



L'ECG pour le généraliste Hands-on workshop

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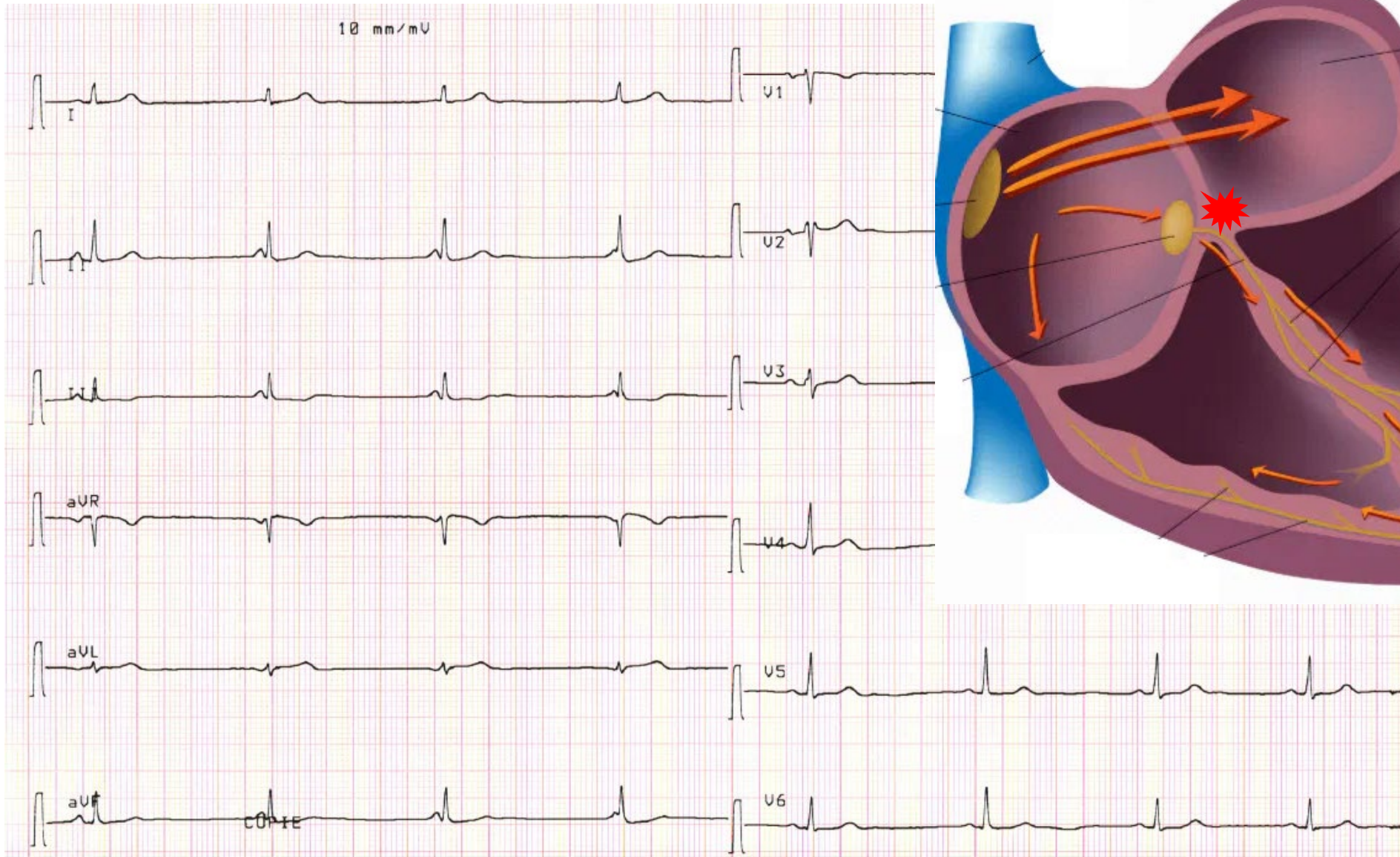
hari.vivekanantham@h-fr.ch

Conflits d'intérêts

Aucuns

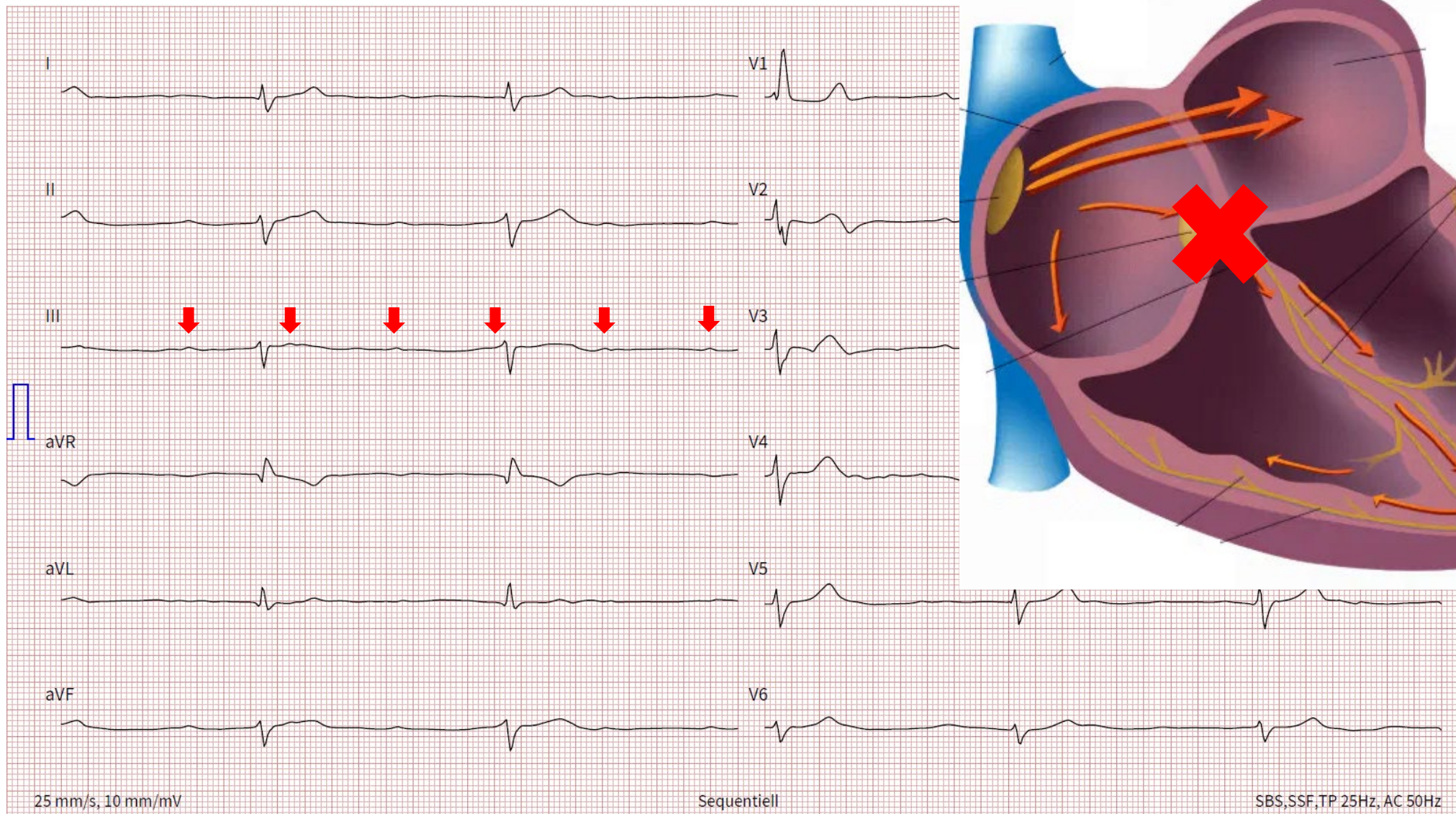
♀ 37 ans, BSH

Dissociation AV isorythmique



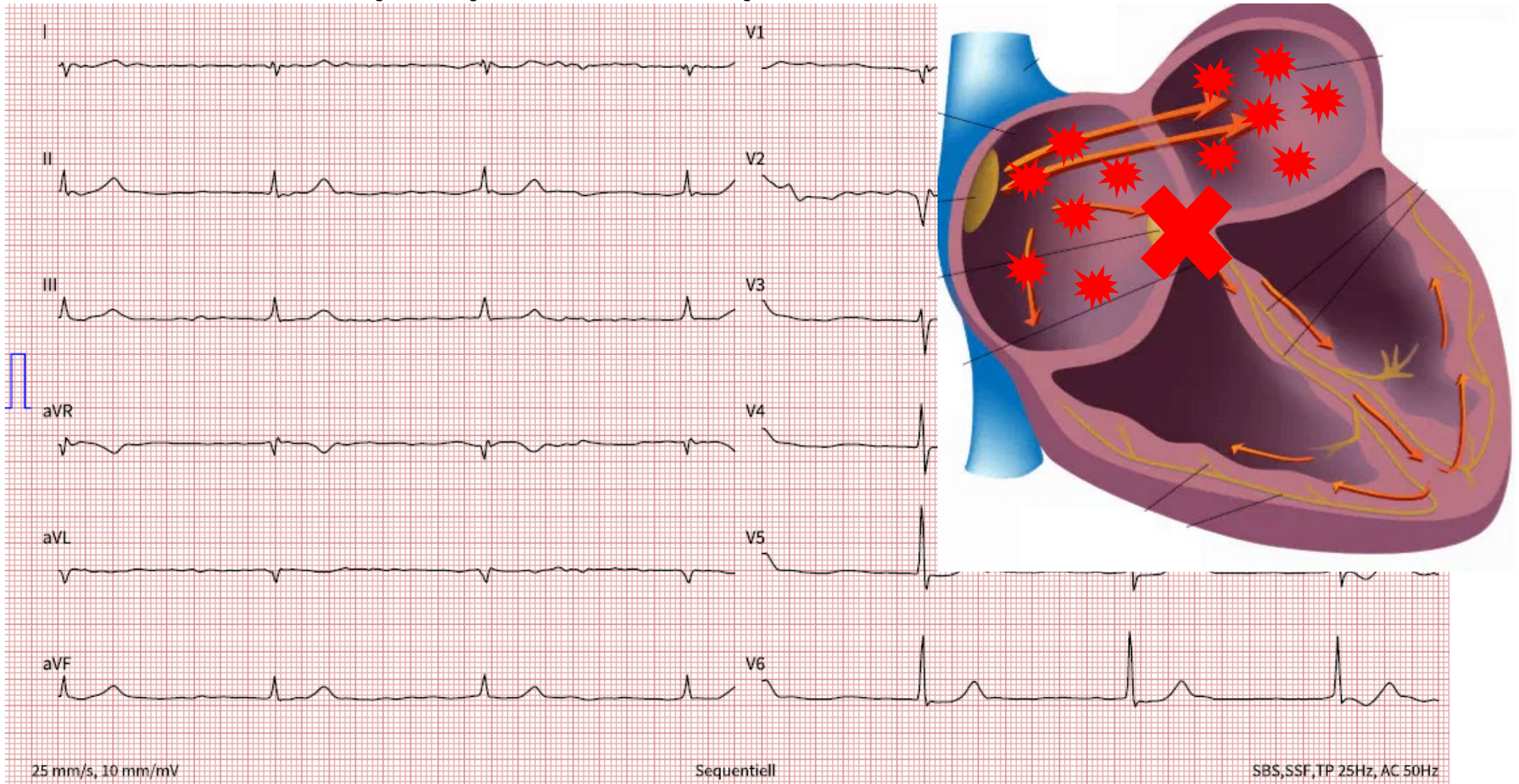
♂ 80 ans, fatigue

BAV complet avec échappement ventriculaire
→ Pacemaker

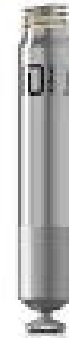
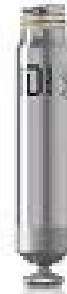


