ECG au cabinet
Savoir interpréter les urgences

Quadrimed 2026

Crans-Montana

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Cardiologie et médecine interne FMH

Cabinet CardioSierre

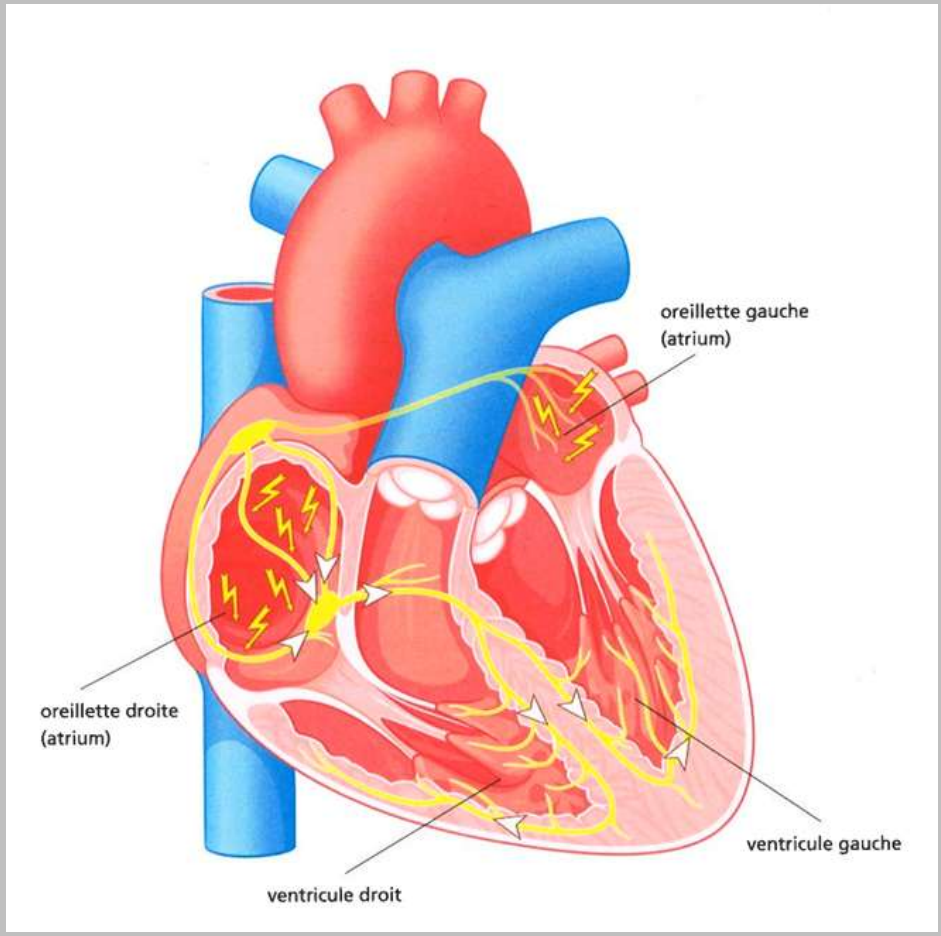
Médecin-adjoint, Hôpital du Valais

Médecin-conseil et expert OFAC

Sommaire

- Conduction électrique normale
- Troubles de la conduction
- Arythmies supraventriculaires
- Maladie du sinus
- Arythmies ventriculaires
- Modifications ECG ischémiques
- Quiz

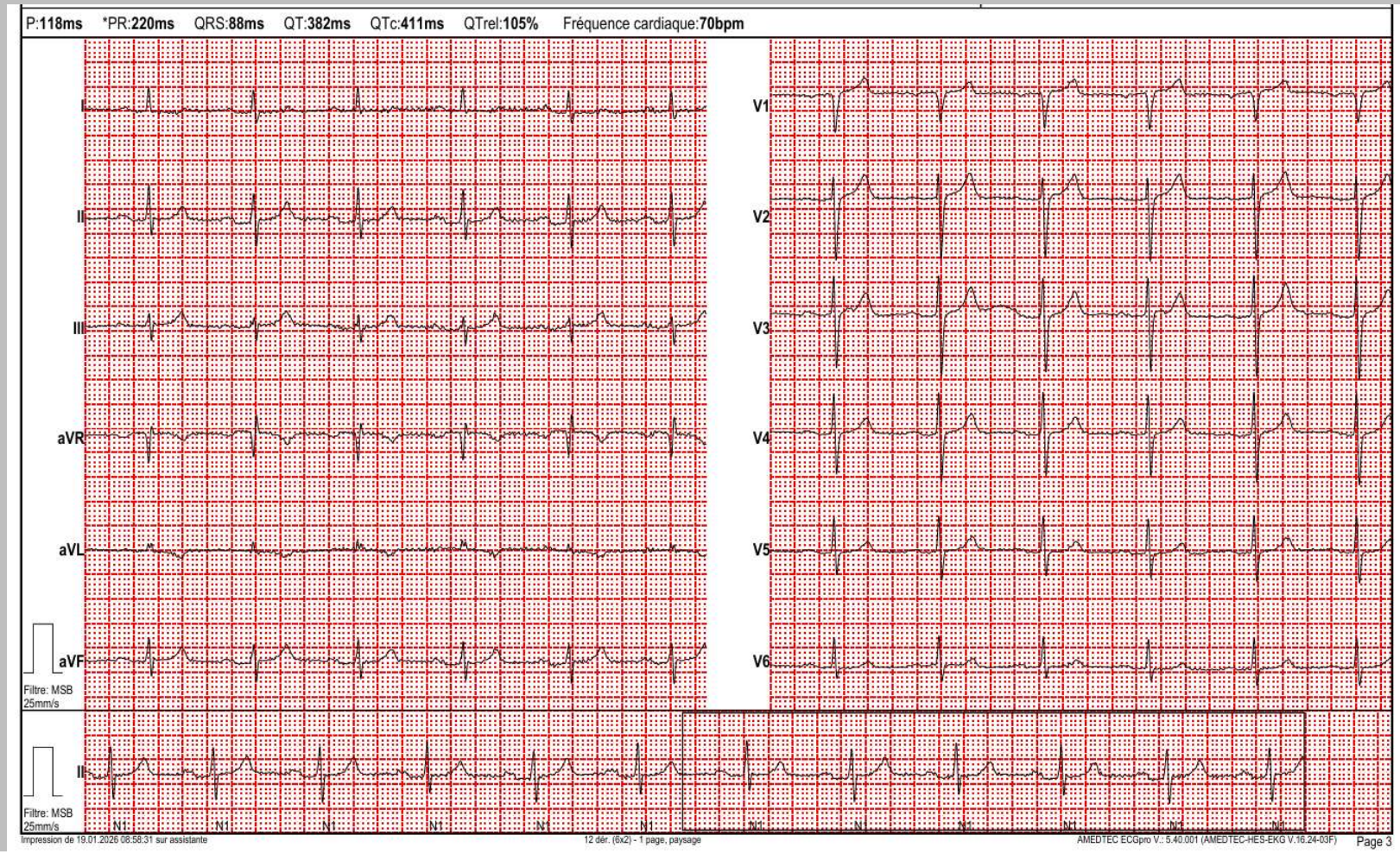
Conduction électrique normale



Fondation Suisse de Cardiologie

BAV du 1er degré

- Temps de conduction AV
- Du début de l'onde P au début du complexe QRS
- >200ms

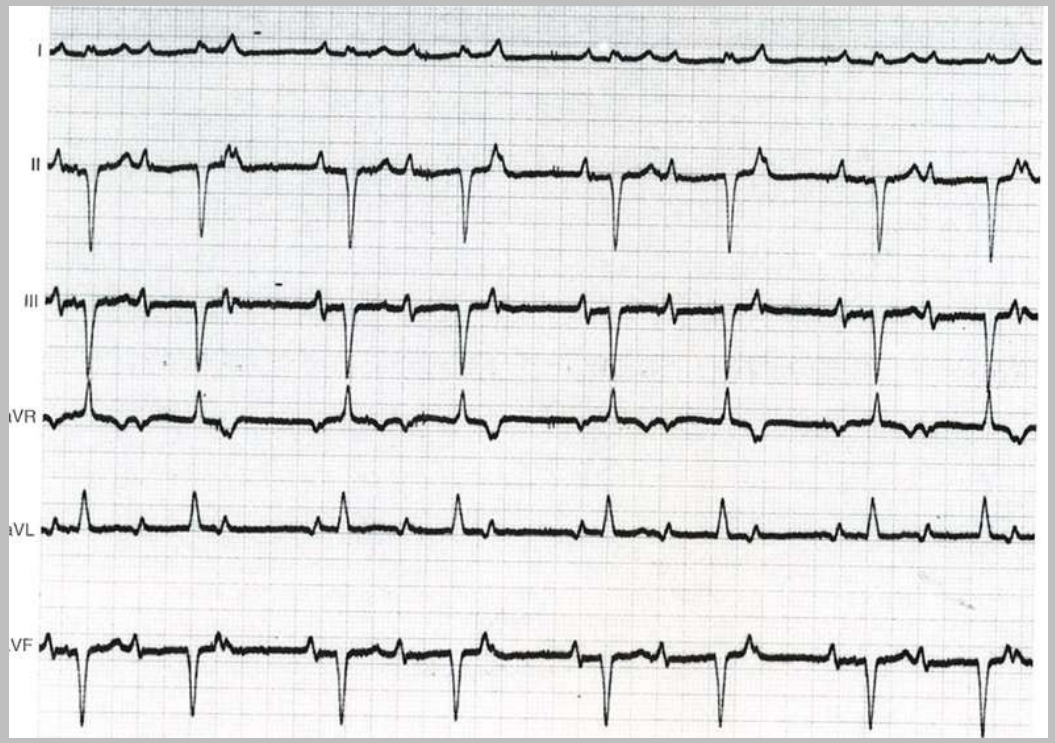


BAV du 2ème degré

- Type I (Wenckebach)
- Type II (Mobitz II)
- Certaines ondes P ne sont pas conduites
- Le bloc peut être situé au niveau nodal ou subnodal

BAV du 2ème degré de type Wenckebach

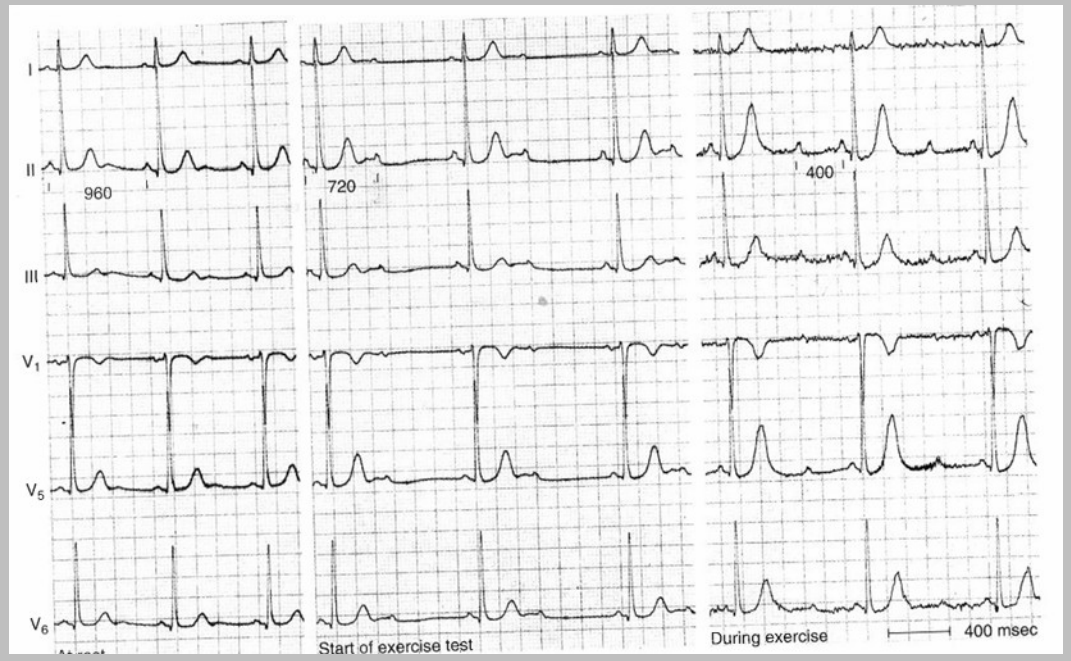
- Prolongation du PR jusqu'à la survenue d'une onde P non conduite
- Battements en groupe
- Souvent présent dans un contexte d'infarctus inférieur
- Généralement bénin sur un cœur sain
- Pacing seulement indiqué si associé à des blocs de plus haut degré



The ECG in Emergency Decision Making, Hein J. J. Wellens, 2nd edition

BAV du 2ème degré de type Mobitz II

- Intervalle PR fixe
- Certaines ondes P ne sont pas conduites
- Le plus souvent du à la fibrose du système de conduction chez les personnes âgées
- Aussi lors d'un IM inféroseptal
- Souvent associé à des syncopes
- Pacing indiqué



