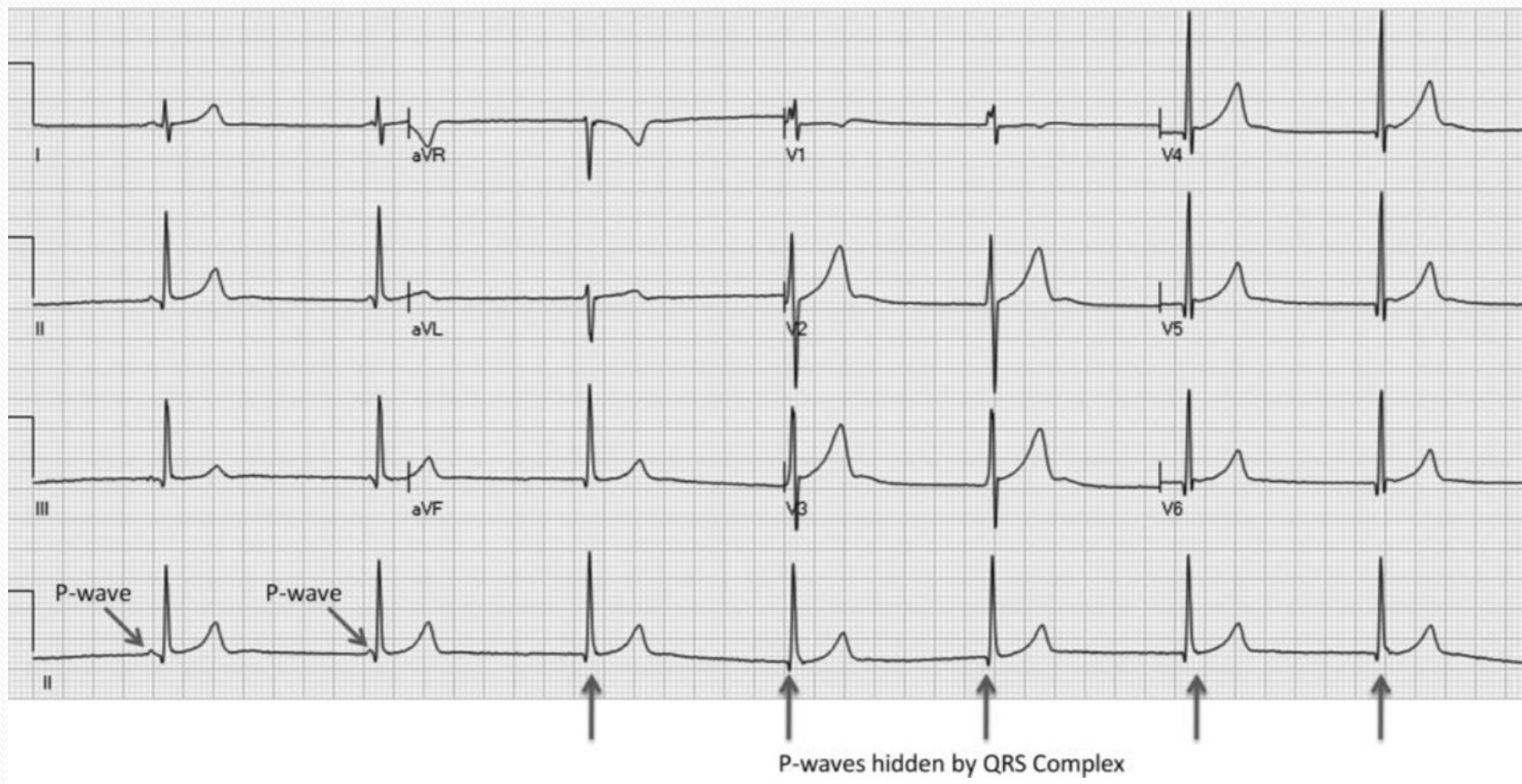


Figure 17 (A) Normal variant repolarisation changes in a black/African athlete characterised by domed ST segment elevation and T wave inversion in V1–V4. (B) Pathological T wave inversion in V1–V3. Note the isoelectric ST segment. The absence of ST segment elevation prior to T wave inversion makes this ECG abnormal. Additional testing is required to rule out arrhythmogenic right ventricular cardiomyopathy. This figure is only reproduced in colour in the online version.







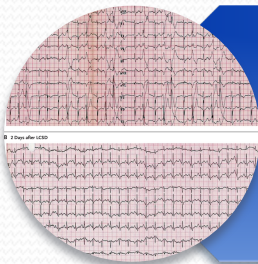
Conclusion



ECG entre 12 et 20 ans tous les 3 ans
ECG entre 20 et 35 ans tous les 5 ans



Canalopathies
CMH
Voie accessoire



ESV doit attirer l'attention
Sauf si isolée, à couplage tardif, monophasique