♂ 88 ans, asymptomatique

FA avec QRS réguliers =
BAV complet avec échappement (jonctionnel)
→ Pacemaker

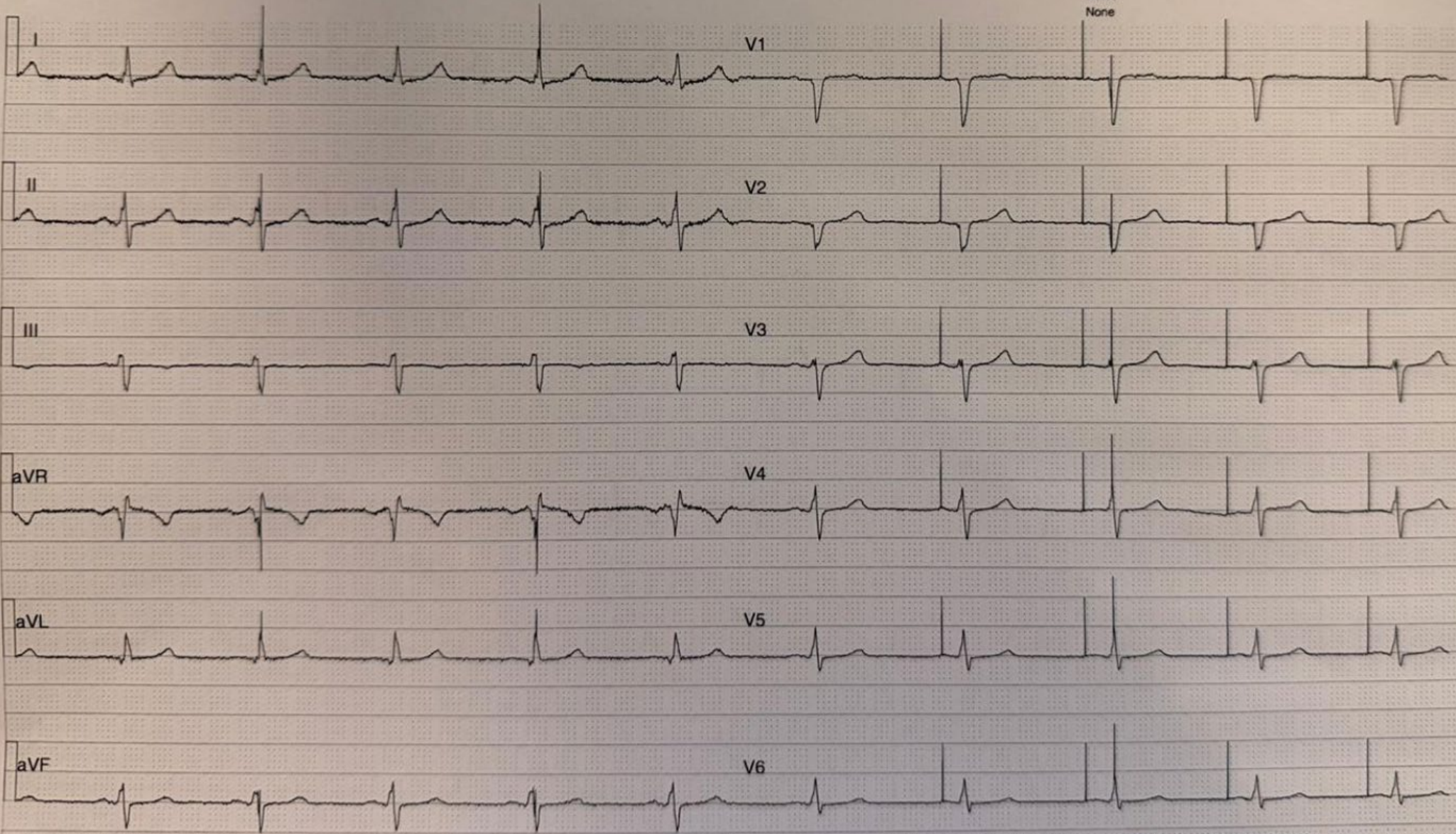


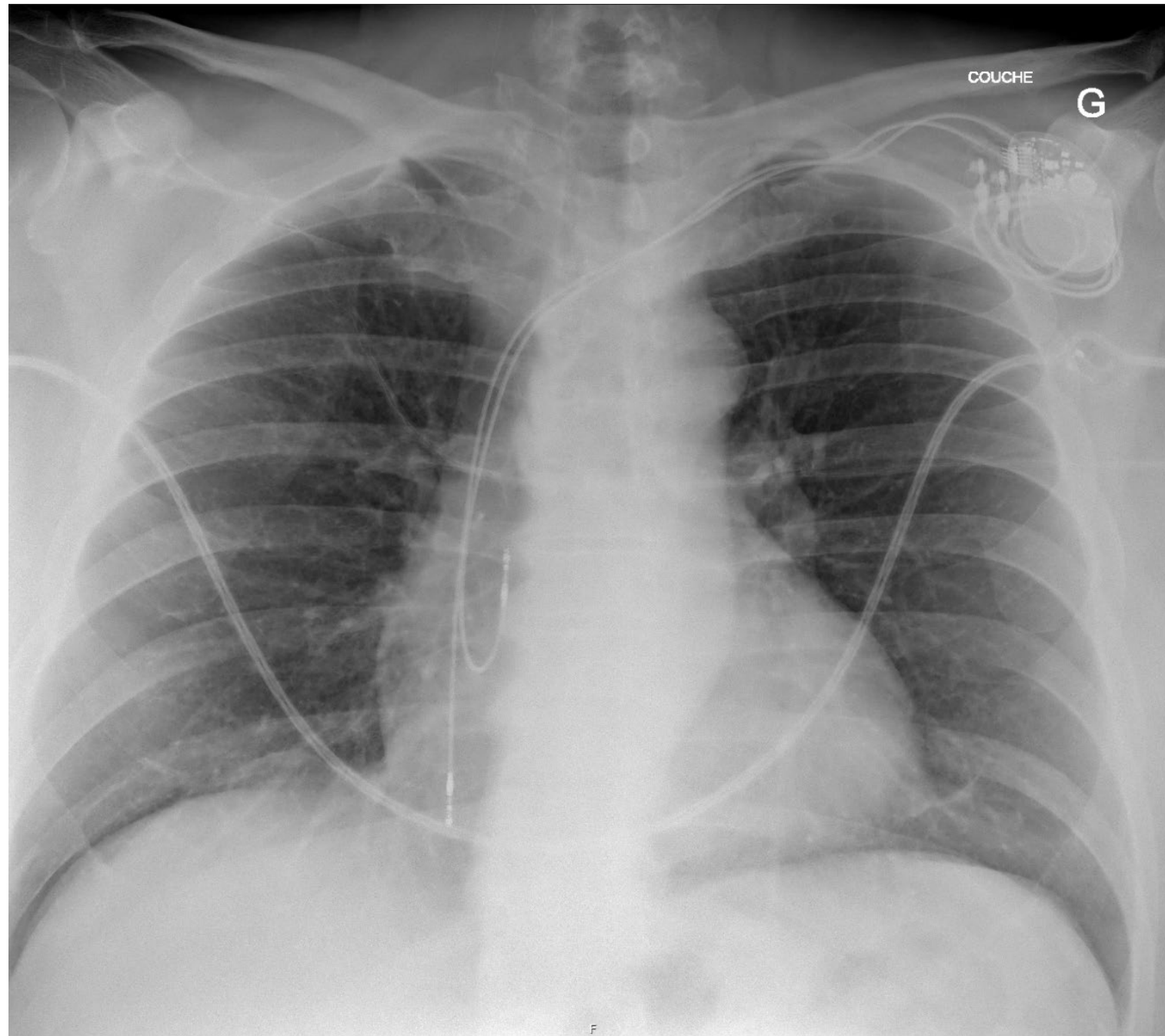
Pacemakers





Notes
None





Effets de l'aimant sur les PM / DCI

Pacemaker

- L'aimant modifie le mode de stimulation en asynchrone (VOO ou DOO), à une FC pré-déterminée par le fabricant (85-100 bpm), tant que l'aimant est en place sur le boîtier

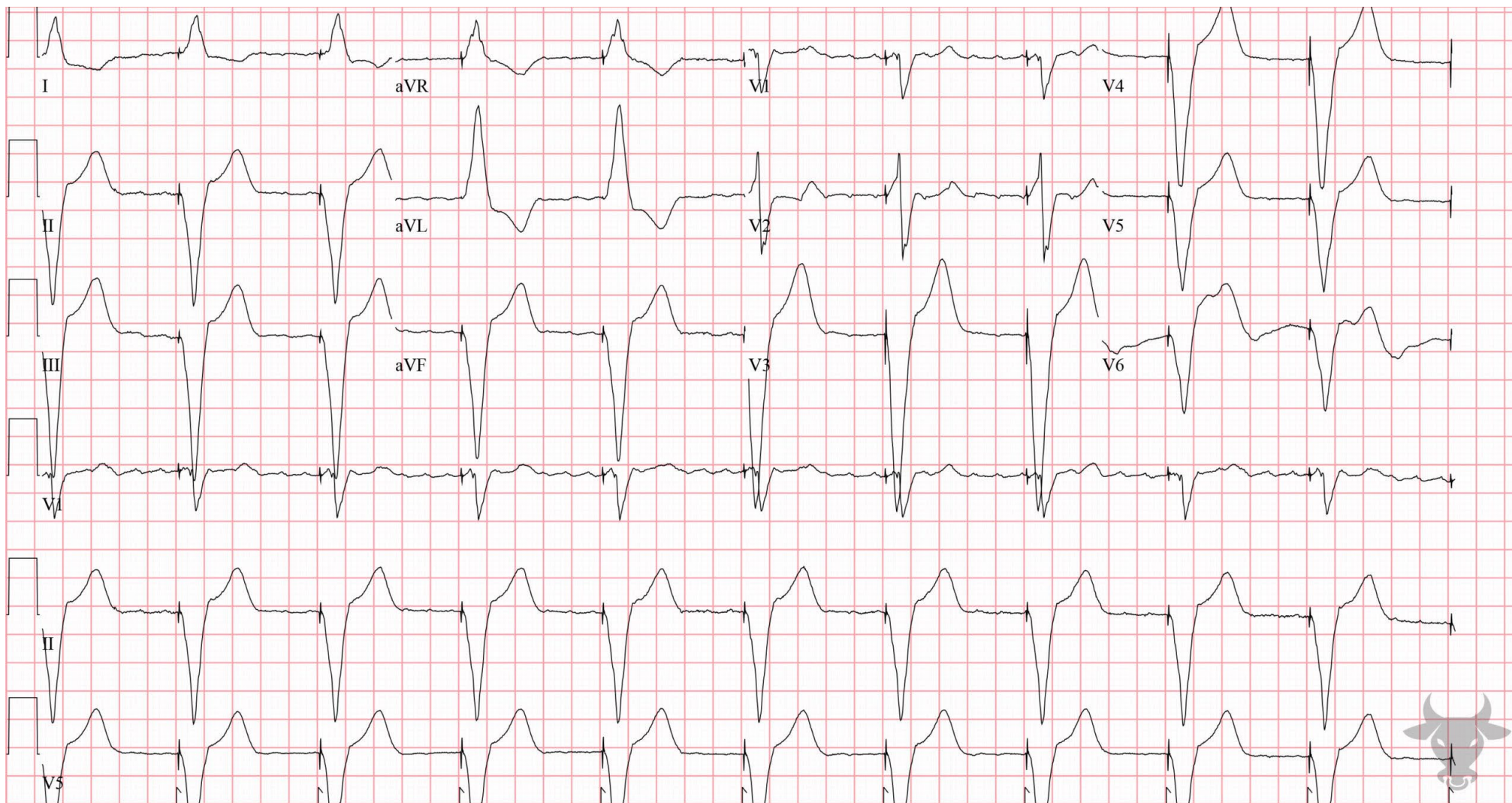


Défibrillateur

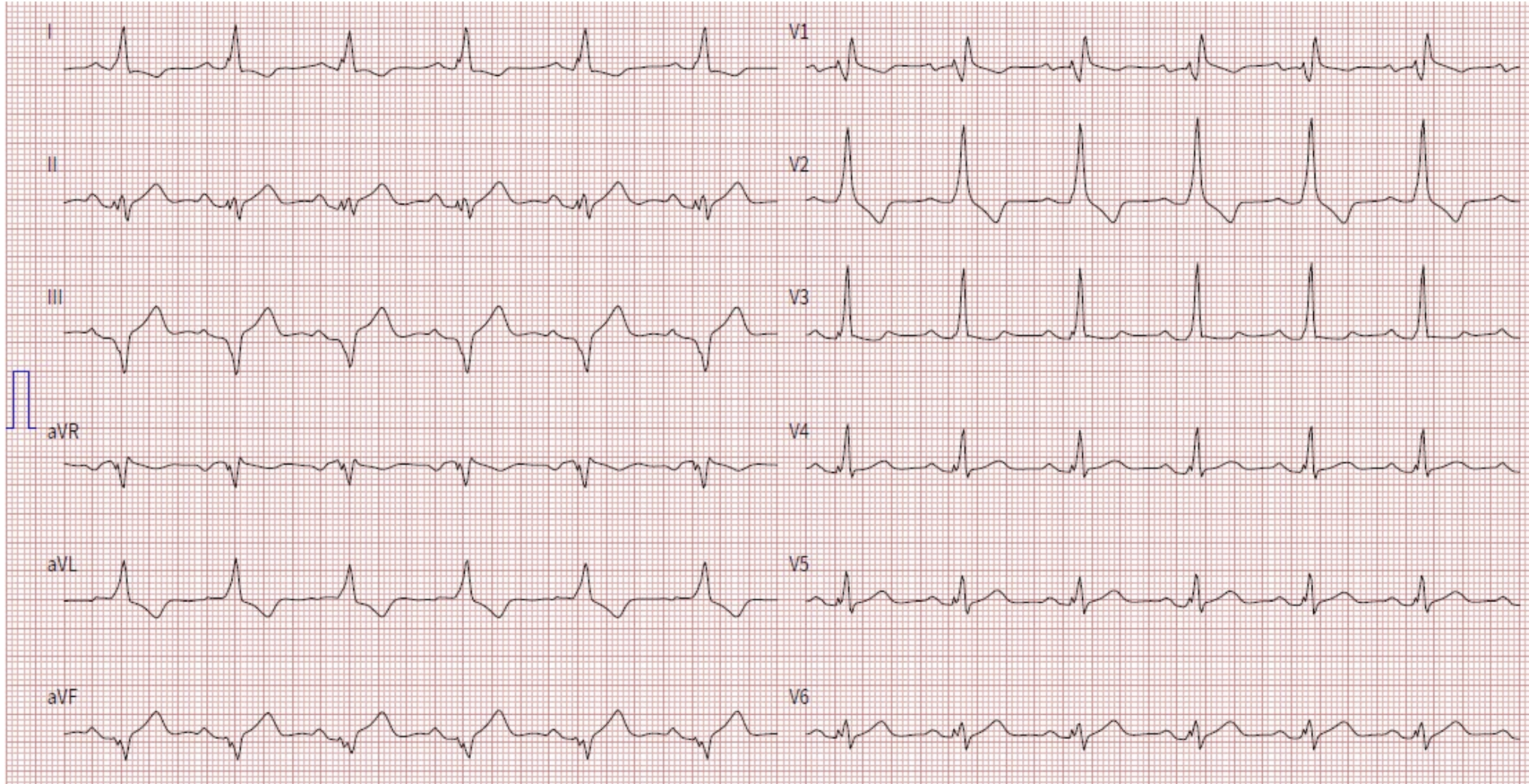
- Désactivation des thérapies de défibrillation mais pas de modification du pacing