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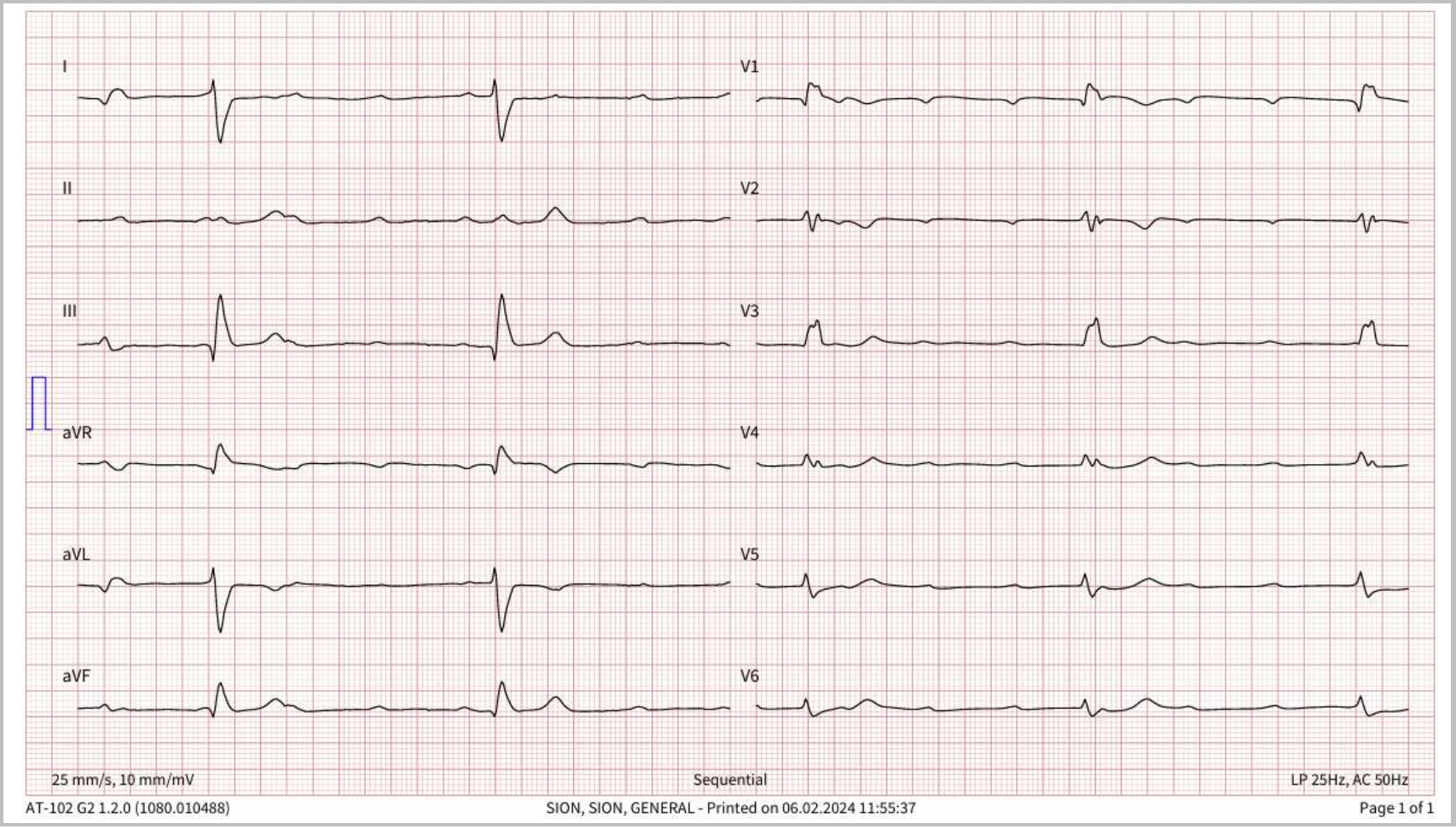
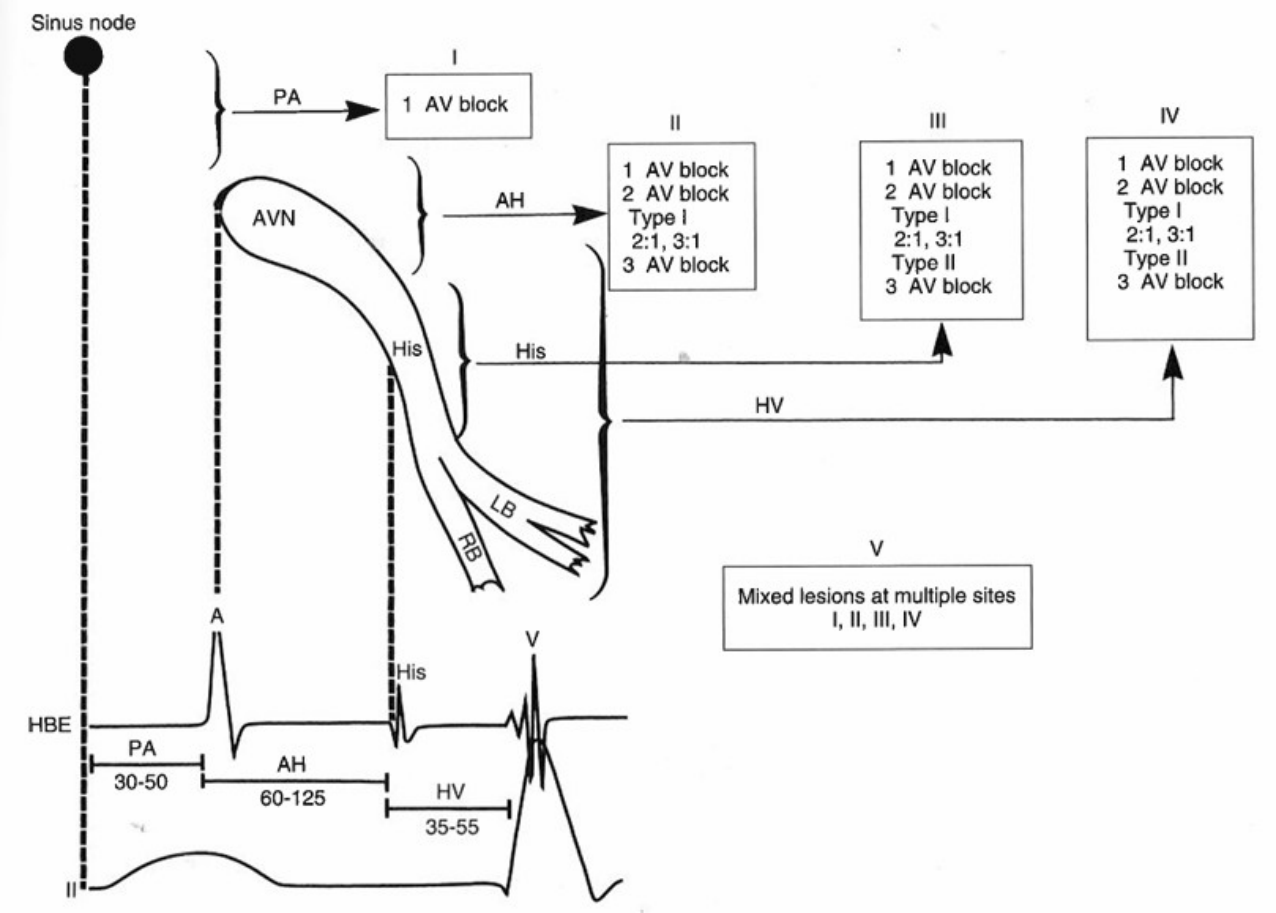
BAV du 3ème degré (BAV complet)

- Ondes P normales
- Pas de relation entre les ondes P et les ondes R
- QRS fin si le bloc se situe au niveau du nœud AV ou du faisceau de His
- QRS large si le rythme d'échappement vient du ventricule
- Ad pacing



Troubles de la conduction AV



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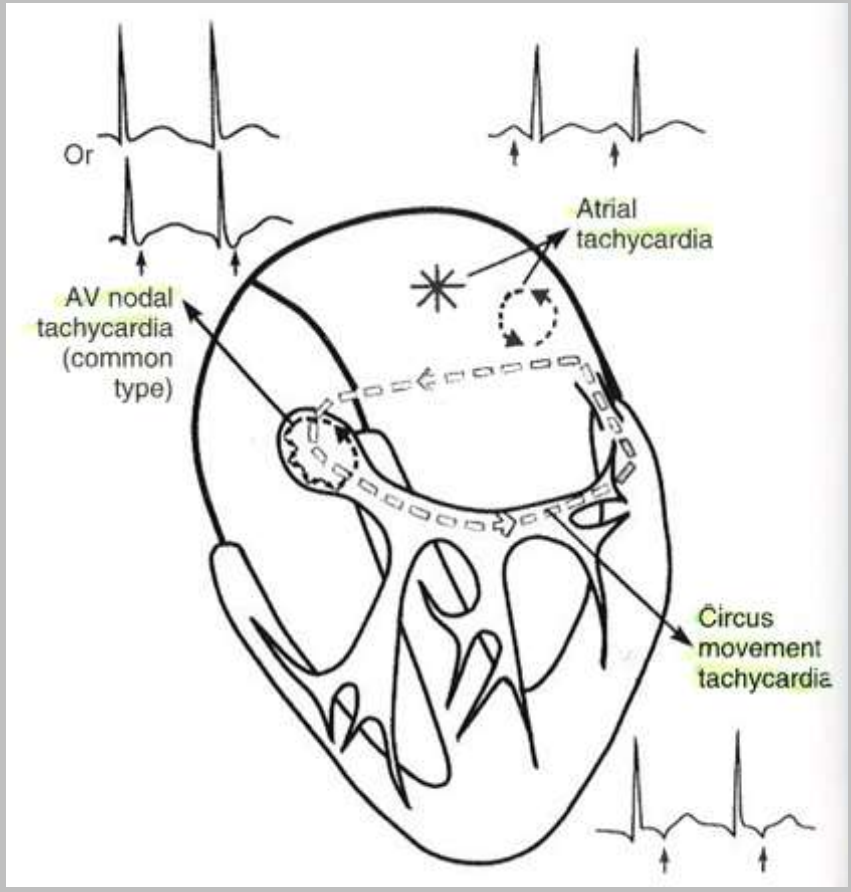
Comment déterminer le site du BAV?

- QRS <0.12 secondes => bloc dans le NAV ou le faisceau de His
- QRS >0.12 secondes => bloc dans la branche gauche ou droite
- Atropine => amélioration si bloc au niveau du NAV
- Exercice => amélioration si bloc au niveau du NAV
- Massage du sinus carotidien => amélioration si bloc subnodal

Causes de bradycardie

Intrinsic	Extrinsic
▪ Idiopathic degenerative disorder ▪ Ischemic heart disease ▪ Chronic ischemia ▪ Acute myocardial infarction ▪ Hypertensive heart disease ▪ Cardiomyopathy ▪ Trauma ▪ Surgery for congenital heart disease ▪ Heart transplant ▪ Inflammation ▪ Collagen vascular disease ▪ Rheumatic fever ▪ Pericarditis ▪ Infection ▪ Viral myocarditis ▪ Lyme disease (Borrelia burgdorferi) ▪ Neuromuscular disorder ▪ Friedreich ataxia ▪ X-linked muscular dystrophy ▪ Familial disorder	▪ Drugs • Antiarrhythmic agents • Class IA - quinidine, procainamide • Class IC - propafenone, flecainide • Class II - β-blockers **CAVE timolol** • Class III - sotalol, amiodarone, dronedarone • Class IV - diltiazem, verapamil ▪ Cardiac glycosides ▪ Alpha-2 agonists • Clonidine, tizanidine, methyldopa, dexmedetomidine ▪ Antipsychotic agents • Lithium, phenothiazines, amitriptyline ▪ Autonomically mediated • Vasovagal syncope (cardioinhibitory) • Carotid sinus hypersensitivity ▪ Hypothyroidism ▪ Intracranial hypertension ▪ Hypothermia ▪ Hyperkalemia ▪ Hypoxia ▪ Anorexia nervosa