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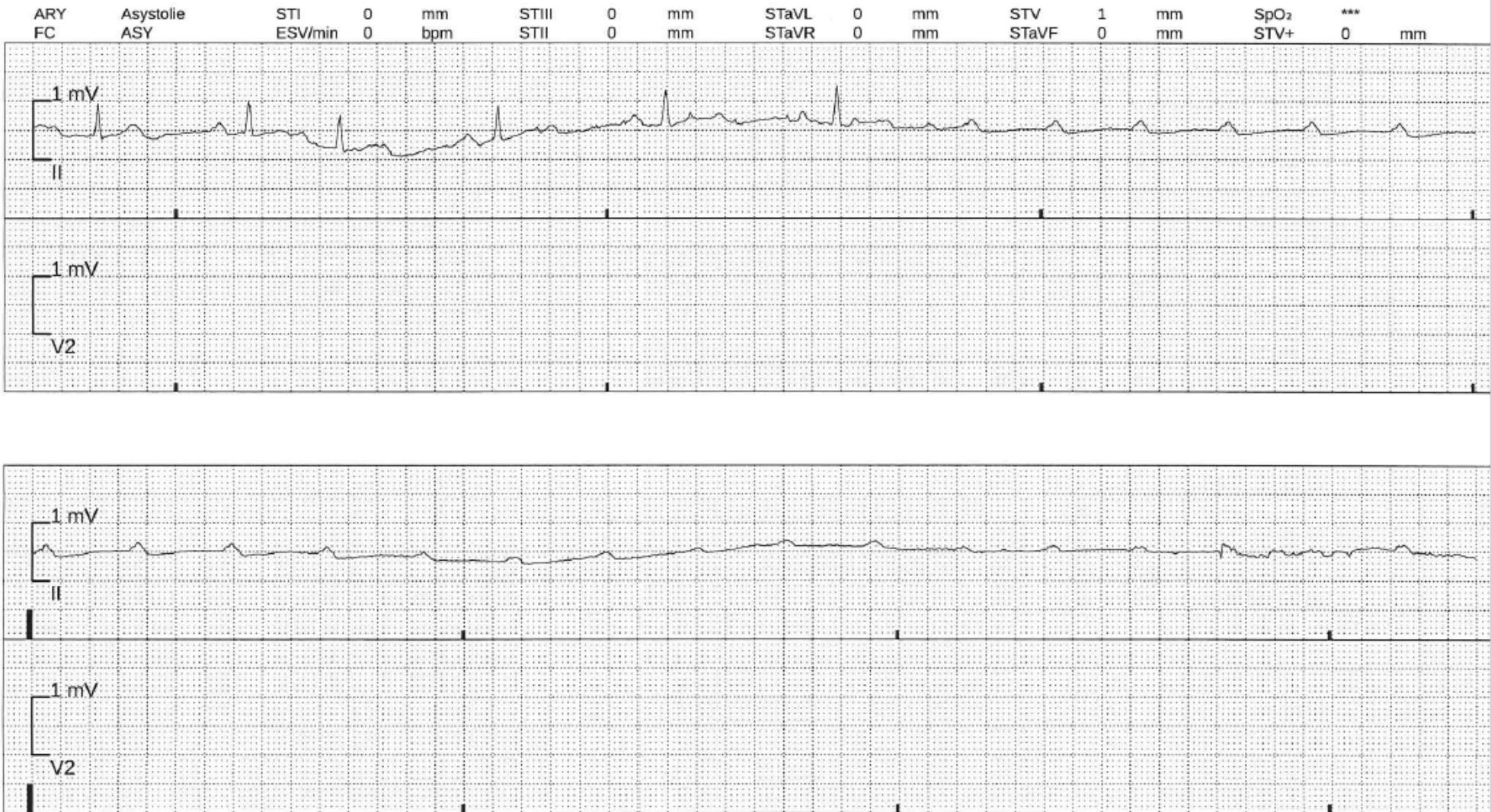
Pacing ventriculaire droit «classique»



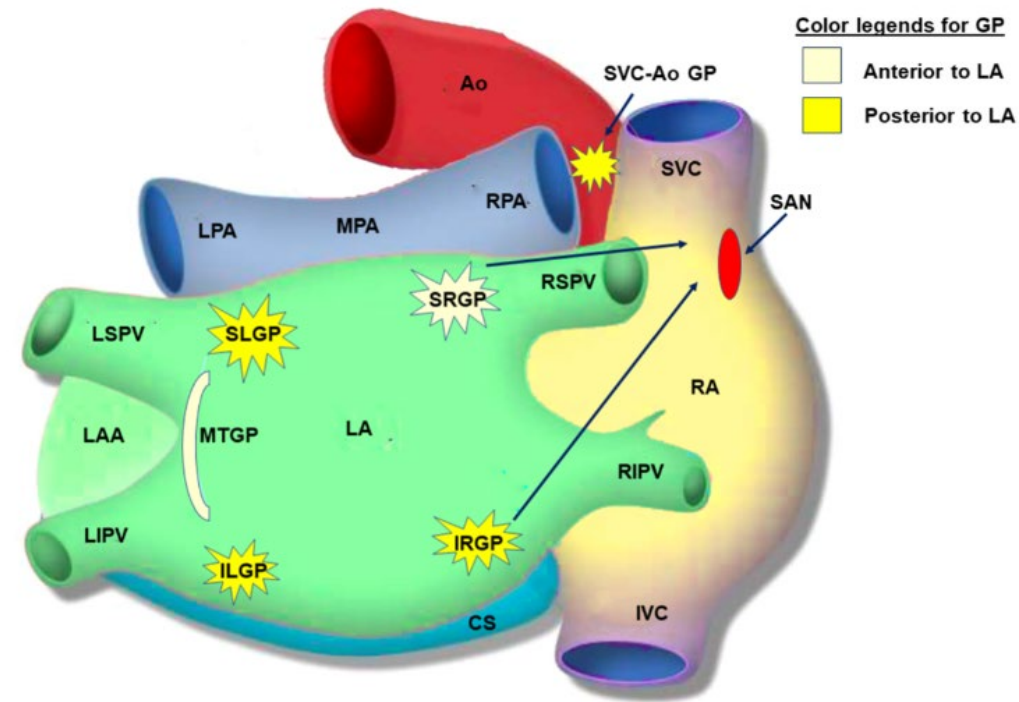
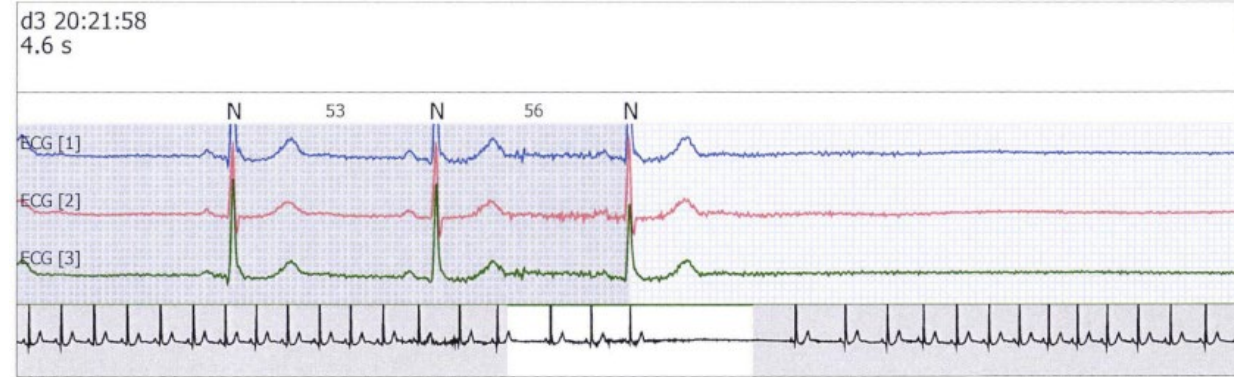
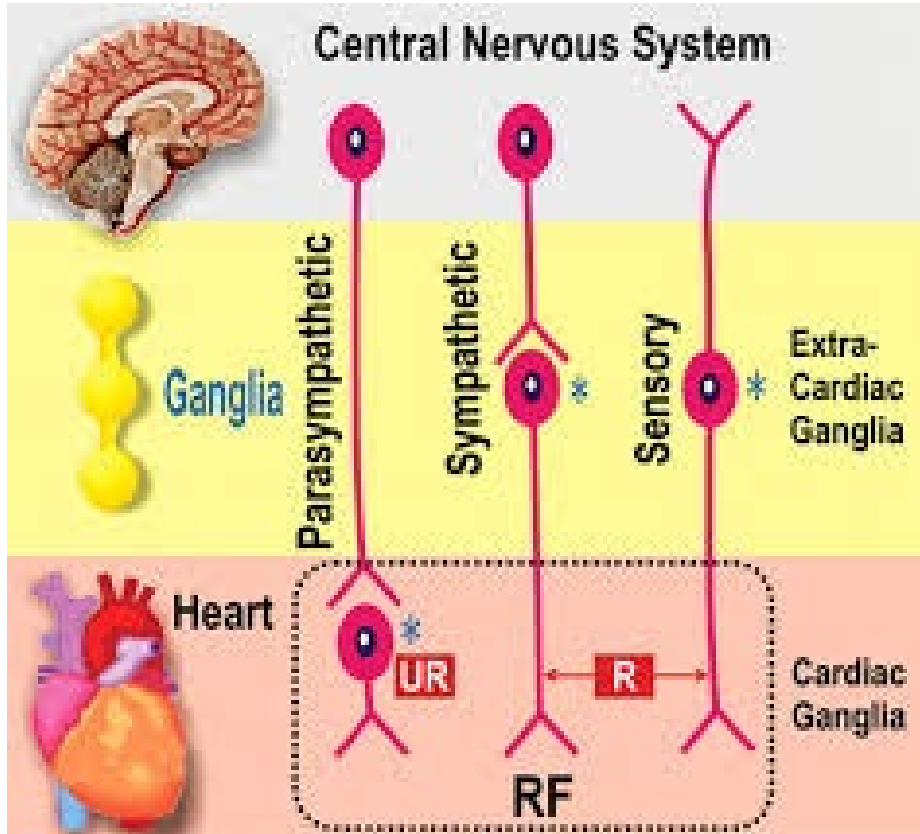
Stimulation «physiologique» : Capture de de branche gauche



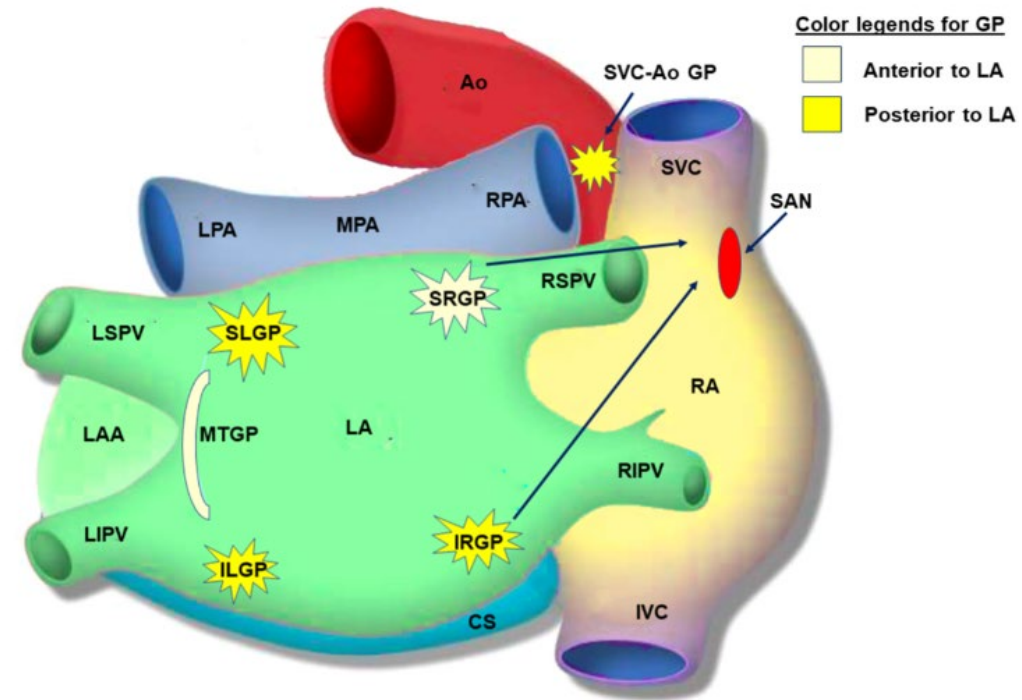
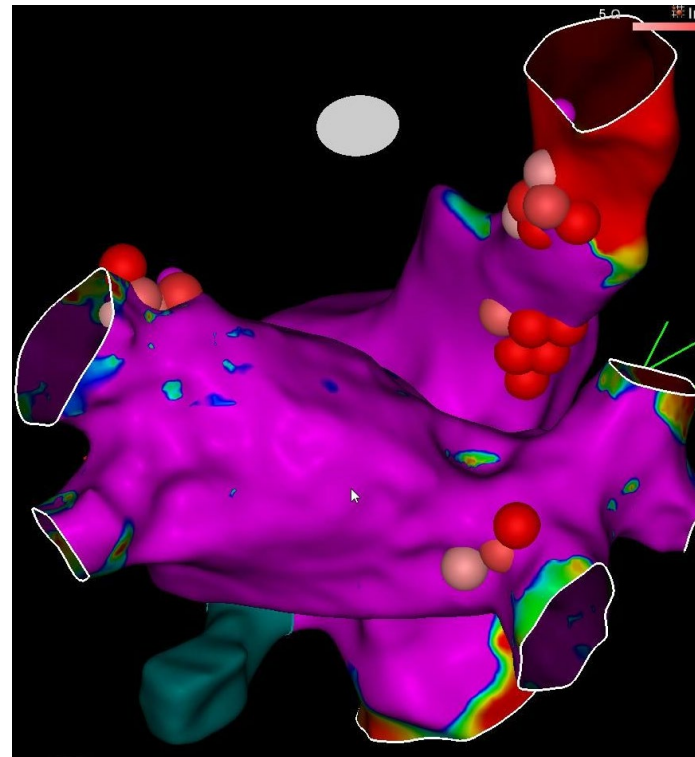
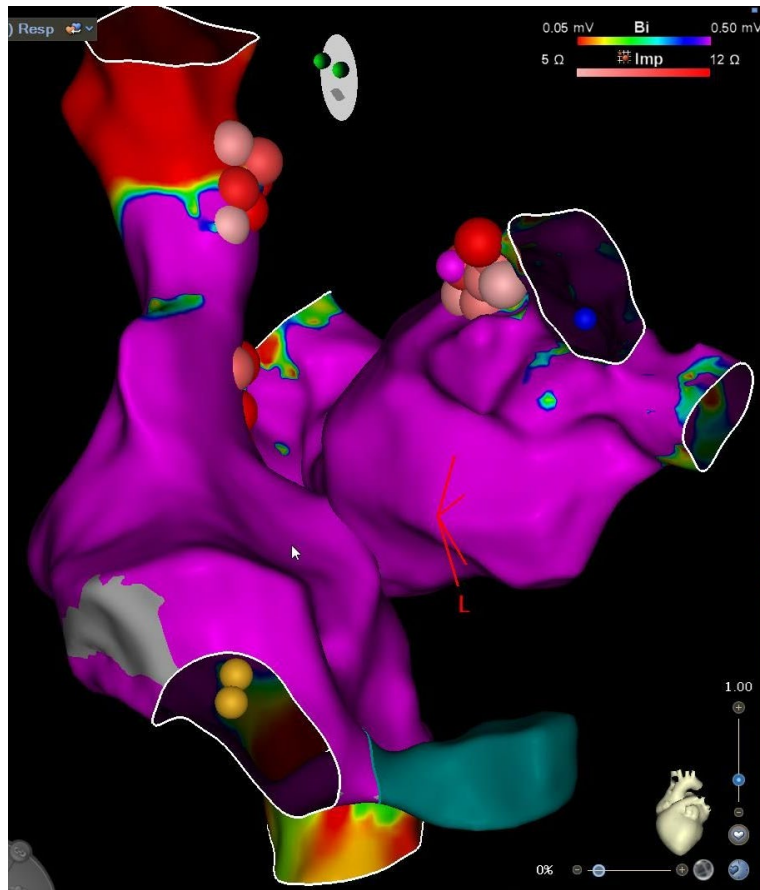
Télémetrie aux soins intensifs



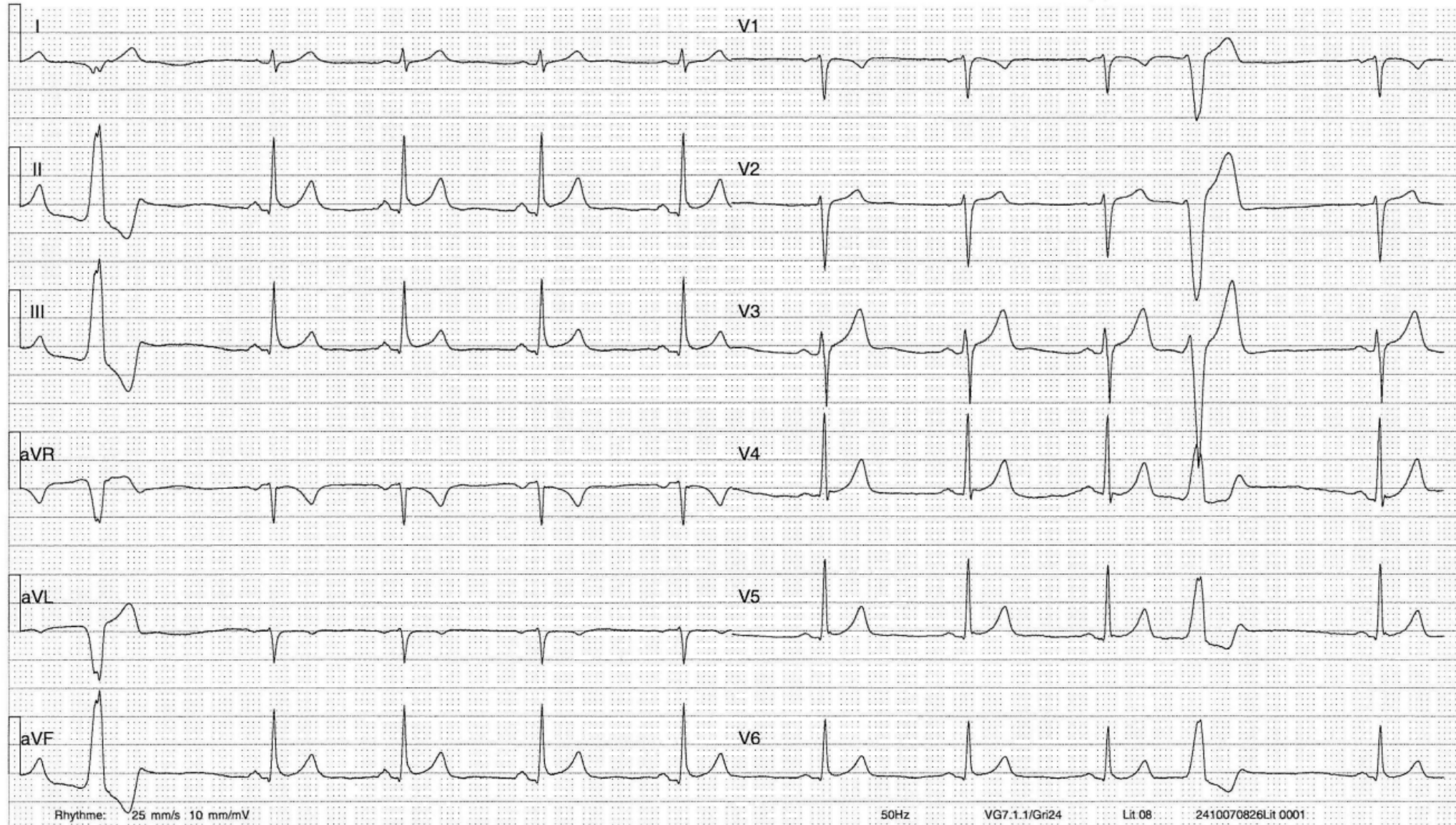
Syncope vaso-vagale → Cardio-neuroablation



Pré-requis: syncope récurrente, imprévisible,
réponse cardio-inhibitrice, < 40 ans ou 40-60 ans



H 34 ans, palpitations



H 71 ans, asymptomatique...

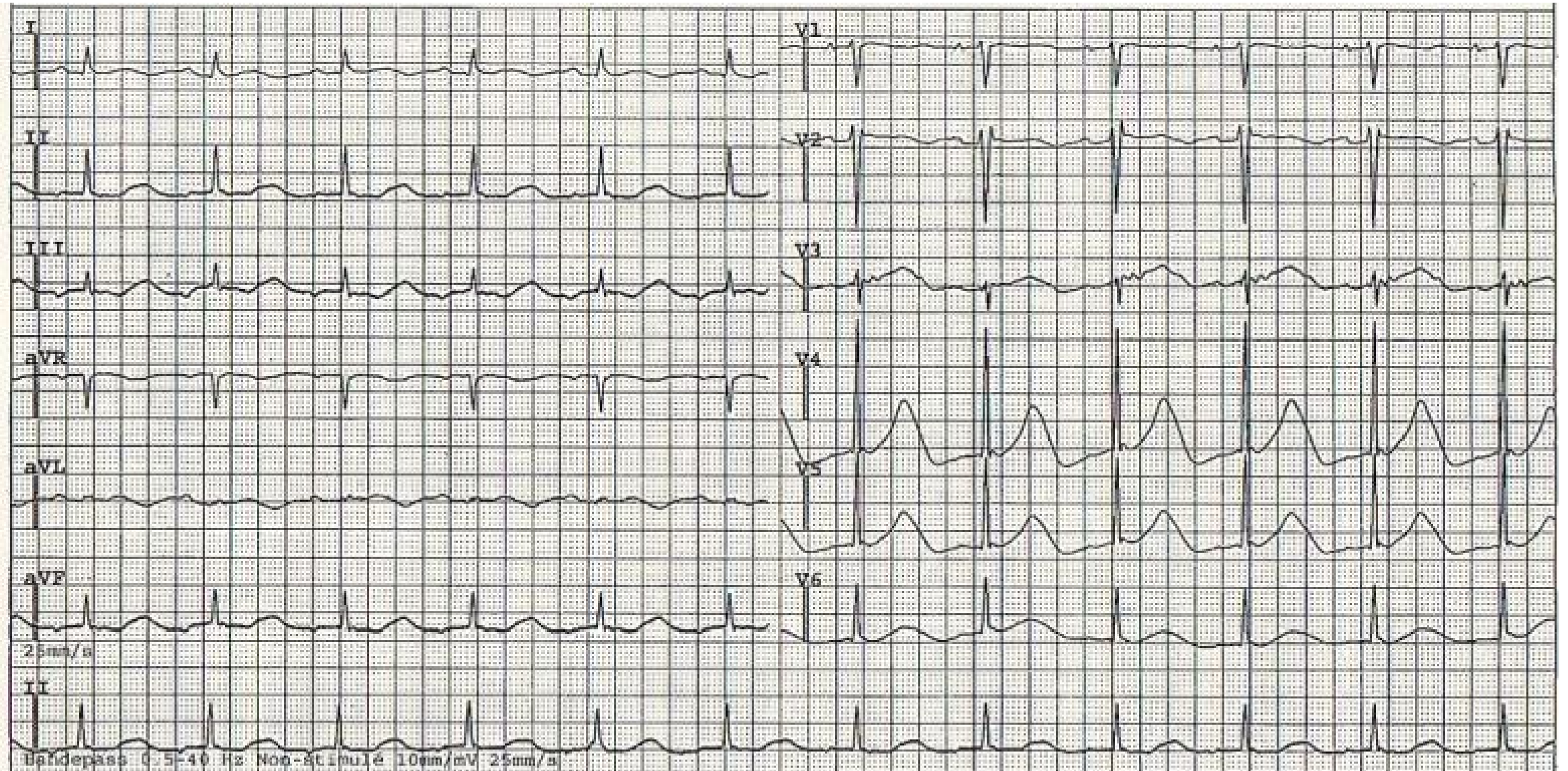


**H 71 ans, asymptomatique... mais FEVG
nouvellement à 30%**



30 ans, asymptomatique

Syndrome du QT long → Bilan cardiaque et génétique

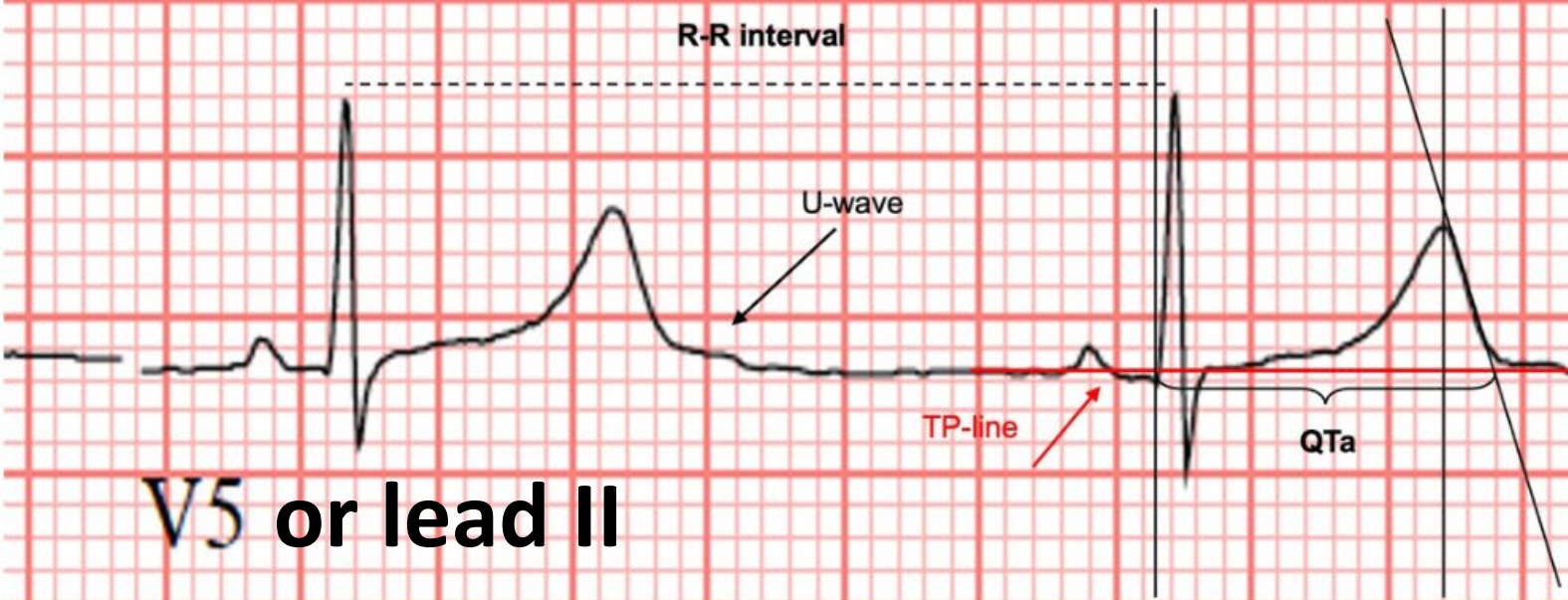


Tips and tricks

1. Make sure rhythm is regular
2. Make sure QRS < 110 ms
3. Don't include U-waves in the QT measurement

	Female (puberty to age 65)	Male (puberty to age 65)
Normal ms	< 460	< 450
Borderline ms	460-479	450-469
Prolonged ms	≥ 480	≥ 470