Arythmies supraventriculaires



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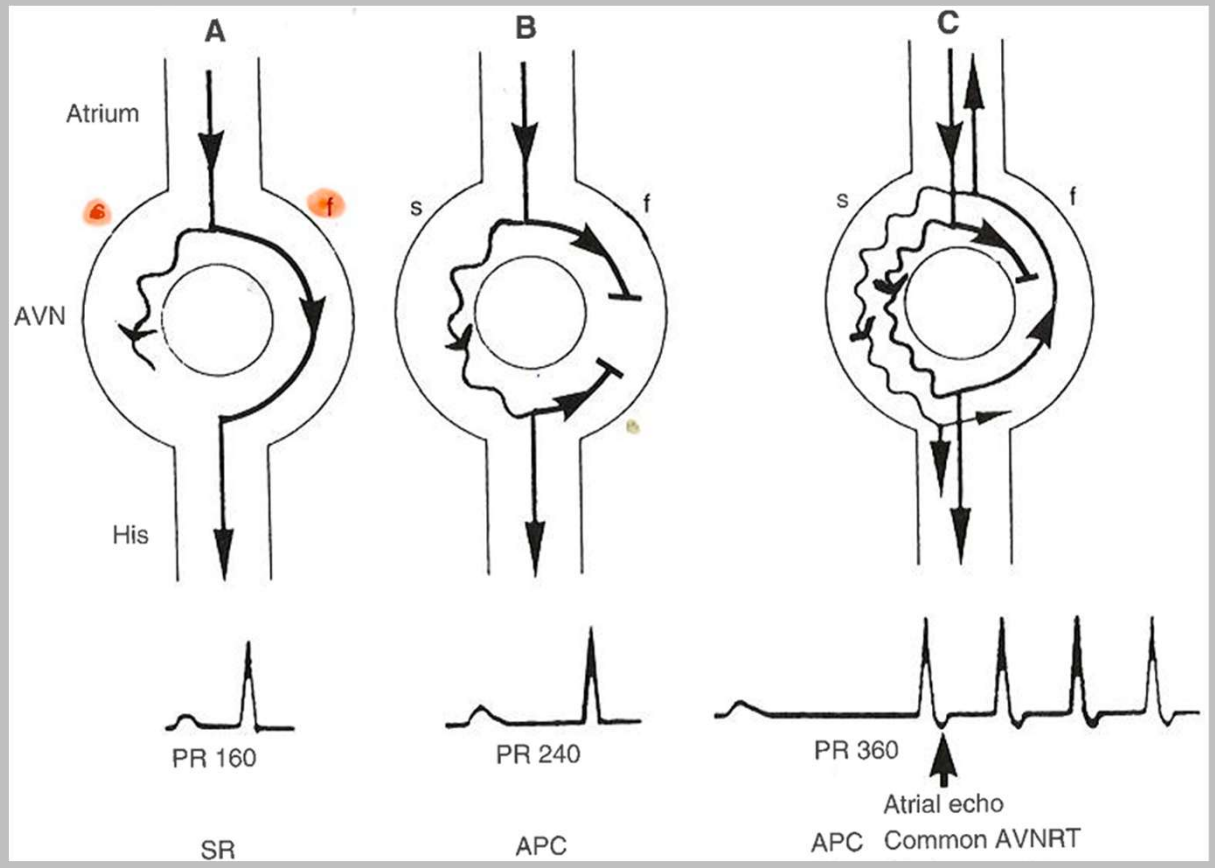
Tachycardie par réentrée nodale (AVNRT)



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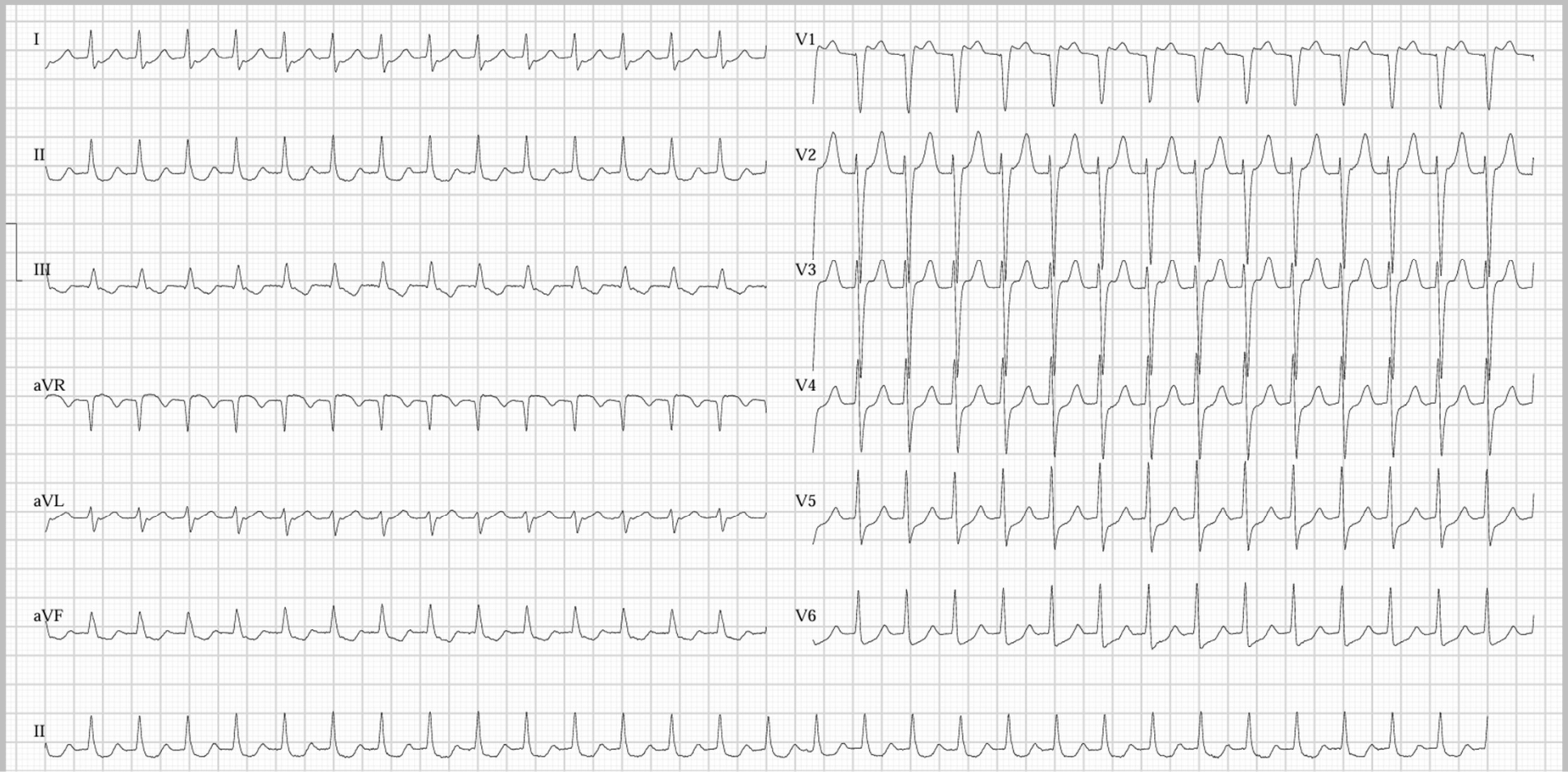
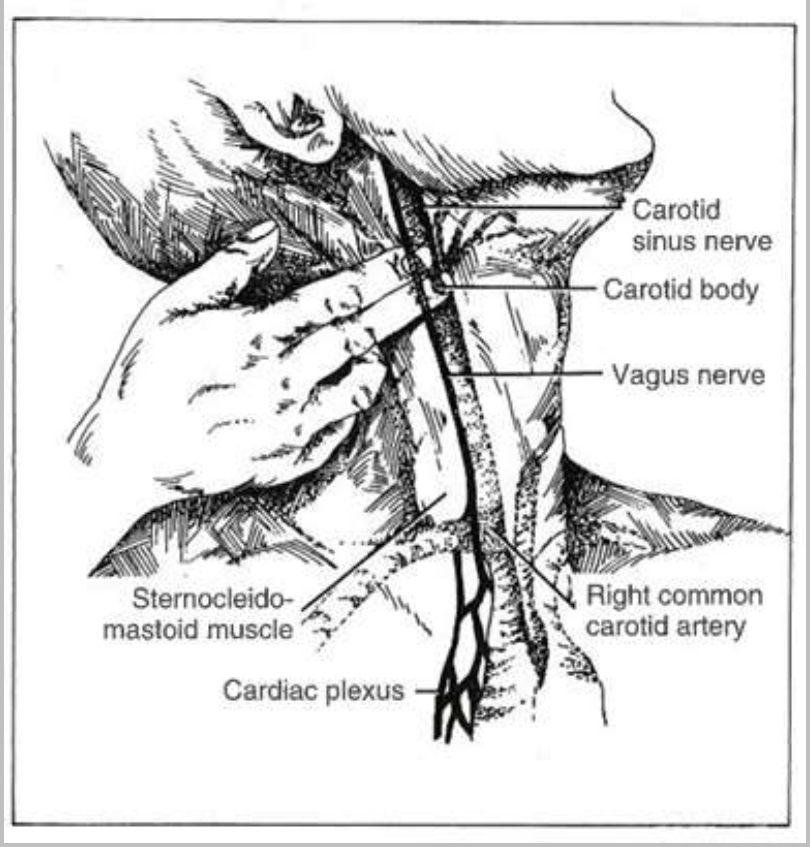
Tachycardie par réentrée nodale (AVNRT)



Tachycardie par réentrée nodale
Massage du sinus carotidien

- Exclure préalablement une sténose carotidienne
- A éviter chez les patients >65 ans en raison du risque de pauses de 3 à 7 secondes
- Ne pas maintenir la pression au-delà de 5 secondes



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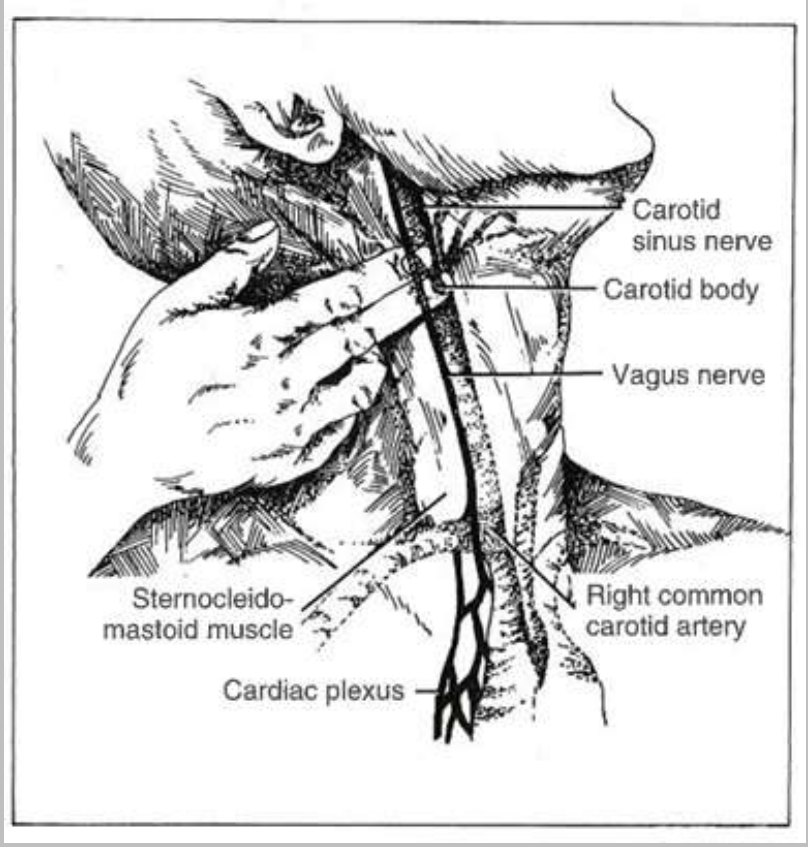
Tachycardie par réentrée nodale
Massage du sinus carotidien

- La manœuvre ralentit la conduction AV
- Pas d'effort sur la FA, le flutter et la tachycardie atriale
- Diminution transitoire de la FC lors d'une tachycardie sinusale
- Cardioversion de la tachycardie par réentrée nodale