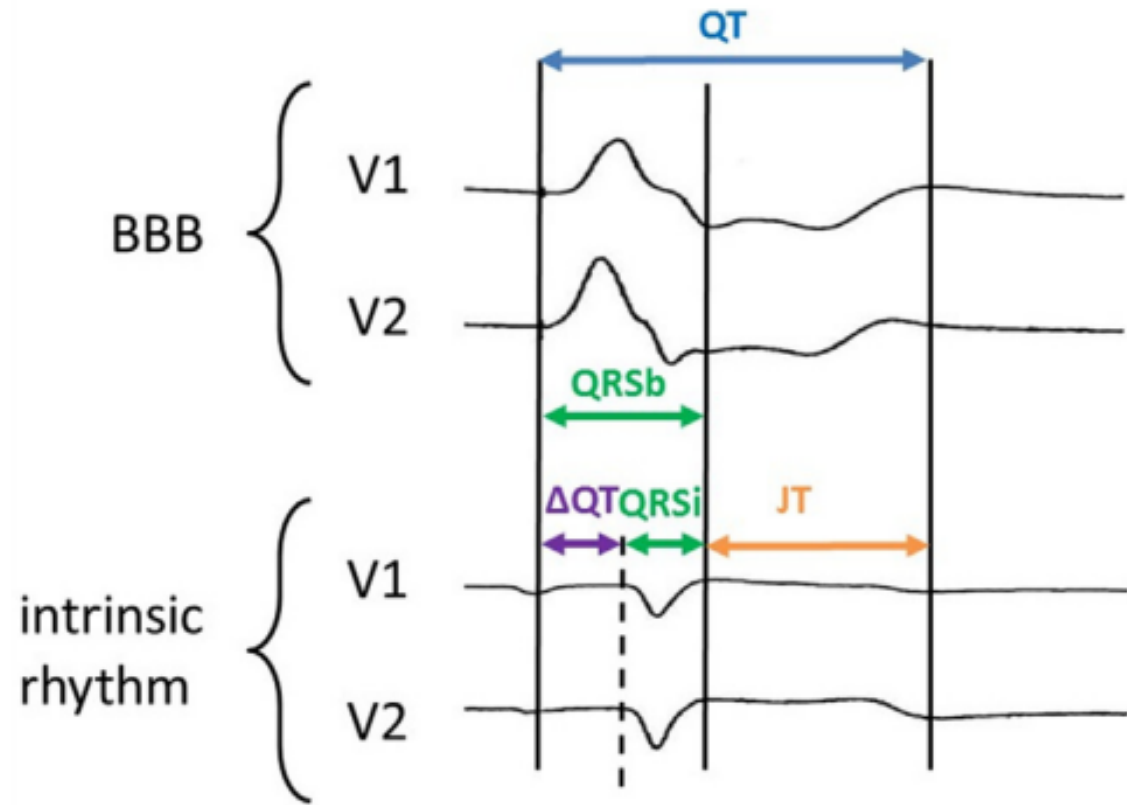
V5 or lead II



QTc measurement step-by-step

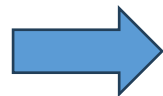
1. Determine the baseline (= TP line)
2. Draw perpendicular lines crossing the TP line at the Q-wave and the peak of the T-wave
3. Draw a tangent at the maximum slope of the T-wave crossing the TP-line and the peak of the T-wave → QTa
4. Enter QTa and the preceding R-R interval into **Bazett's** formula → QTc

Correction du QT en cas de QRS large



**Soustraire la moitié
du QRS du QT mesuré**

$$\text{corrected QT in BBB} = \frac{\text{QRSb}}{2} + \text{JT}$$



SIMPLIFIED FORMULA FOR BBB: $QT_m = QT_{\text{BBB}} - 50\% * QRS_{\text{BBB}}$

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ADECA QTdrugs Surveillance Metrics (last updated 04/04/2025)

Drugs under active surveillance for evidence of QT/TdP	893
Drugs with new evidence of QT/TdP reviewed last month	35
Drugs with new and revised labels reviewed last month	125
QT/TdP-related new scientific publications reviewed last month	106

Table 4. Intra-class differences in risk of QTc prolongation

Drug class	Higher risk	Lower risk	Minimal risk
SSRI antidepressants	Citalopram Escitalopram	Fluoxetine Fluvoxamine	Sertraline Paroxetine
Antipsychotic drugs	Amisulpride Asenapine Iloperidone Sertindole Thioridazine Ziprasidone	Haloperidol Risperidone Quetiapine Olanzapine	Aripiprazole Clozapine Droperidol Lurasidone
Macrolide antibiotics	Erythromycin	Clarithromycin	Azithromycin
Fluoroquinolone antibiotics	Moxifloxacin	Levofloxacin Ciprofloxacin	
5-HT ₃ antagonist antiemetics	Ondansetron	Granisetron Palonosetron	

5-HT₃, 5-hydroxytryptamine 3 receptor antagonist; QTc, QT interval corrected for heart rate; SSRI, selective serotonin reuptake inhibitor.

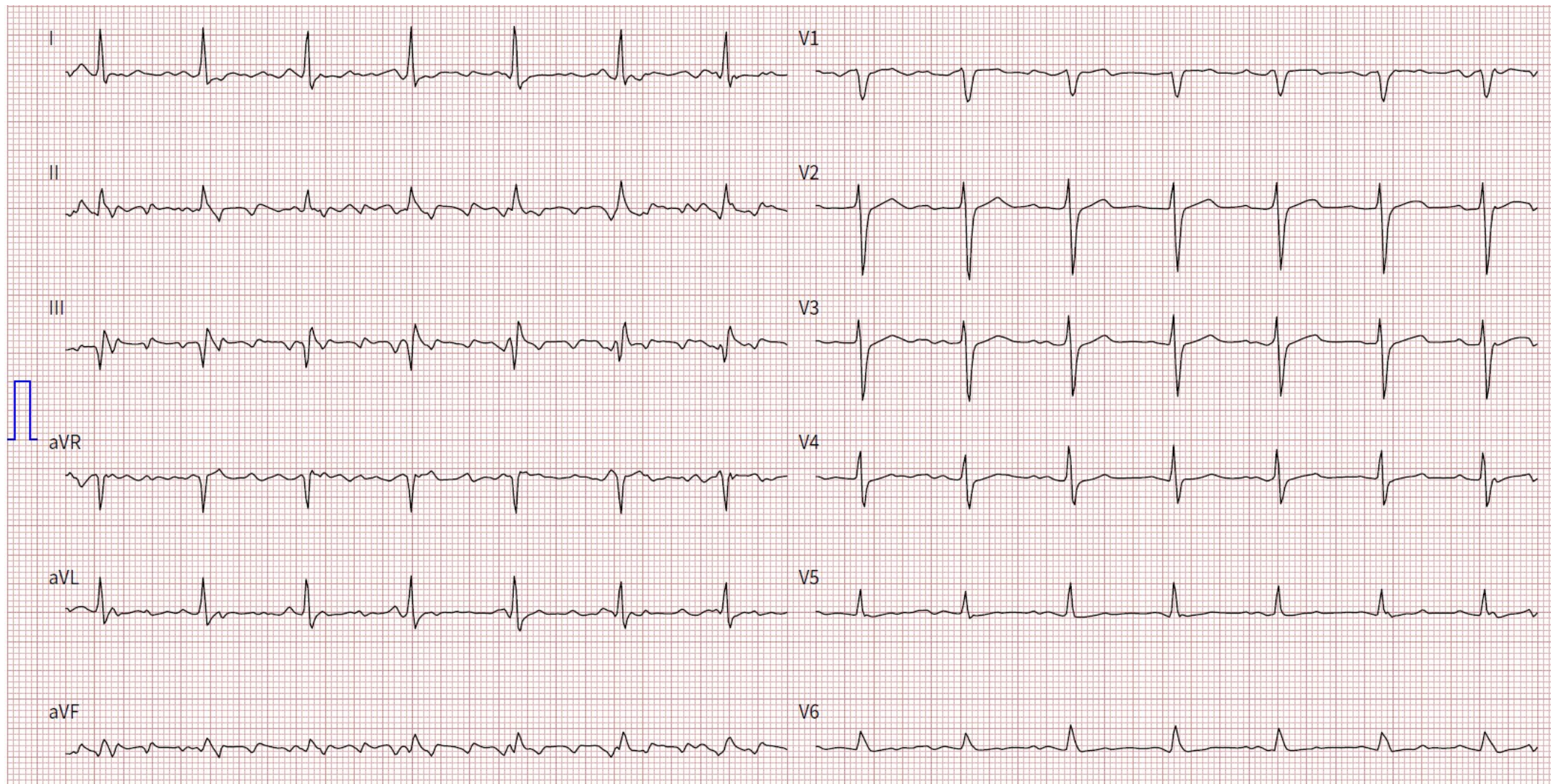
Table 5. Drug interactions that increase the risk of acquired long QT syndrome and torsades de pointes

Mechanism	Examples
Pharmacodynamic	
Concomitant use of 2 drugs that independently prolong QTc	i) Methadone with ondansetron ii) Sotalol with moxifloxacin iii) Fluoxetine with clarithromycin
Concomitant use of drugs that prolong QTc by different mechanisms	i) Ziprasidone with a thiazide or loop diuretic (ziprasidone prolongs QTc; diuretics might promote K ⁺ or Mg ²⁺ wasting) ii) Itraconazole with cisplatin (itraconazole prolongs QTc; cisplatin might promote Ca ²⁺ or K ⁺ wasting)
Pharmacokinetic	
Concentration of a QTc-prolonging drug increased by another drug	i) Flecainide metabolism (CYP2D6) inhibited by bupropion, paroxetine or terbinafine ii) Pimozide metabolism (CYP3A4) inhibited by verapamil
Mixed	
More than 1 mechanism	i) Quetiapine with itraconazole (both drugs can prolong QTc; itraconazole inhibits quetiapine metabolism via CYP3A4) ii) Sotalol with a proton pump inhibitor (sotalol directly prolongs QTc; PPIs can lead to hypomagnesemia, especially in combination with loop diuretics)

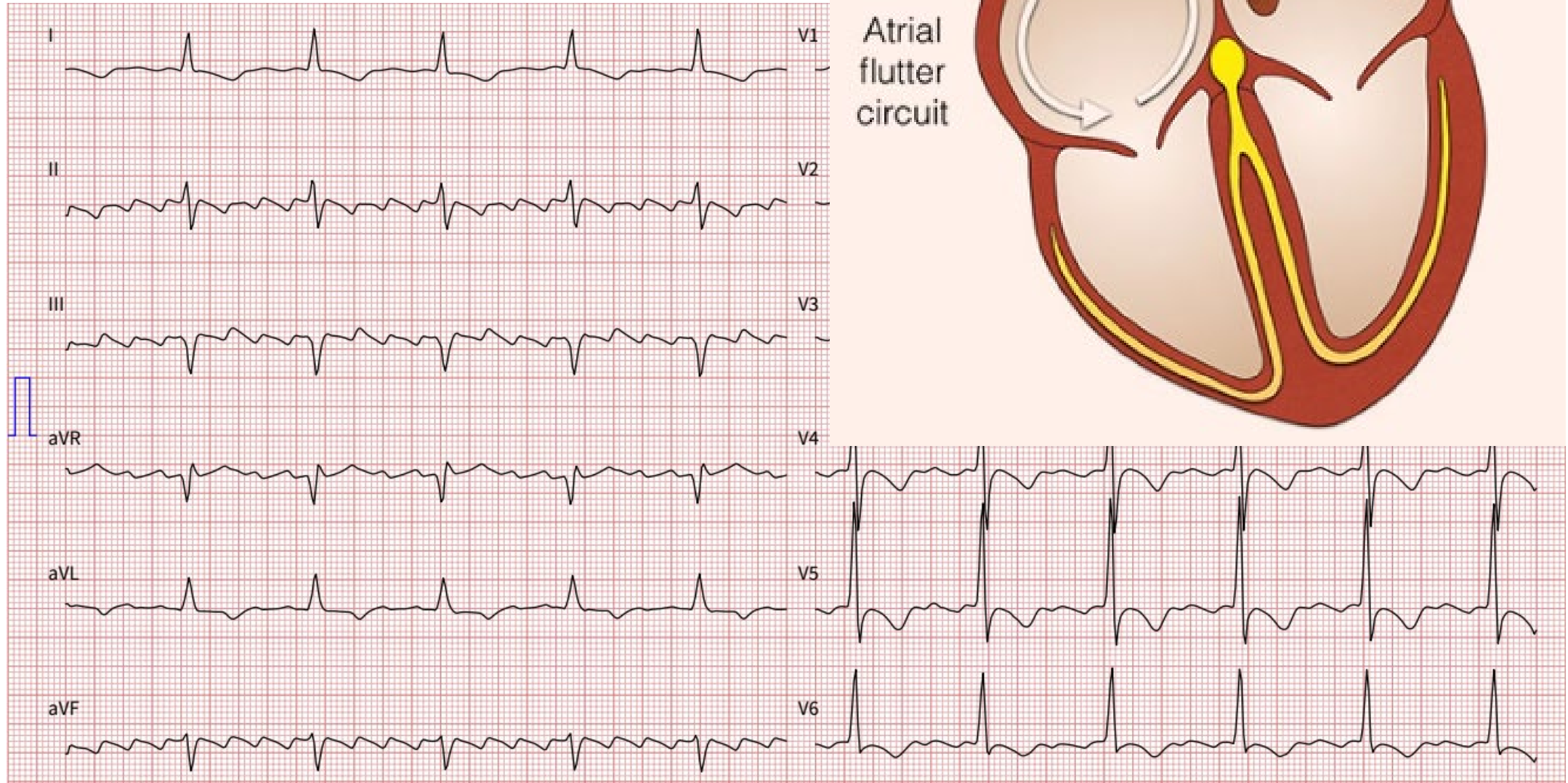
CYP, cytochrome P450; PPI, proton pump inhibitor; QTc, QT interval corrected for heart rate.

F 75 ans, palpitations

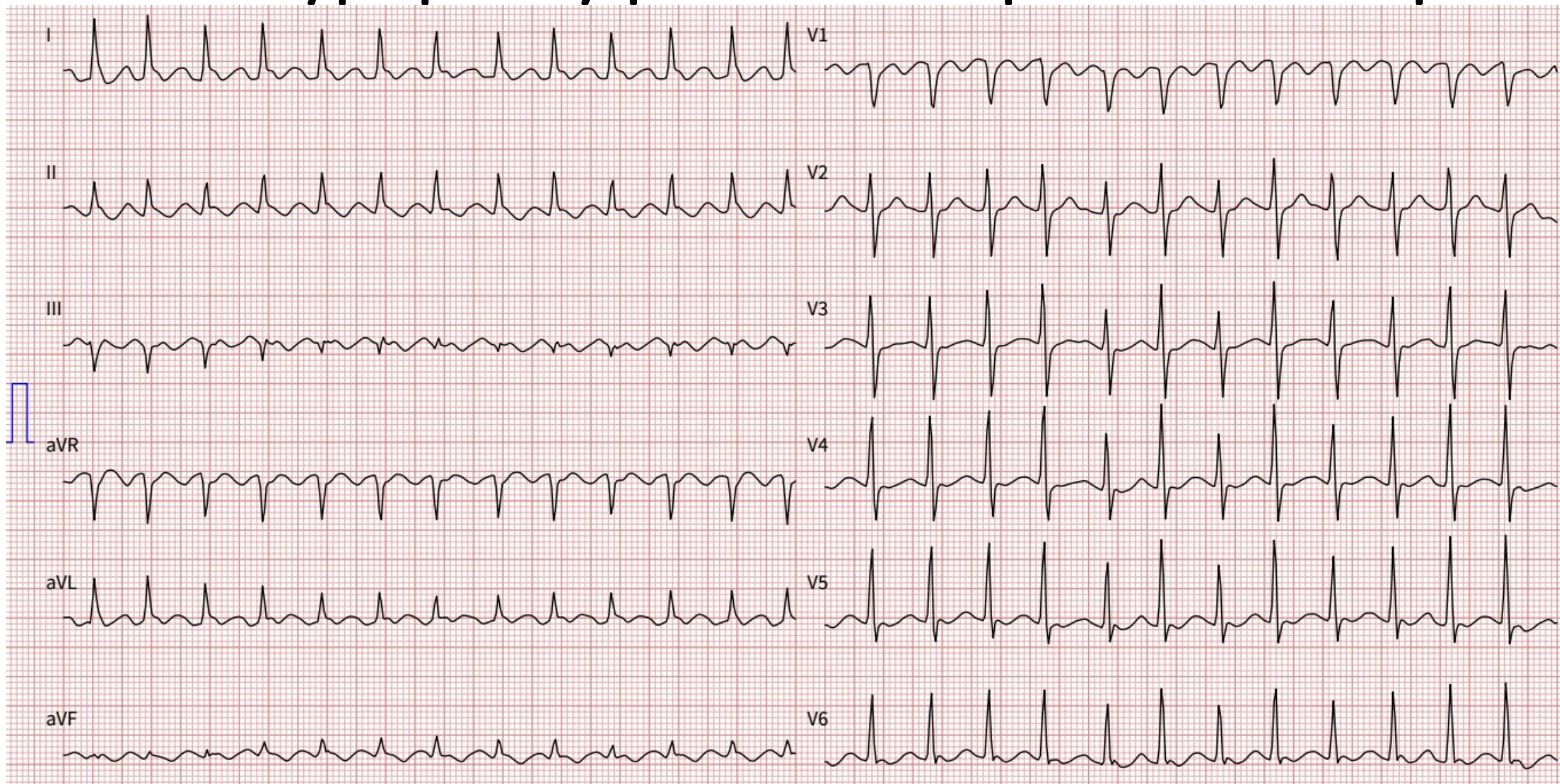
Artefacts sur tremblements
(maladie de Parkinson)



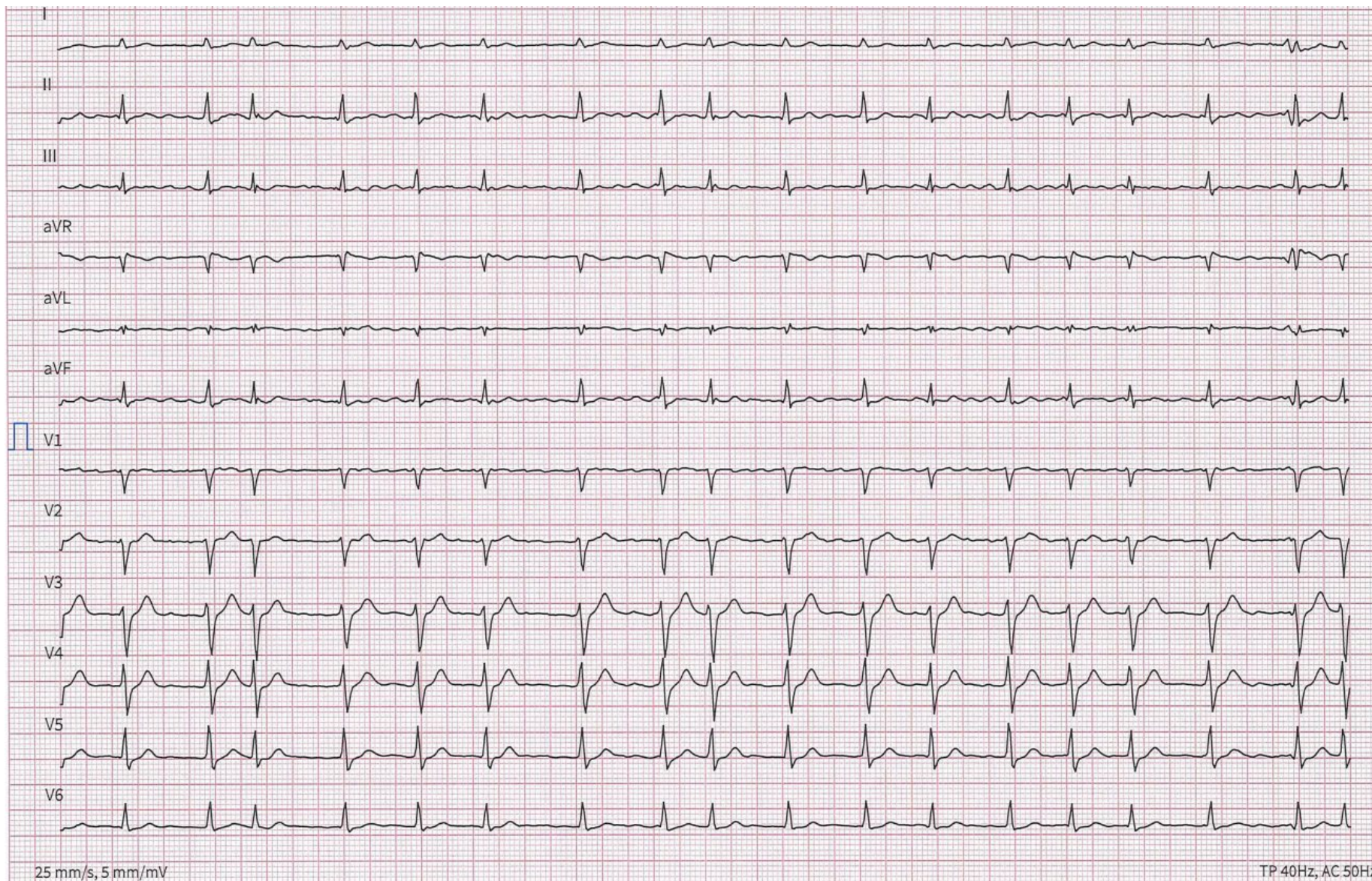
Flutter typique



Flutter typique - y penser lorsque FC ~ 150 bpm



Fibrillation auriculaire



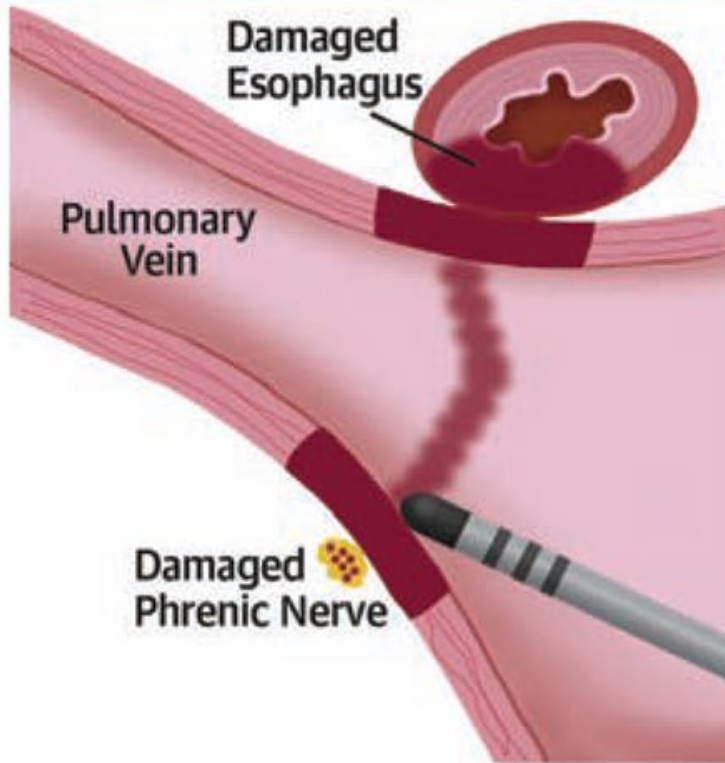
Que faire au cabinet ?



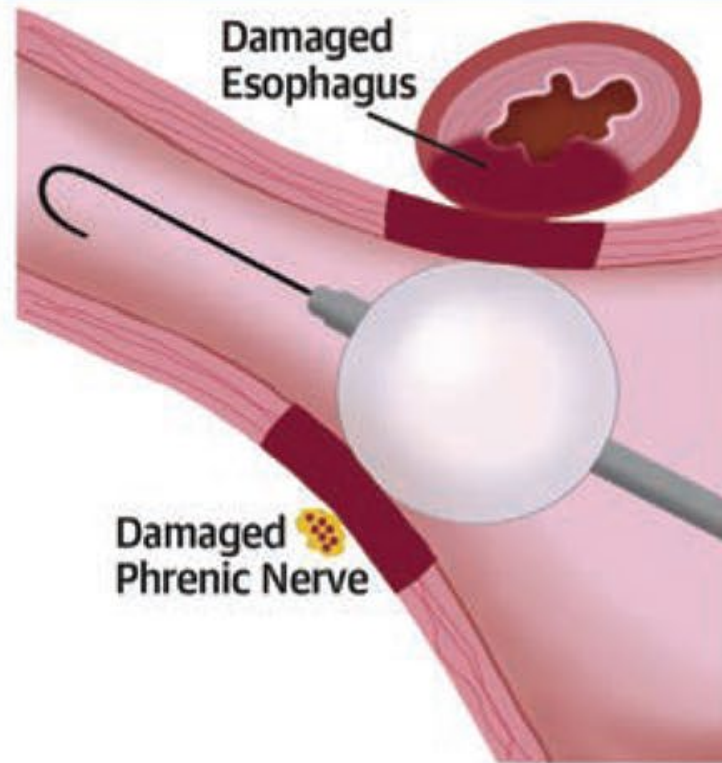
- Privilégier contrôle du rythme (Amiodarone) - sauf cas particuliers
- ACO à dose adaptée indépendamment du CHA2DS2-VA (anticipation pour éventuelle cardioversion/ablation) + Amiodarone en principe après 4 semaines d'ACO (CAVE QTc)
- Bilan cardio : ETT et décision rhythm vs rate-control, avec éventuel changement de l'anti-arythmique