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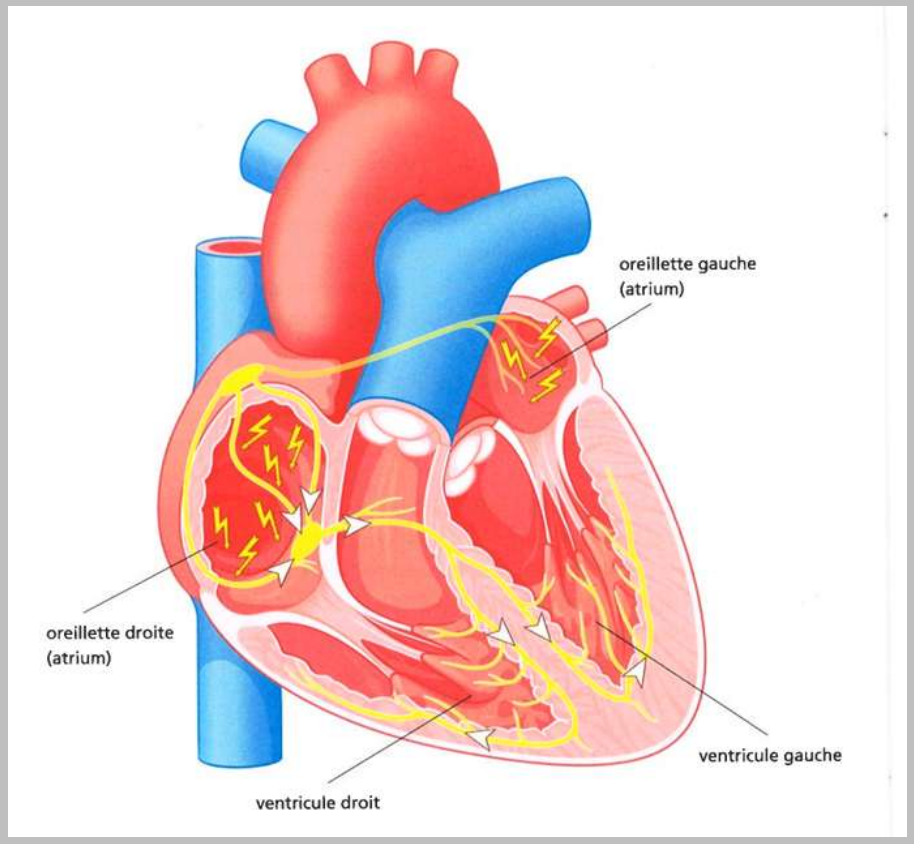
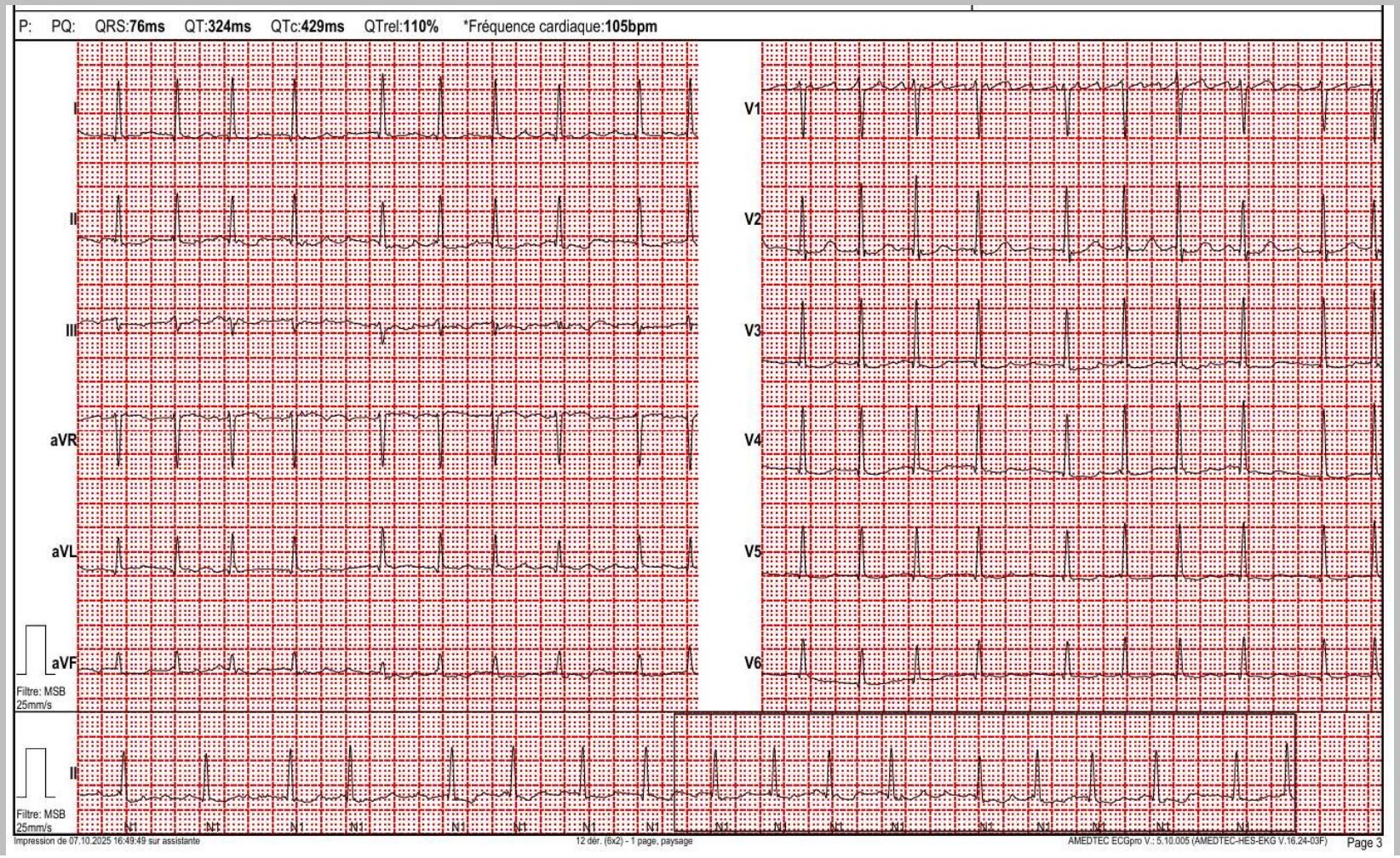
Fibrillation auriculaire

- Arythmie la plus fréquente
- Activité atriale non coordonnée
- Absence d'onde P
- RR irrégulier



La fibrillation auriculaire, Fondation Suisse de Cardiologie

Fibrillation auriculaire



FA –anticoagulation – score

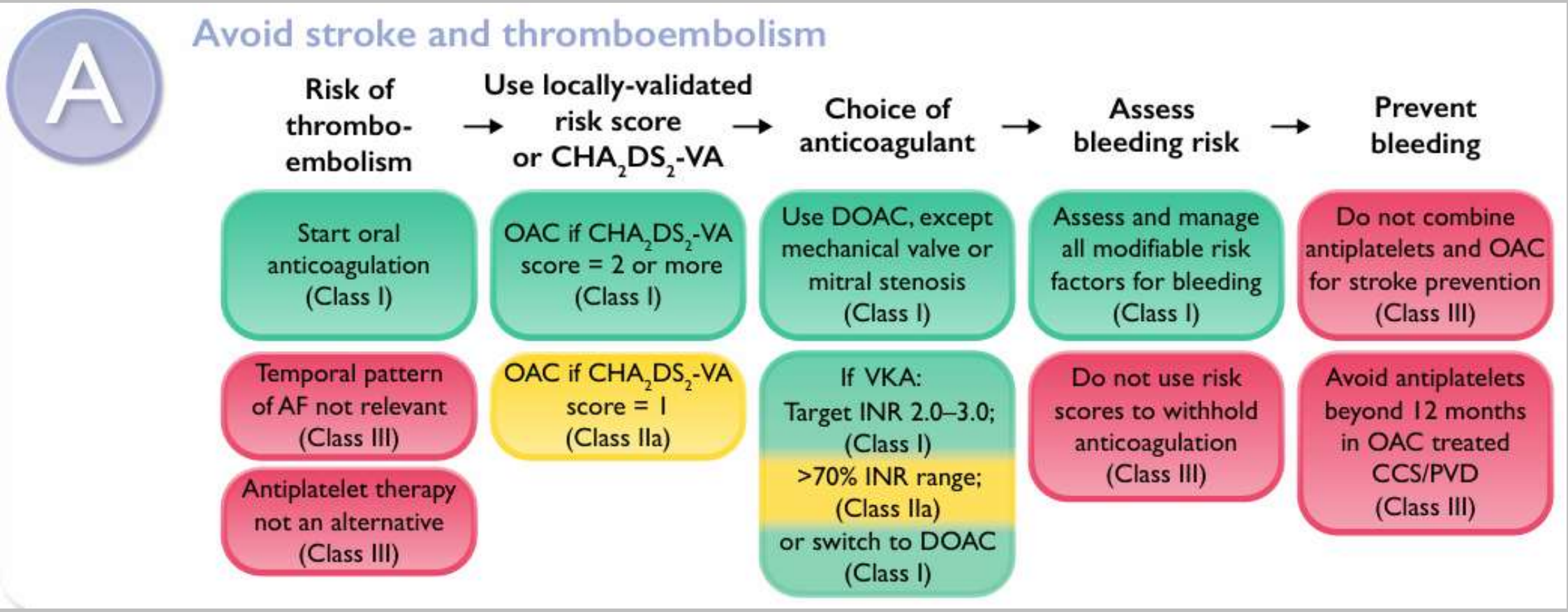
CHA_2DS_2-VA component		Definition and comments	Points awarded[a]
C	Chronic heart failure	Symptoms and signs of heart failure (irrespective of LVEF, thus including HFpEF, HFmrEF, and HFrEF), or the presence of asymptomatic LVEF ≤40%.[261–263]	1
H	Hypertension	Resting blood pressure >140/90 mmHg on at least two occasions, or current antihypertensive treatment. The optimal BP target associated with lowest risk of major cardiovascular events is 120–129/70–79 mmHg (or keep as low as reasonably achievable).[162,264]	1
A	Age 75 years or above	Age is an independent determinant of ischaemic stroke risk.[265] Age-related risk is a continuum, but for reasons of practicality, two points are given for age ≥75 years.	2
D	Diabetes mellitus	Diabetes mellitus (type 1 or type 2), as defined by currently accepted criteria,[266] or treatment with glucose lowering therapy.	1
S	Prior stroke, TIA, or arterial thromboembolism	Previous thromboembolism is associated with highly elevated risk of recurrence and therefore weighted 2 points.	2
V	Vascular disease	Coronary artery disease, including prior myocardial infarction, angina, history of coronary revascularization (surgical or percutaneous), and significant CAD on angiography or cardiac imaging.[267] OR Peripheral vascular disease, including: intermittent claudication, previous revascularization for PVD, percutaneous or surgical intervention on the abdominal aorta, and complex aortic plaque on imaging (defined as features of mobility, ulceration, pedunculation, or thickness ≥4 mm).[268,269]	1
A	Age 65–74 years	1 point is given for age between 65 and 74 years.	1

2024 ESC Guidelines for the management of atrial fibrillation, European Heart Journal (2024) 45, 3314–3414

FA –anticoagulation – score

CHA_2DS_2-VA Score	Ischaemic Stroke Risk [%]
0	0.5
1	1.5
2	2.9
3	5.1
4	7.3
5	11.2
6	15.5
7	14.7
8	19.5

FA –anticoagulation



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FA –anticoagulation

DOAC	Standard full dose	Criteria for dose reduction	Reduced dose only if criteria met
Apixaban	5 mg twice daily	Two out of three needed for dose reduction: (i) age ≥80 years (ii) body weight ≤60 kg (iii) serum creatinine ≥133 µmol/L.	2.5 mg twice daily
Dabigatran	150 mg twice daily	Dose reduction recommended if any apply: (i) age ≥80 years (ii) receiving concomitant verapamil. Dose reduction considered on an individual basis if any apply: (i) age 75–80 (ii) moderate renal impairment (creatinine clearance 30–50 mL/min) (iii) patients with gastritis, oesophagitis, or gastro-oesophageal reflux (iv) others at increased risk of bleeding.	110 mg twice daily
Edoxaban	60 mg once daily	Dose reduction if any apply: (i) moderate or severe renal impairment (creatinine clearance 15–50 mL/min) (ii) body weight ≤60 kg (iii) concomitant use of ciclosporin, dronedarone, erythromycin, or ketoconazole.	30 mg once daily
Rivaroxaban	20 mg once daily	Creatinine clearance 15–49 mL/min.	15 mg once daily

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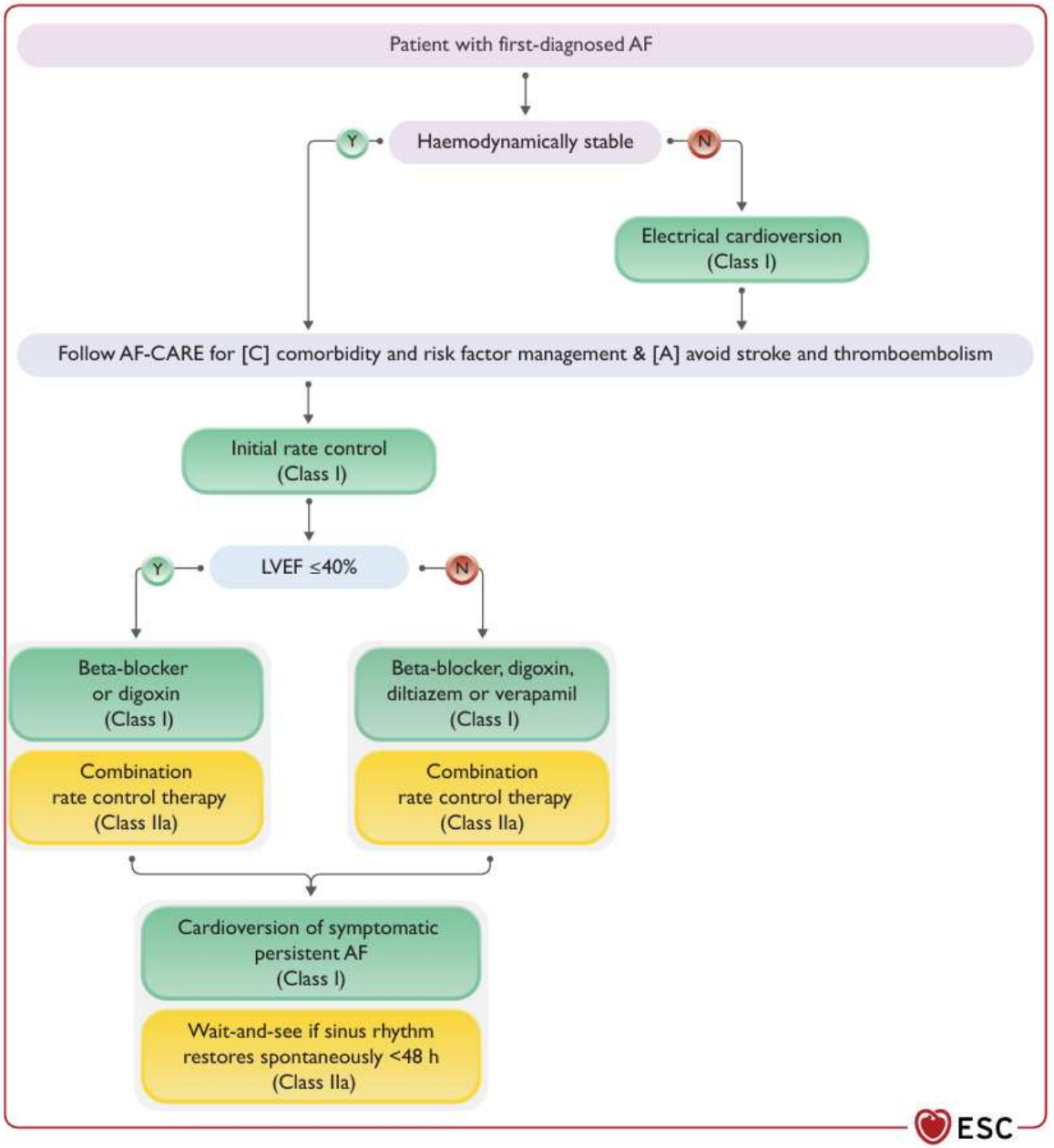
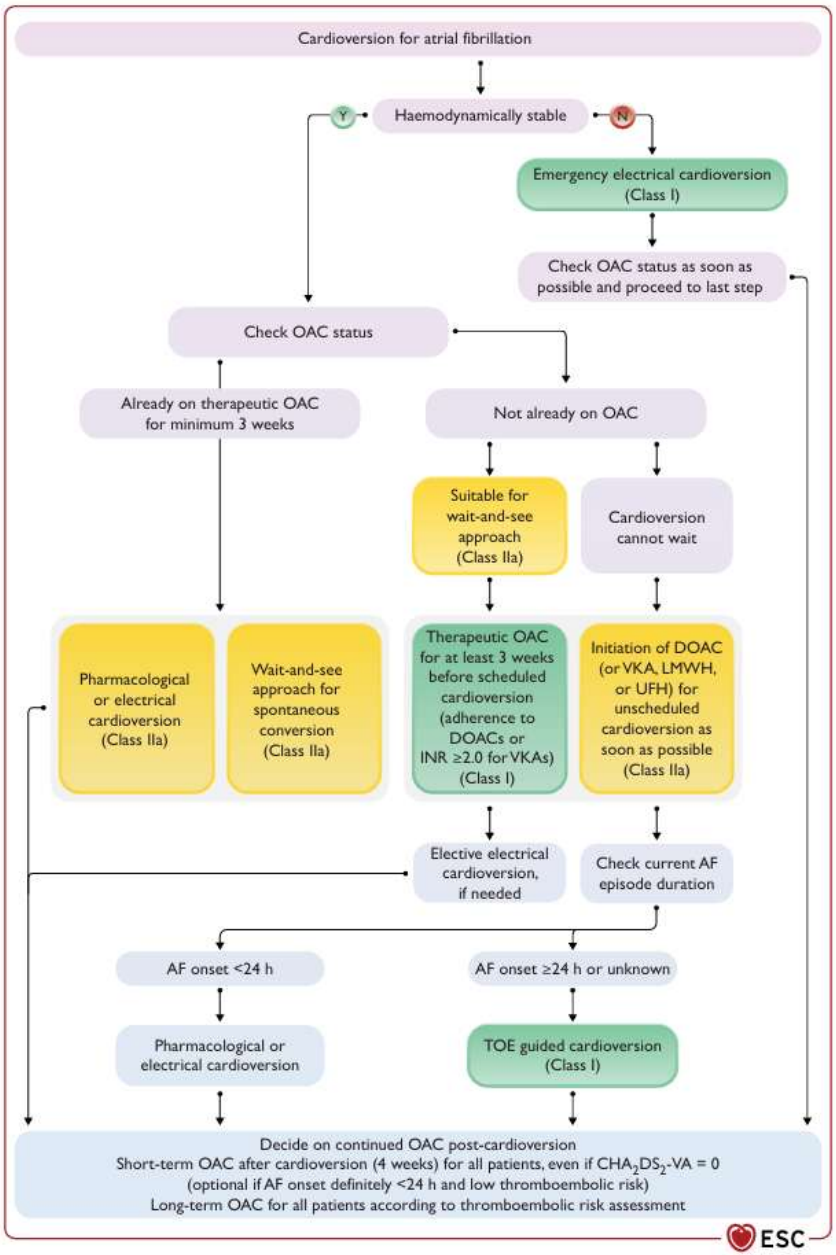
FA – prise en charge au diagnostic initial



2024 ESC Guidelines for the management of atrial fibrillation, European Heart Journal (2024) 45, 3314–3414

FA – cardioversion



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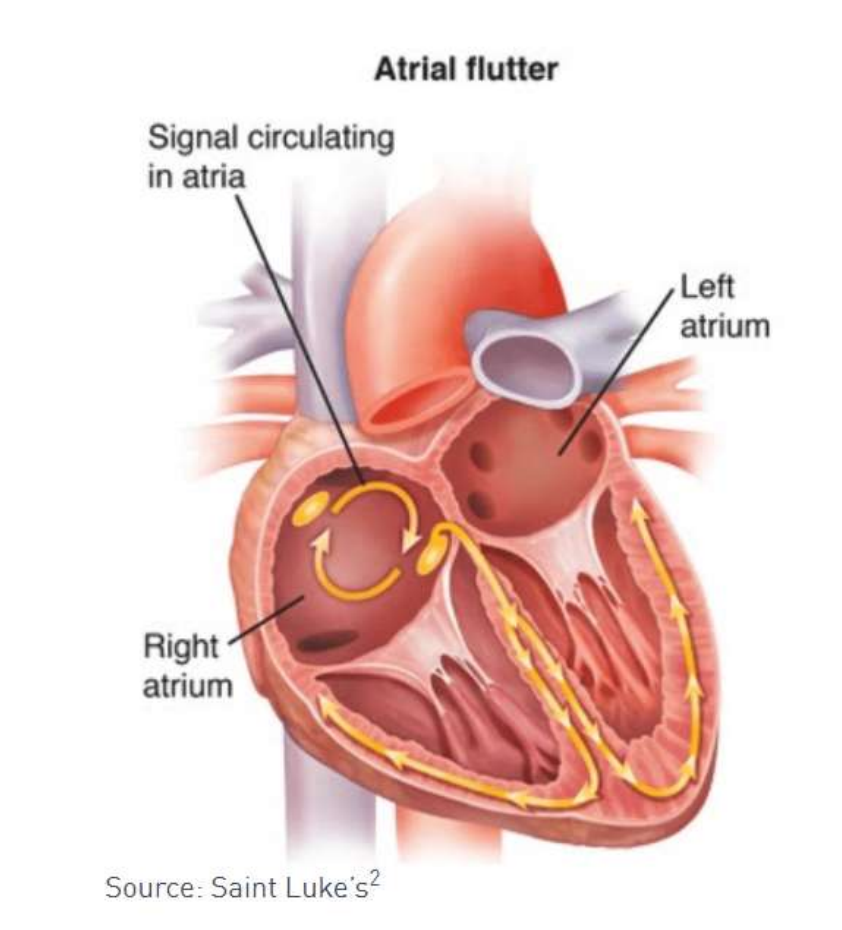
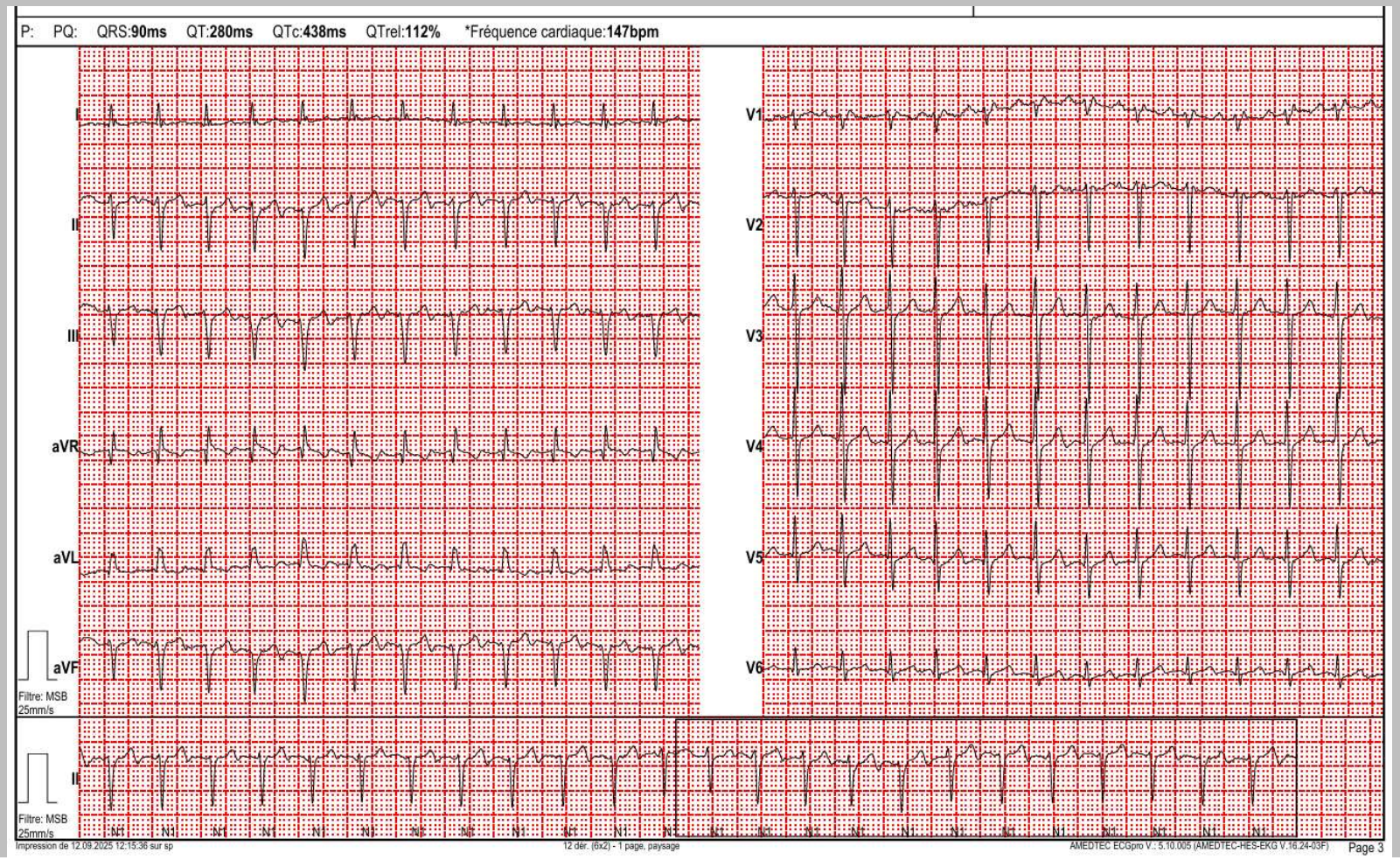
Flutter auriculaire

- Marco-réentrée
- Le plus souvent dans l'OD
- Circuit comprenant l'isthme cavotricuspide (région entre la valve d'Eustache de la VCI, la valve tricuspide et la SC)
- Rythme régulier
- Fréquence atriale 250-350bpm
- Réponse ventriculaire +/- régulière selon la conduction AV
- Prise en charge initiale comme FA
- Contrôle de la réponse ventriculaire médicamenteuse difficile
- Ablation de l'isthme cavo-tricuspidien très efficace



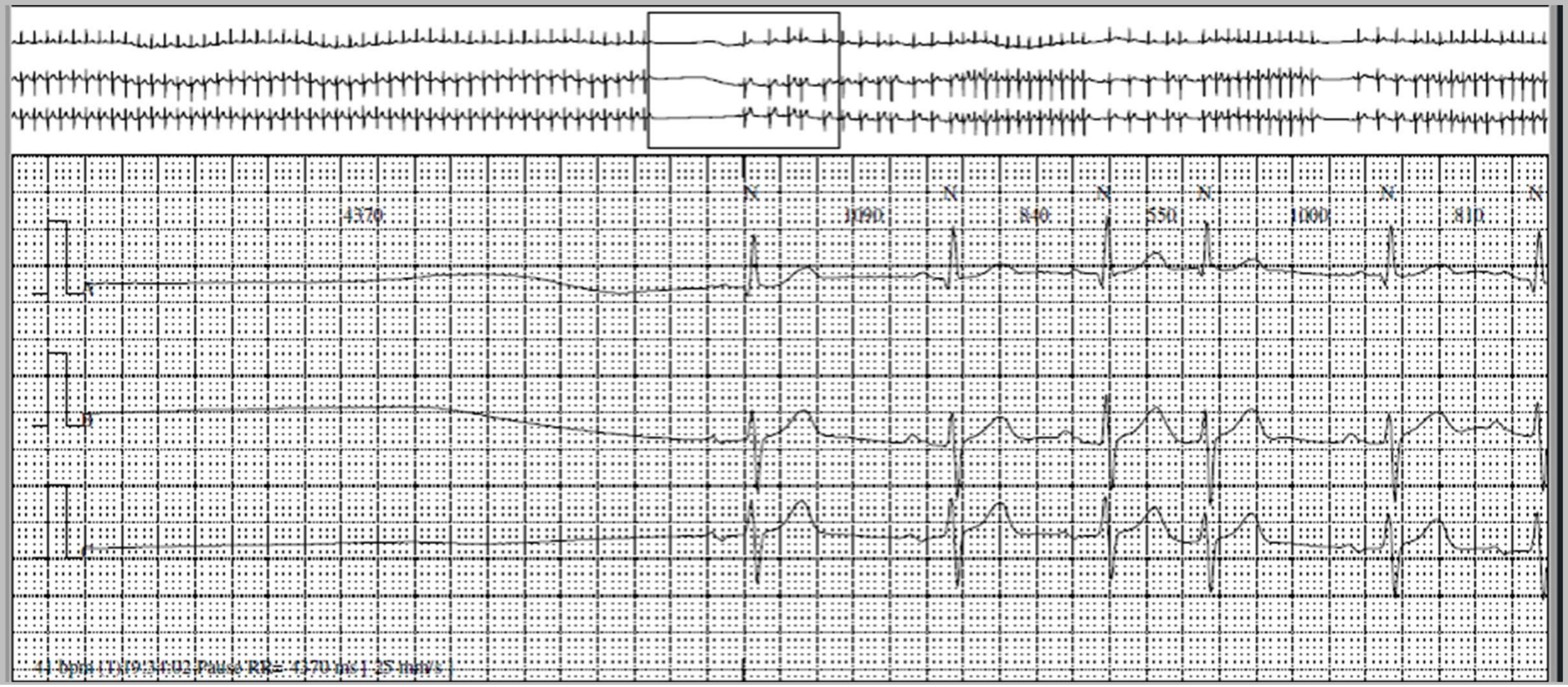
Flutter auriculaire



Maladie du sinus (sick sinus syndrome)