Technologies disponibles pour l'IVP à l'HFR

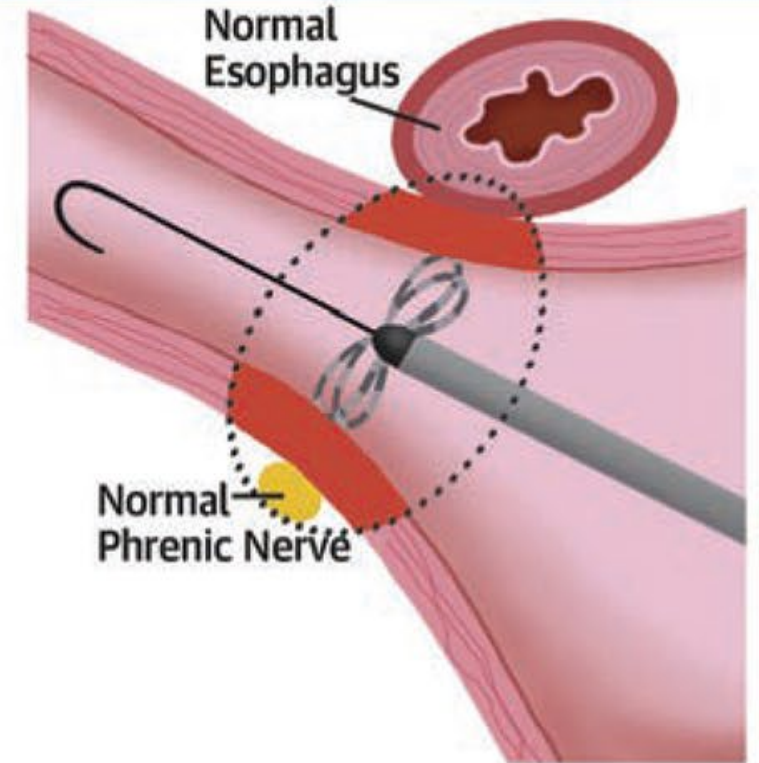
Radiofrequency Ablation



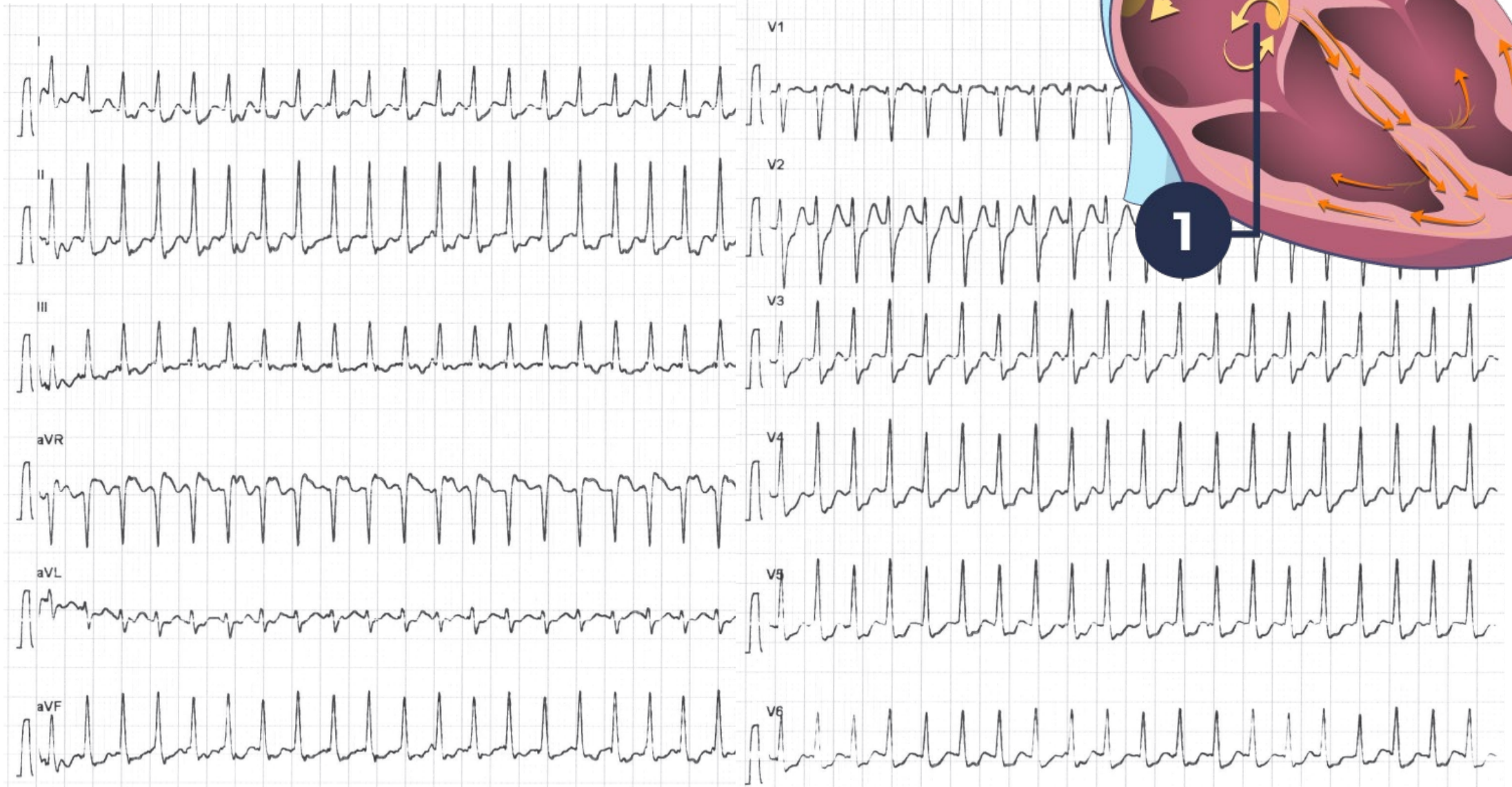
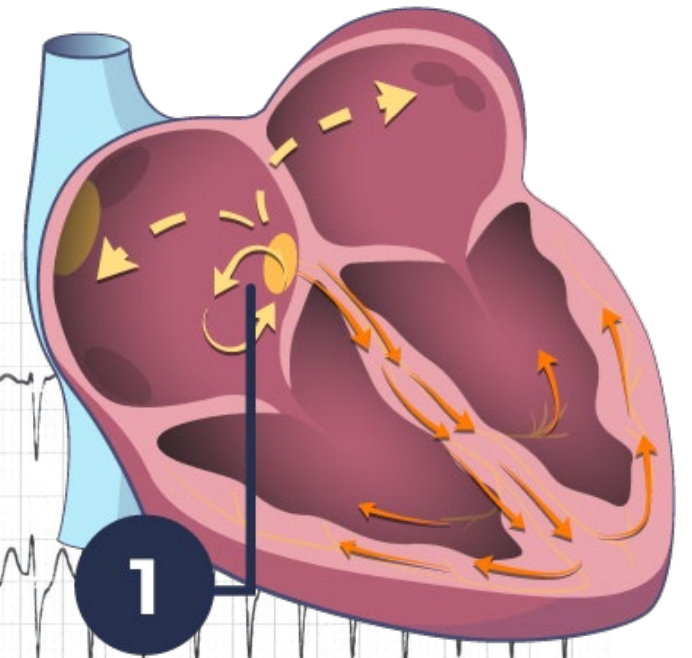
Cryoballoon Ablation



Pulsed Field Ablation



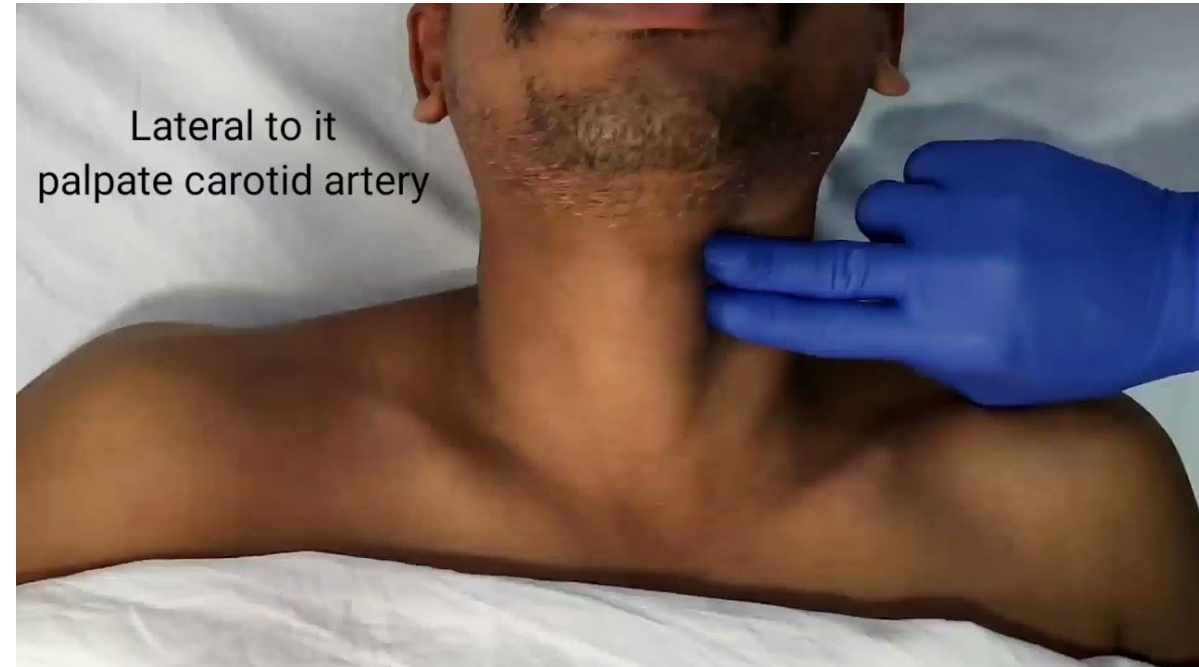
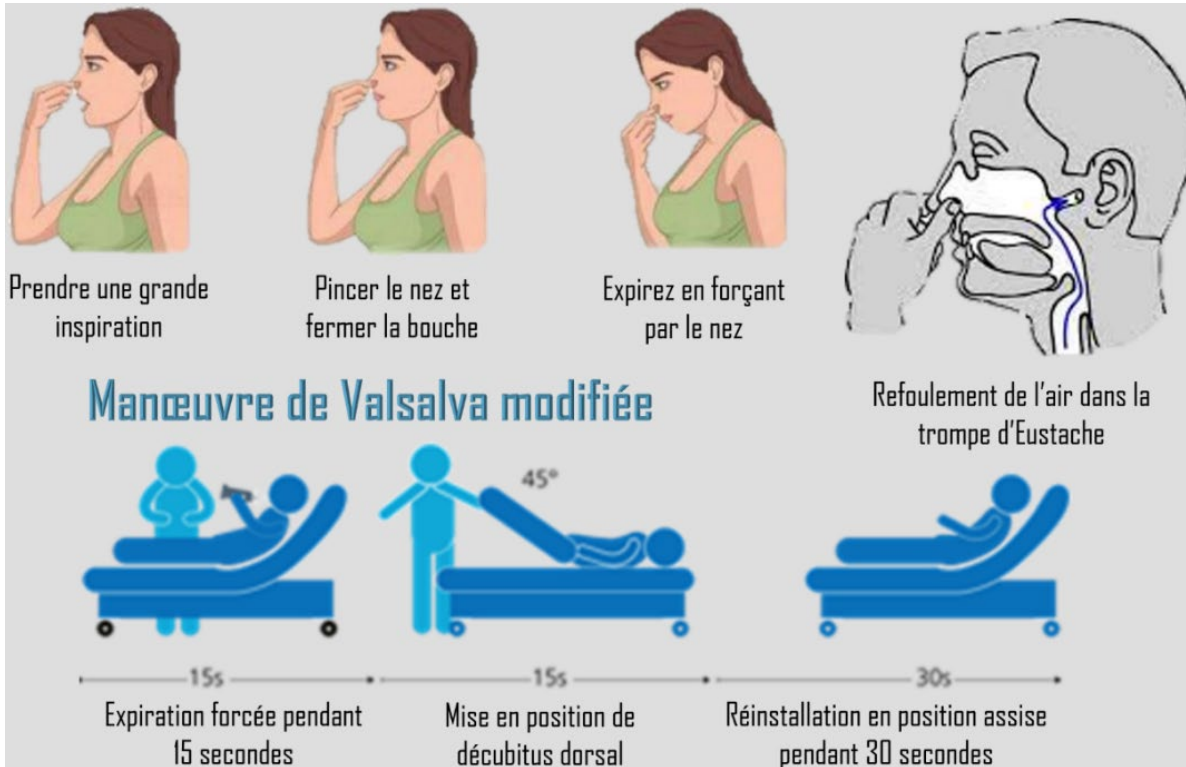
♀ 25 ans, oppression thoracique



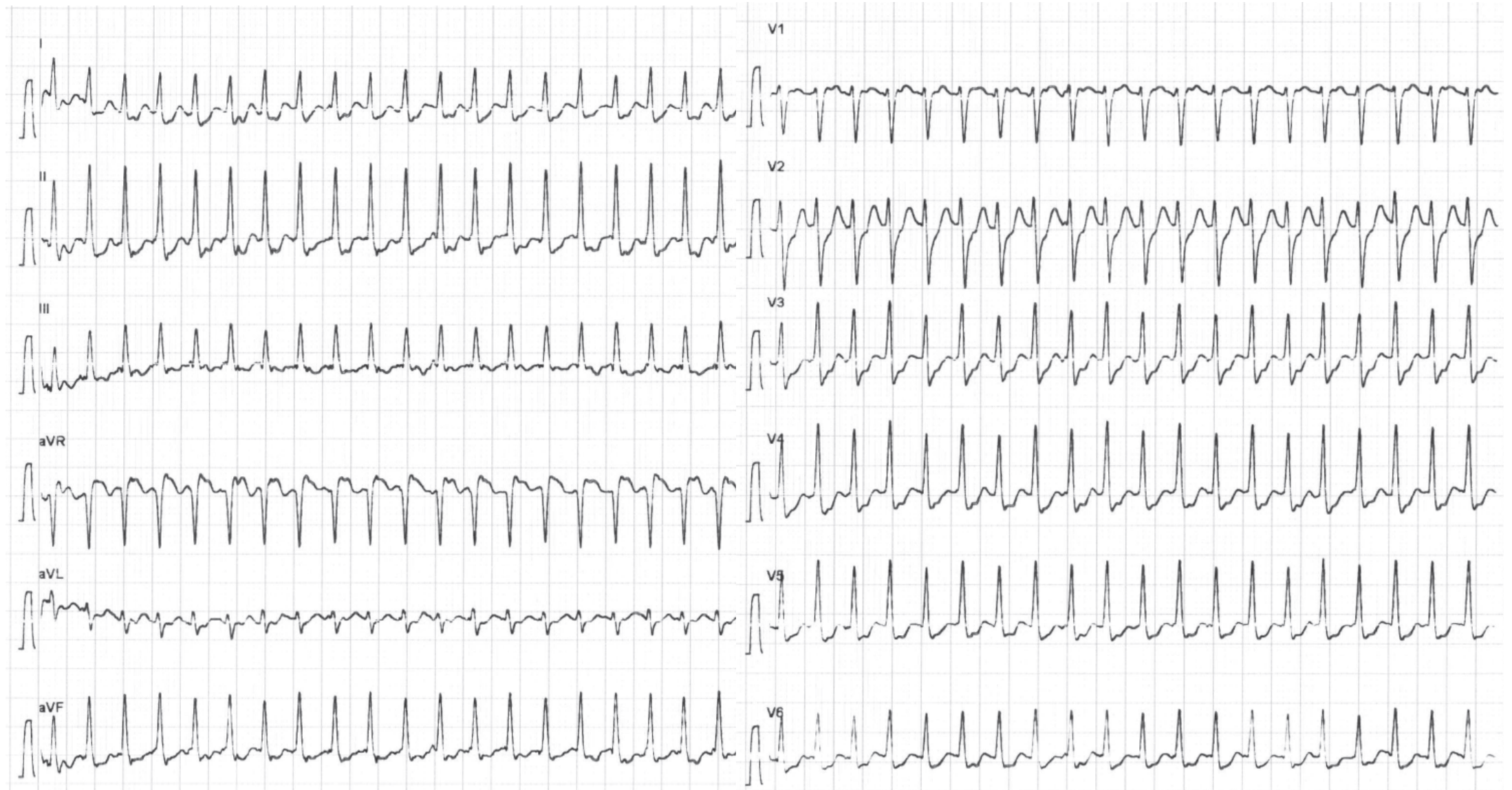
Que faire au cabinet ?