- FA paroxystique ou autre TSV
- Longues pauses causée par une suppression de l'activité du nœud sinusal (overdrive)
- Généralement au moment de la transition tachycardie bradycardie

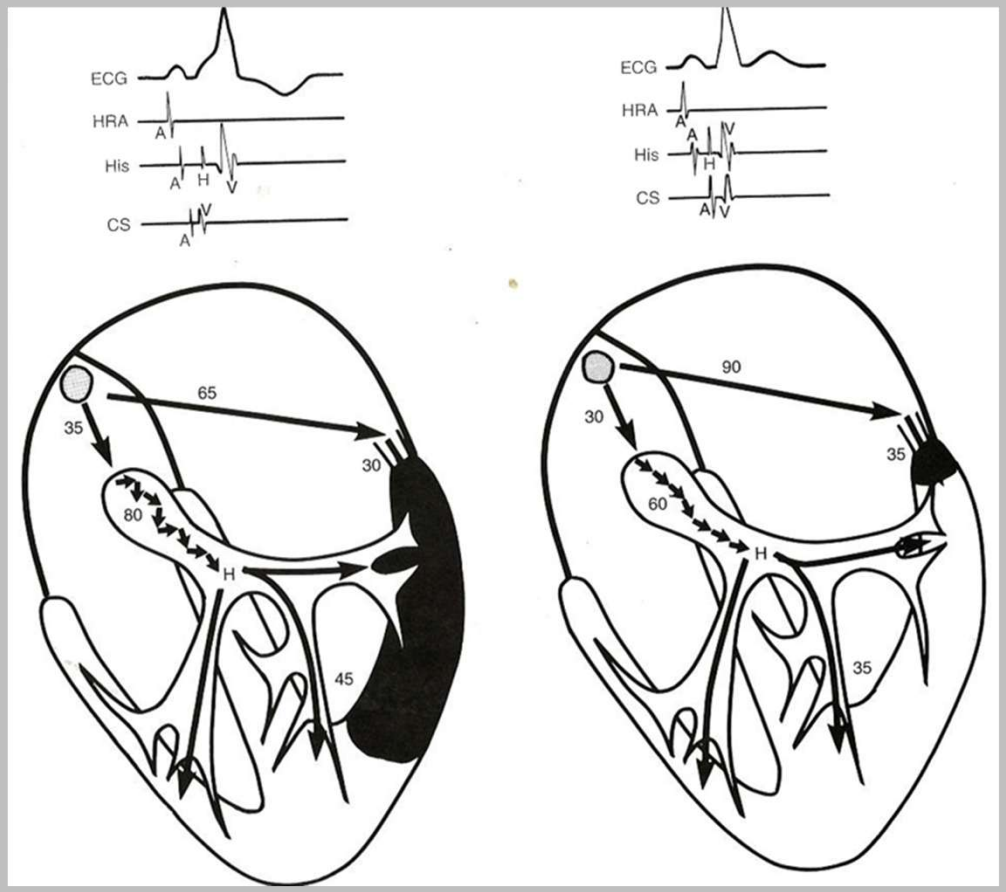
Maladie du sinus (sick sinus syndrome)



Maladie du sinus (sick sinus syndrome)

- Arrêt du traitement bradycardisant
- Pacing
- Ablation de la FA

Syndrome de Wolff Parkinson White



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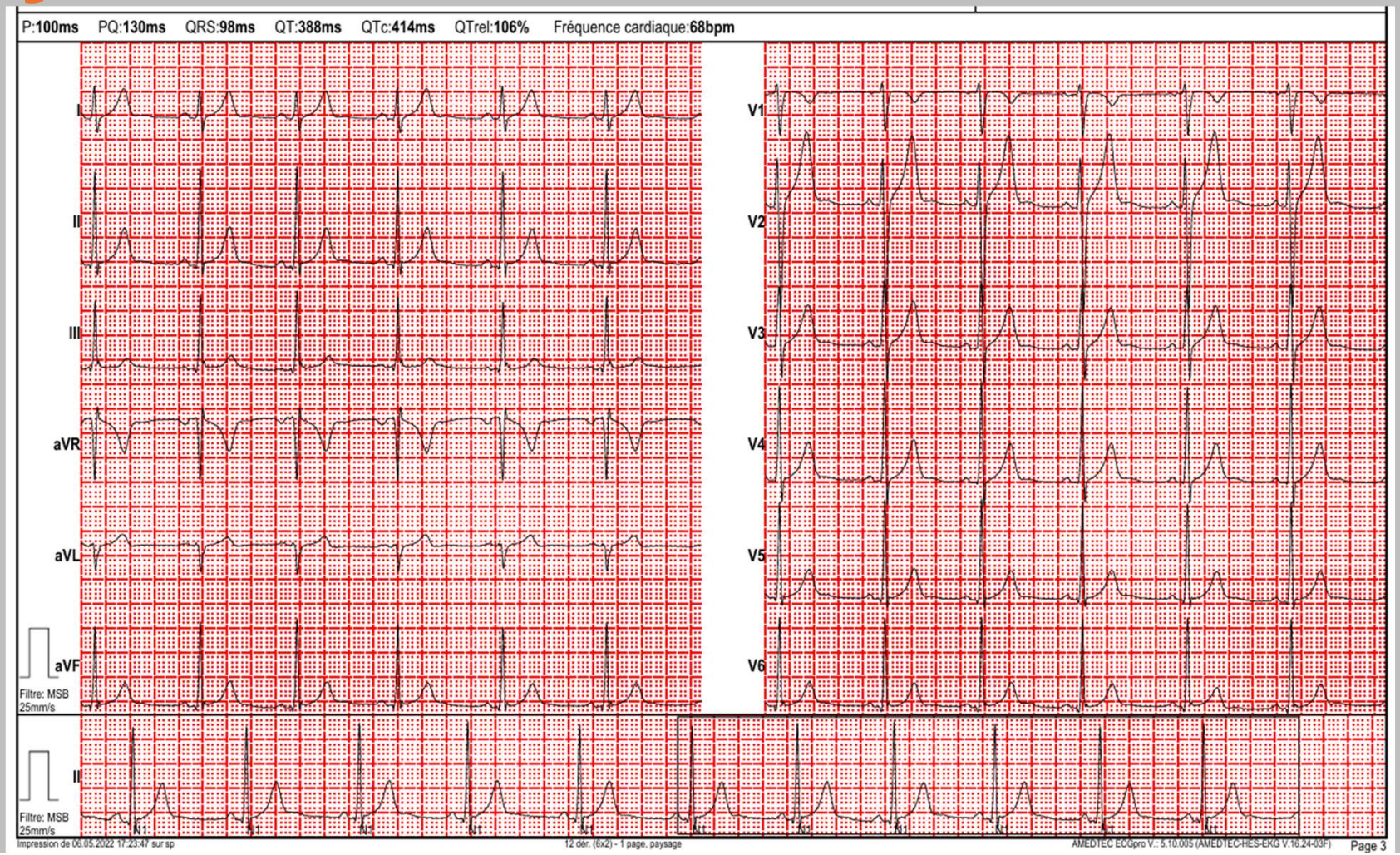
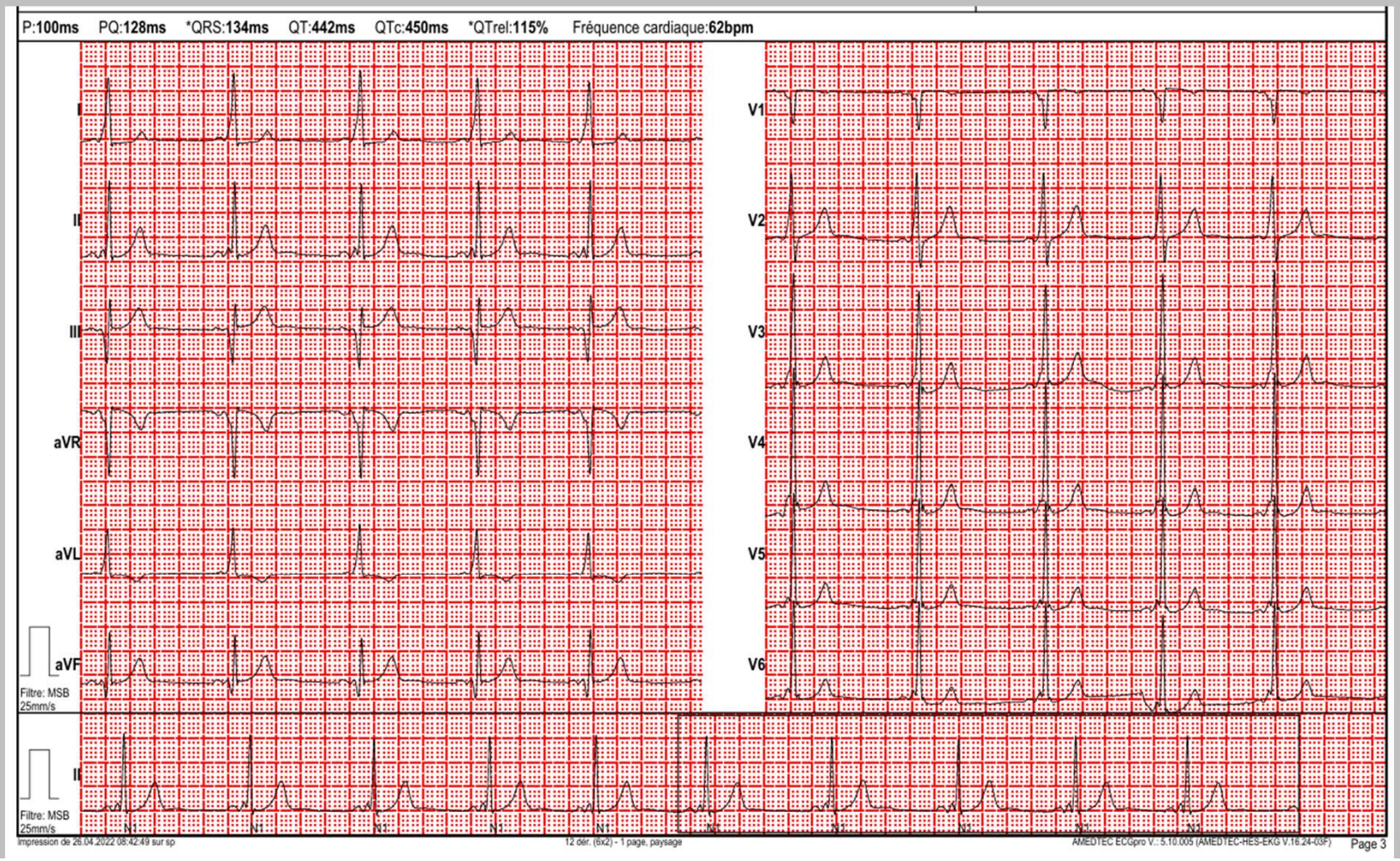
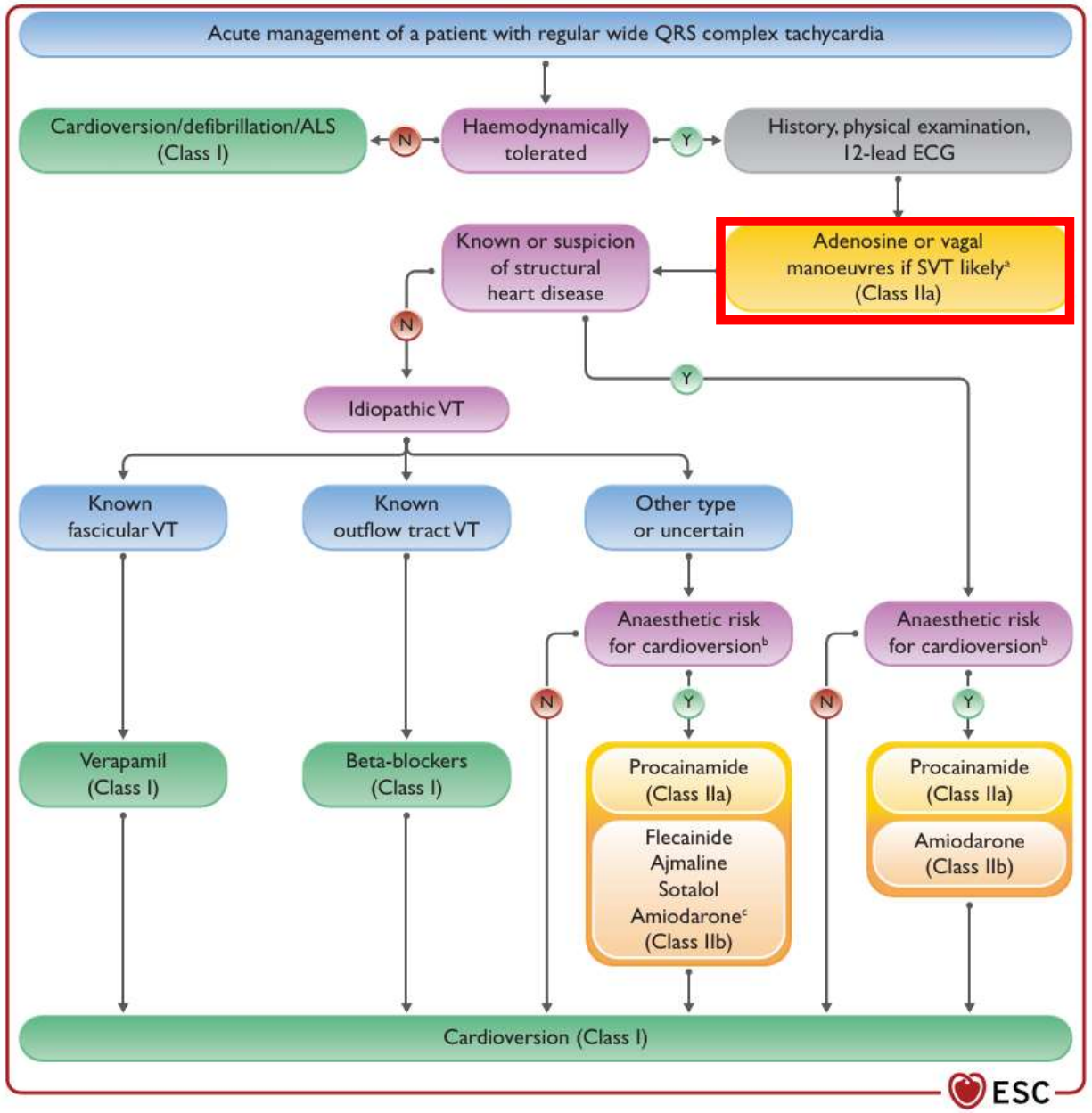
Syndrome de Wolff Parkinson White



Syndrome de Wolff Parkinson White

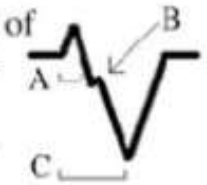


Tachycardie à complexes larges

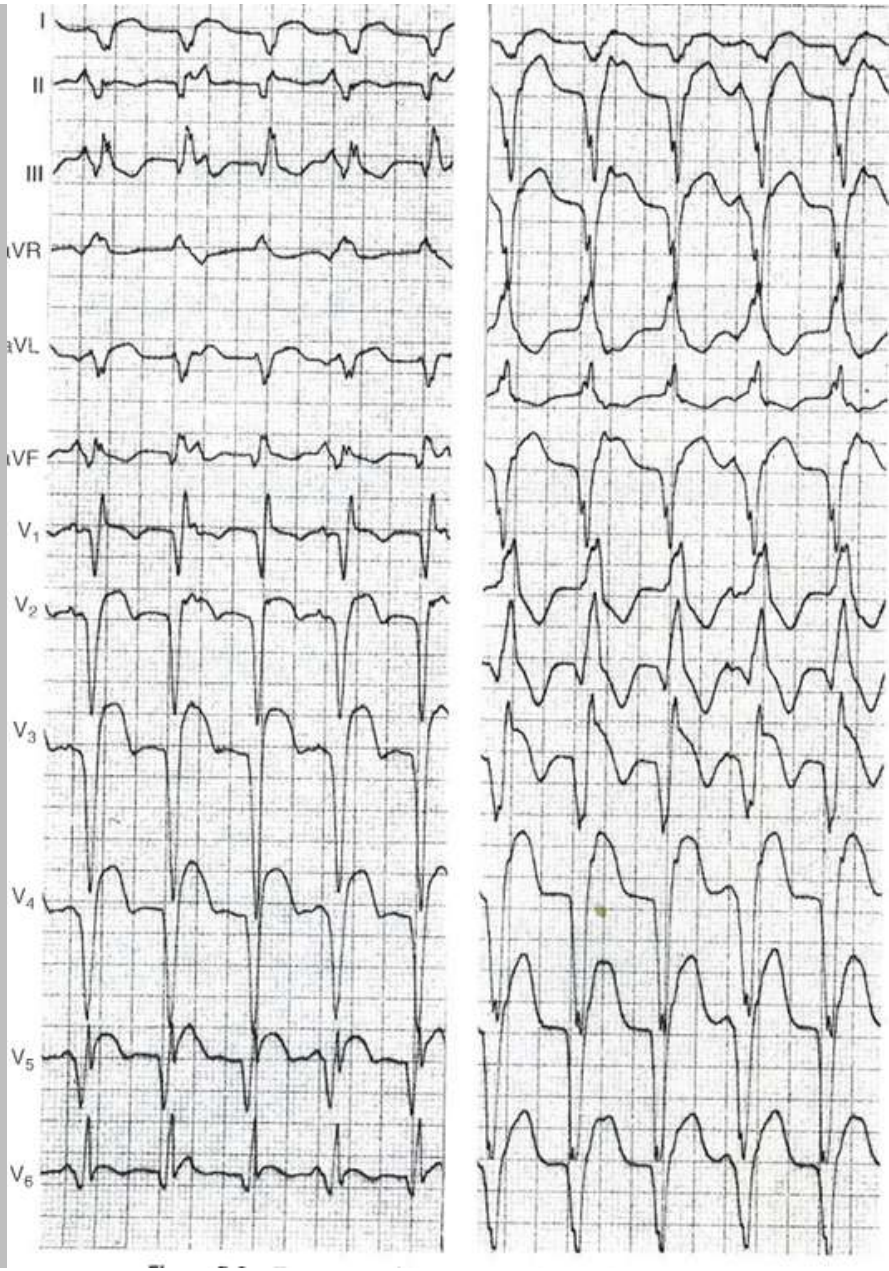


2022 ESC Guidelines for the management of patients with ventricular arrhythmias and the prevention of sudden cardiac death, European Heart Journal (2022) 43, 3997–4126

Tachycardie à complexes larges

Classical, Wellens, criteria favouring VT	
AV dissociation, capture or fusion beats, negative or positive concordance, tachycardia QRS more narrow than sinus QRS	
RBBB configuration	LBBB configuration
QRS width >140 ms, left axis	QRS width >160 ms, right axis
QR, R, RSr' complex in V1  	(A) Initial R in V1 >30 ms (B) Slurring or notching of the downstroke of the S-wave in V1–2 (C) Begin QRS-nadir S-wave >70 ms in V1–2 
RS <1 in V6  QS in V6 	Any Q V6 

Dissociation AV



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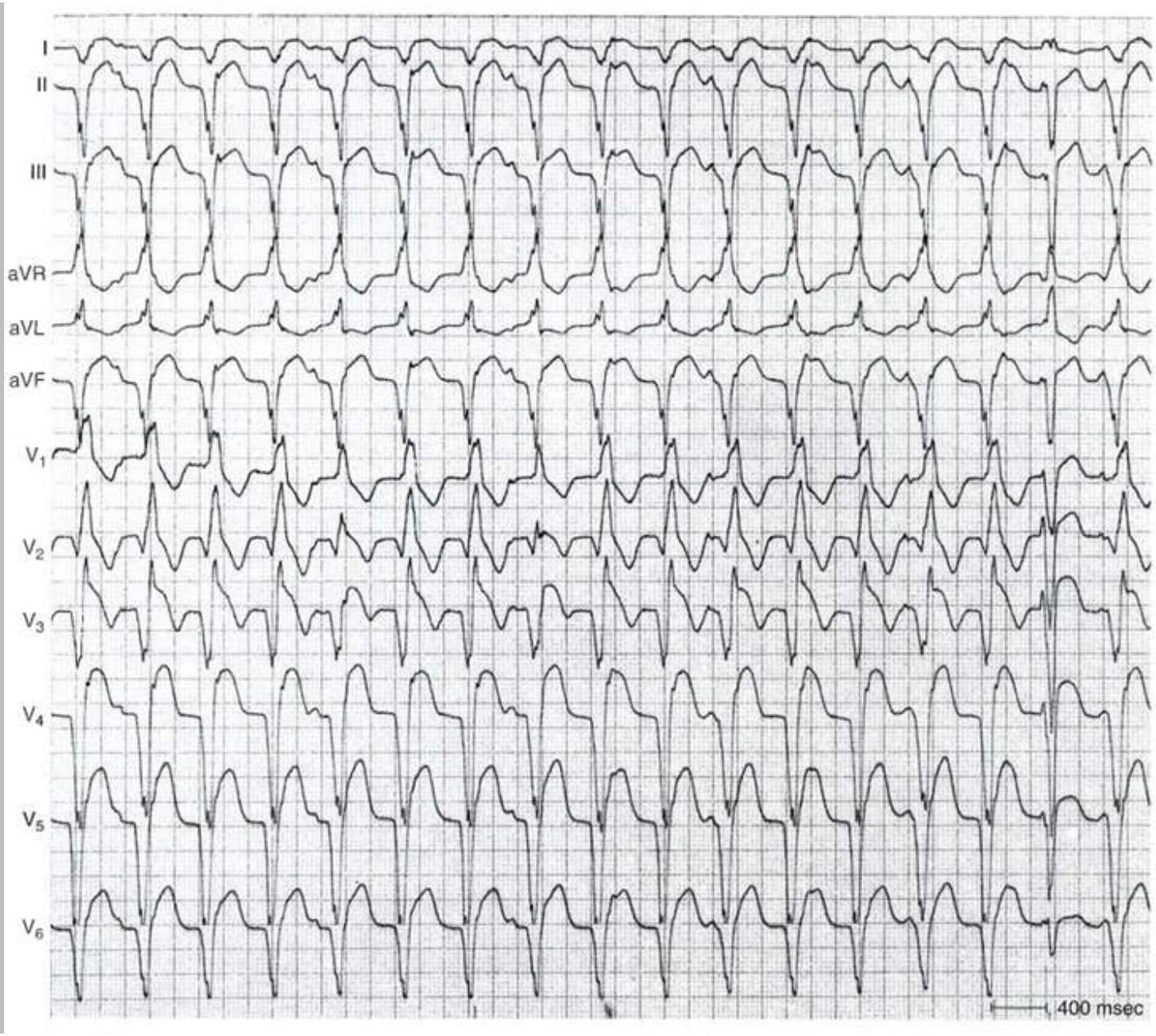
Capture/fusion

- Capture: conduction complète par le système AV
- Fusion: activation du ventricule à la fois par une impulsion ectopique et le système AV



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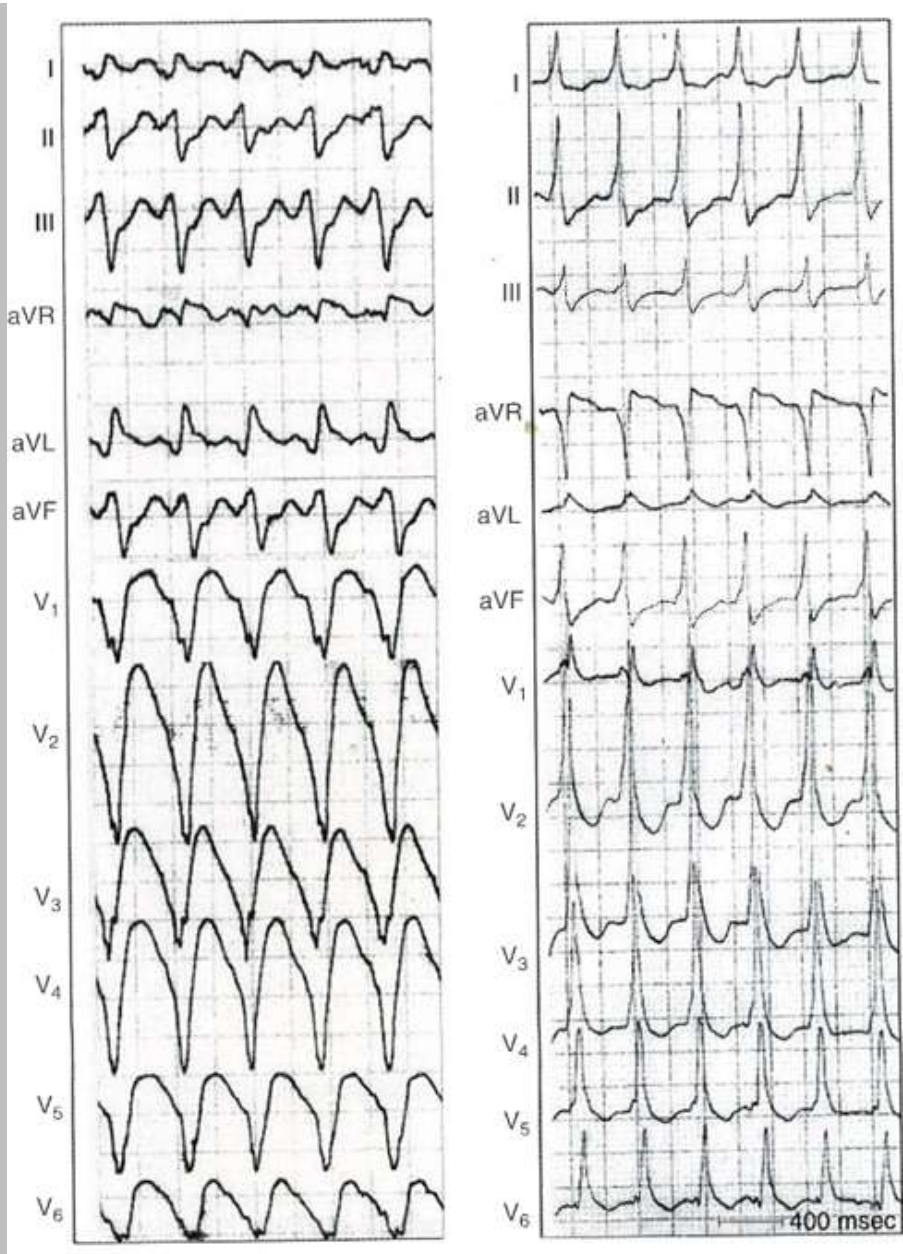
Concordance