Manœuvres de Valsalva (modifié) / massage du sinus carotidien G



♀ 25 ans, oppression thoracique



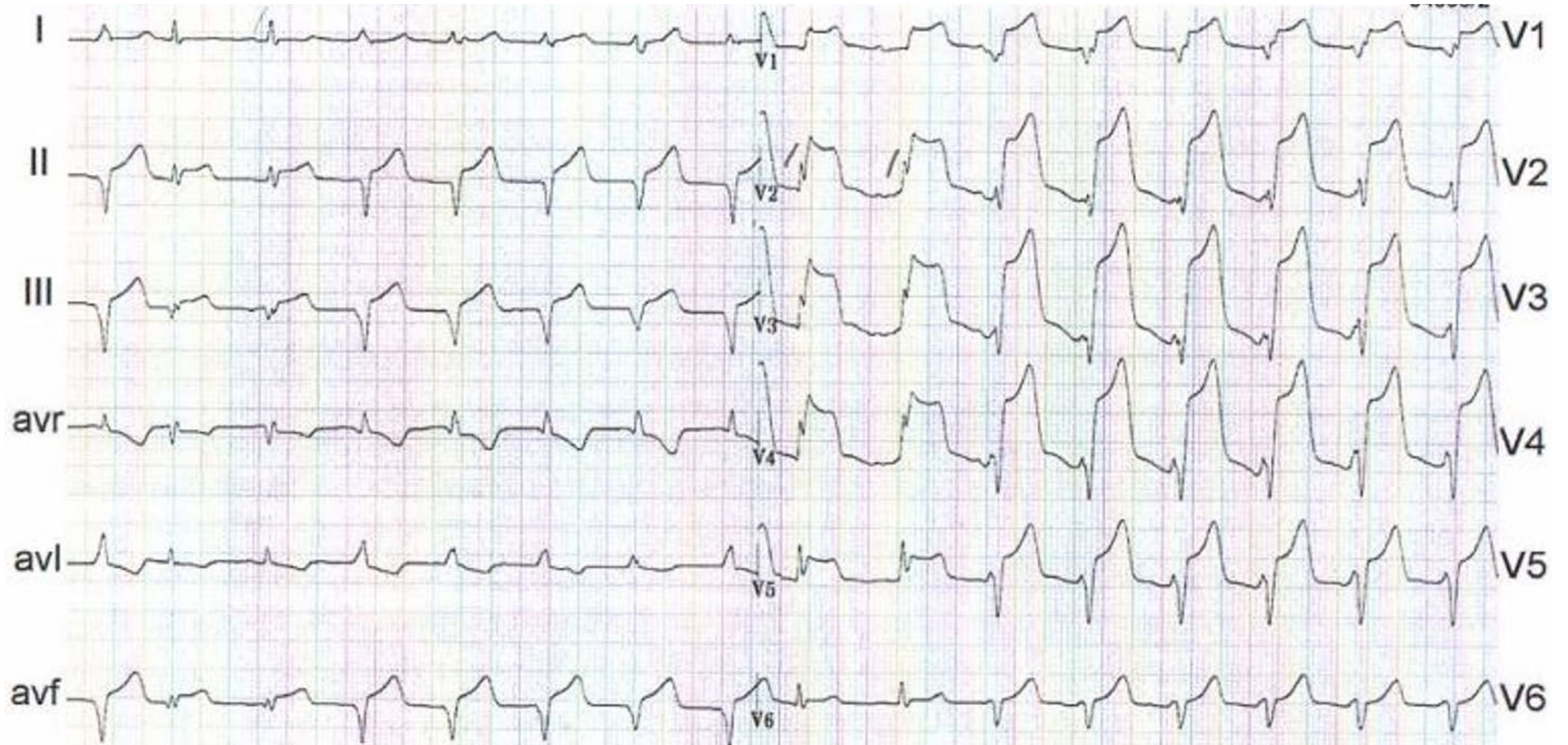
Sous-décalage ST durant TSV ≠ test d'effort

Using ST-segment deviations during supraventricular tachyarrhythmias, particularly during re-entrant atrioventricular tachycardias, per se, as reliable evidence of obstructive CAD, is not recommended.^{80–84}

III

B

STEMI



Que faire au cabinet ?

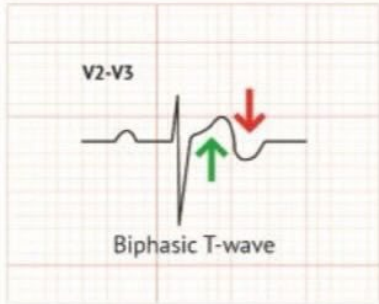
DON'T PANIC



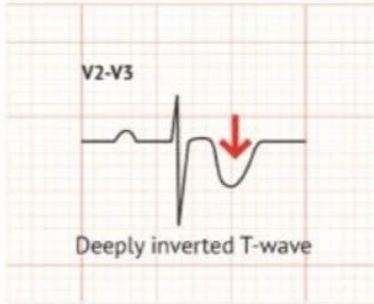
- VVP
- Aspirine cardio 500 mg po ou iv (si possible), Héparine 5000 UI iv
- **026 306 32 00** (HOTLINE STEMI = garde des soins intensifs)

Equivalents STEMI

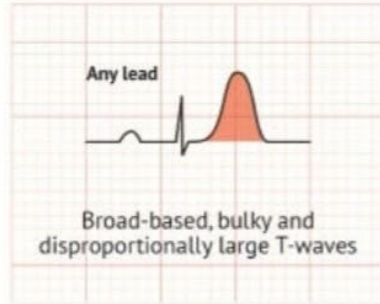
Wellens pattern A



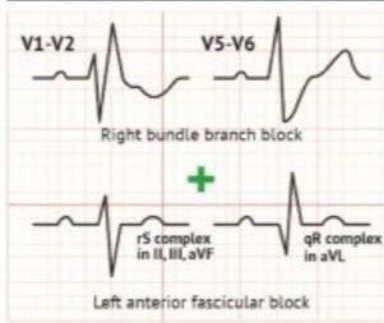
Wellens pattern B



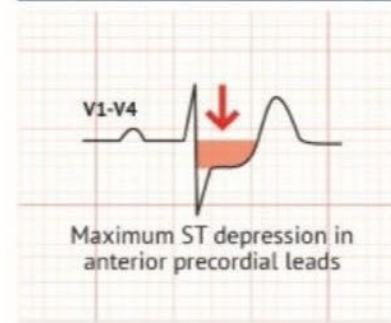
Hyperacute T-wave



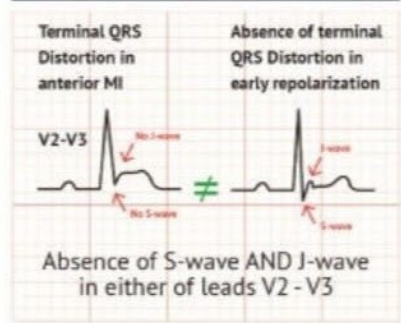
New-onset bifascicular block



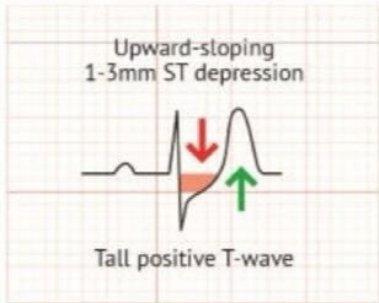
Posterior OMI



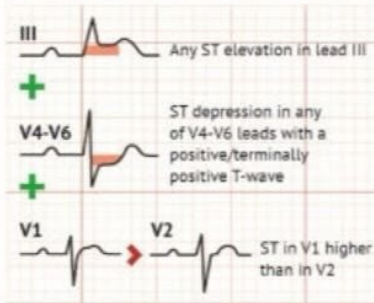
Terminal QRS distortion



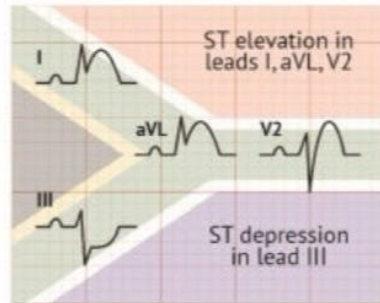
De Winter T-wave



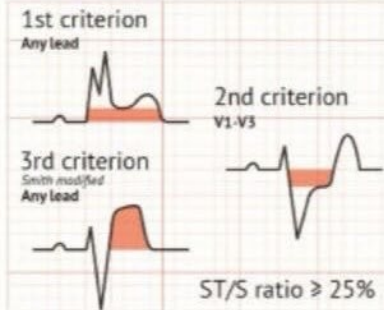
Aslanger pattern



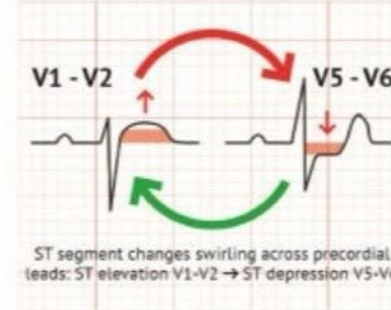
South African flag sign



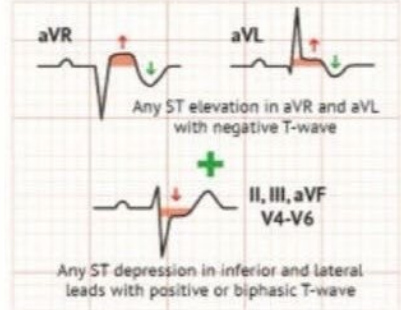
Modified Sgarbossa - Smith



Precordial Swirl



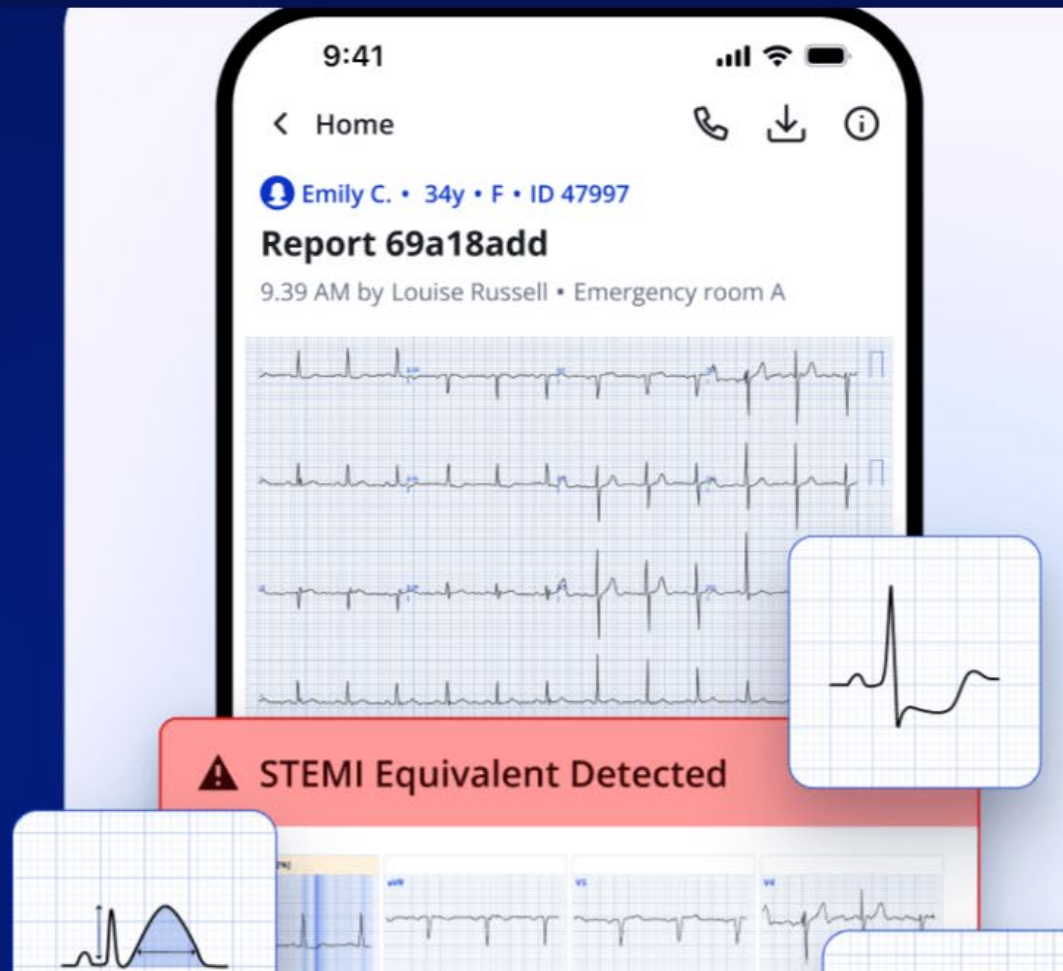
Northern OMI



● STEMI AI ECG Model

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Code pour rabais : **DRSMITH20**

Merci de votre attention !



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