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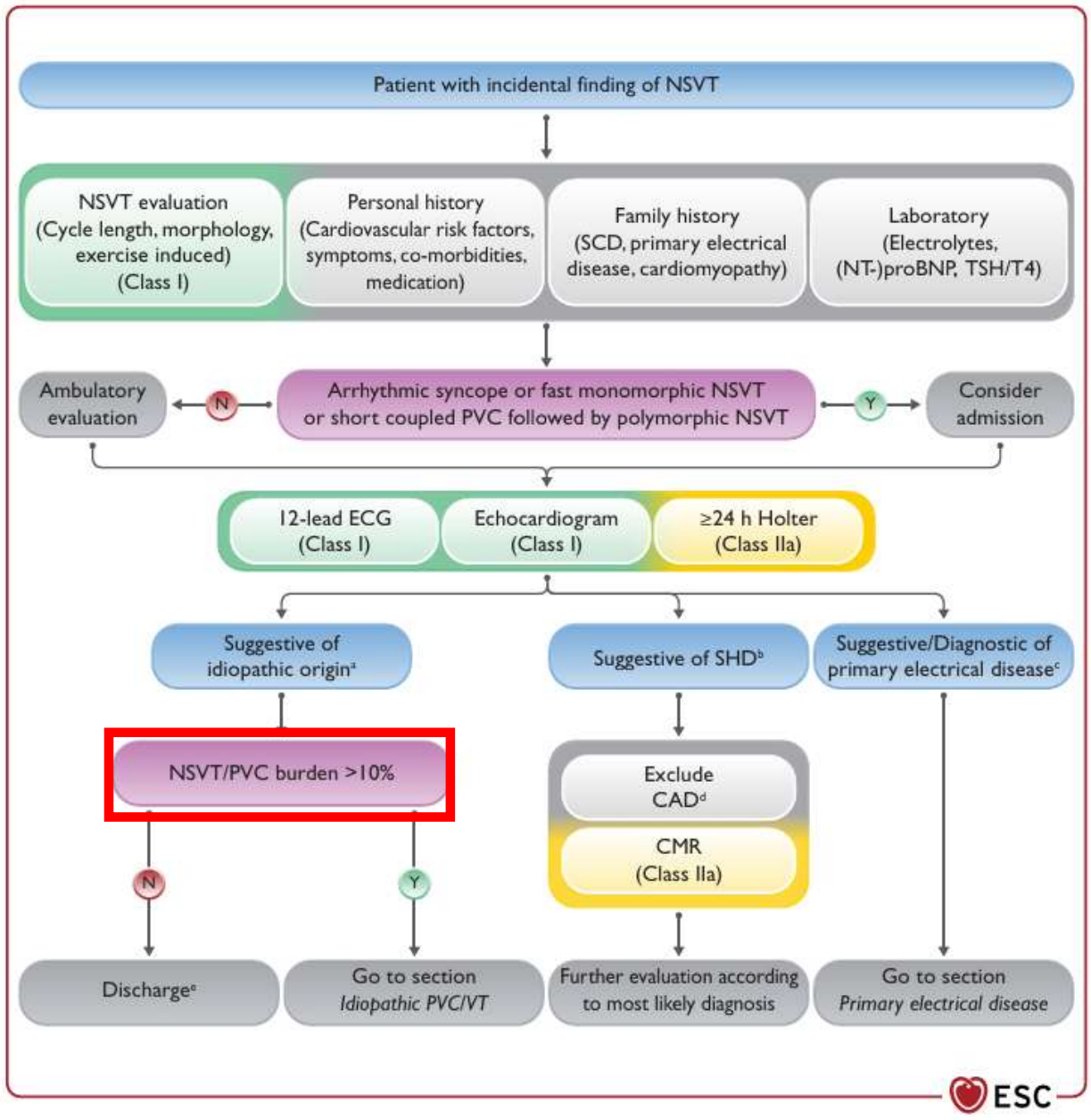
ESV et TVNS



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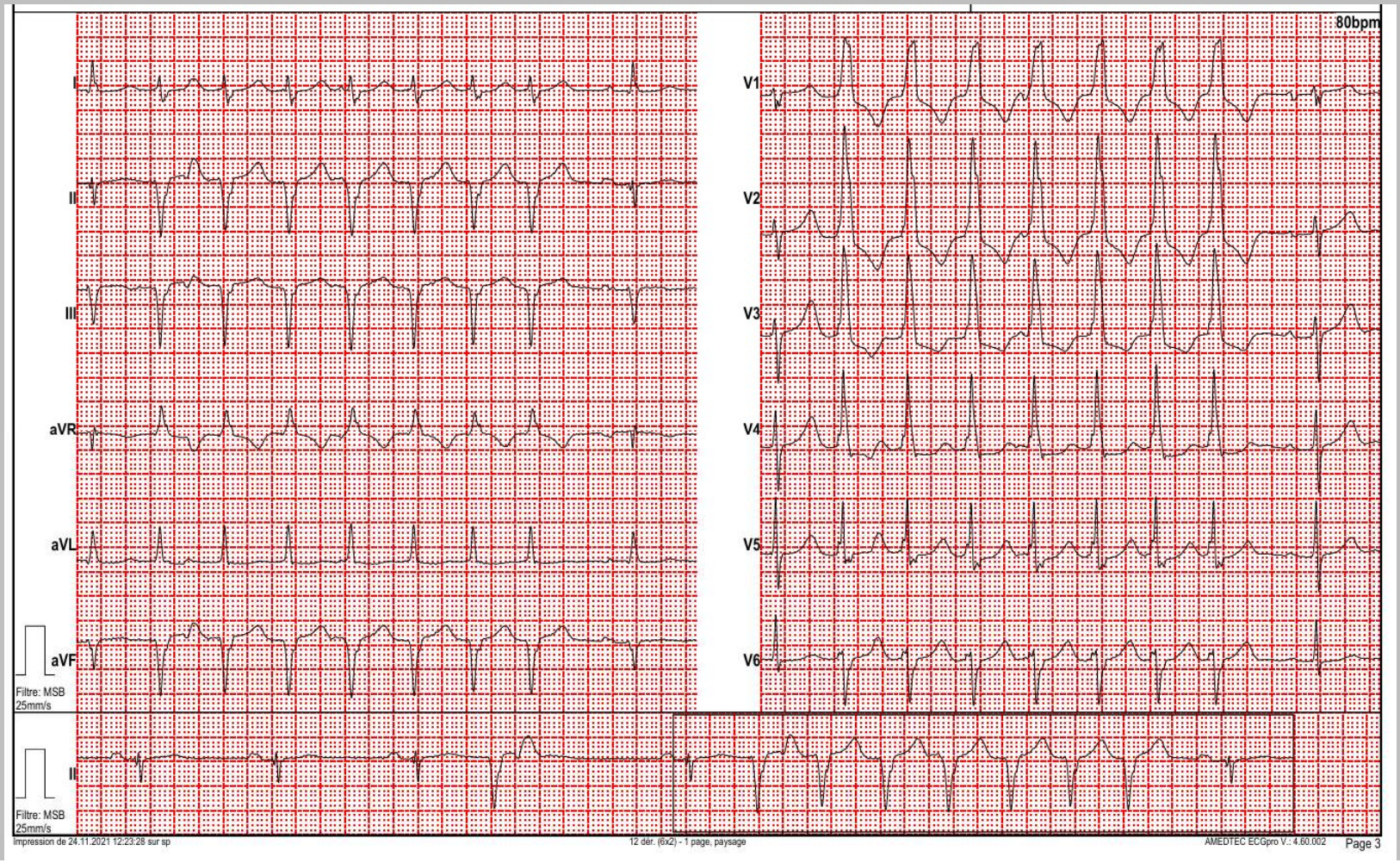
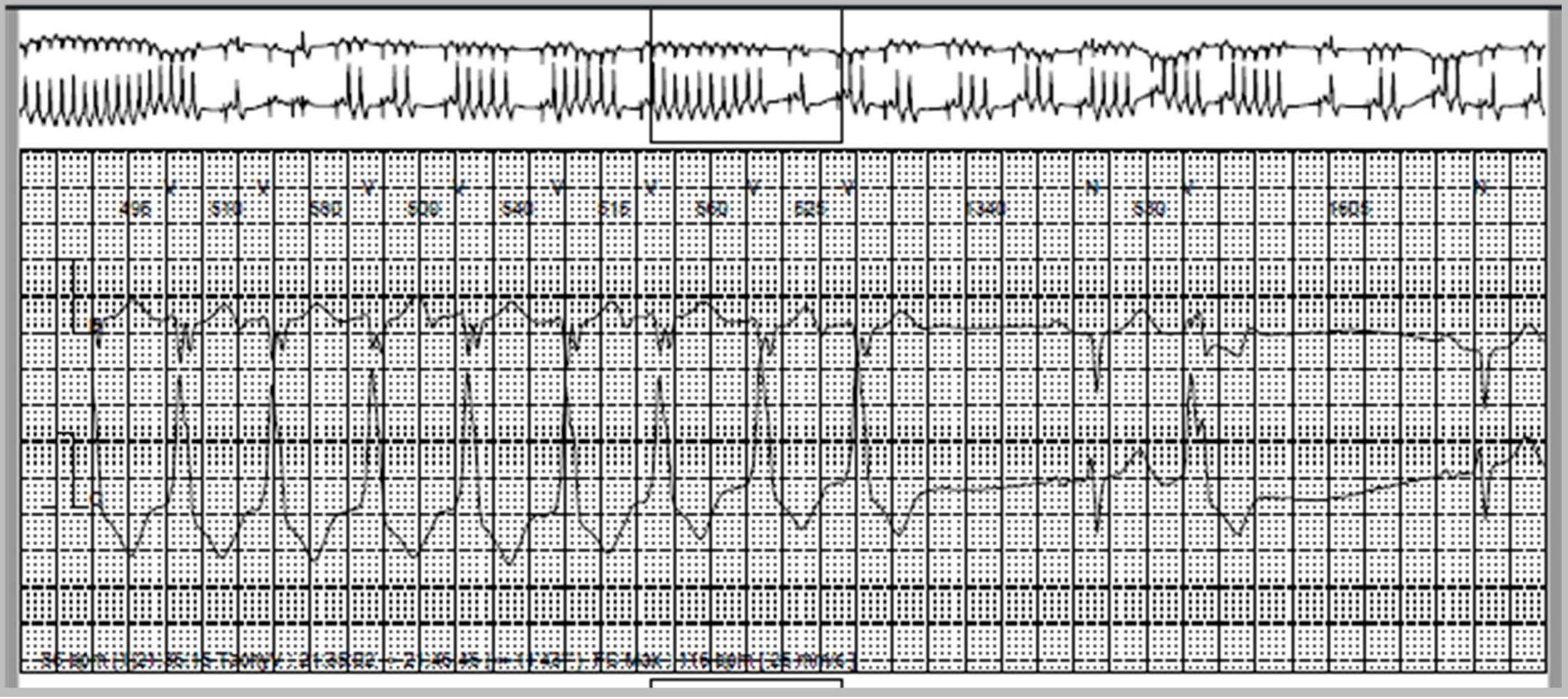
Tachycardie à complexes larges



Tachycardie à complexes larges



ESV

- Prévalence normale des ESV
  - <1%: 70%
  - Entre 1% et 5%: 21%
  - Entre 6% et 10%: 4%
  - >10%: 5%
- Mécanisme
  - Ré-entrée (zone de fibrose myocardique)
  - Automaticité (ischémie aigue)
  - Activité triggée (troubles électrolytiques)

ESV
situations prédisposantes

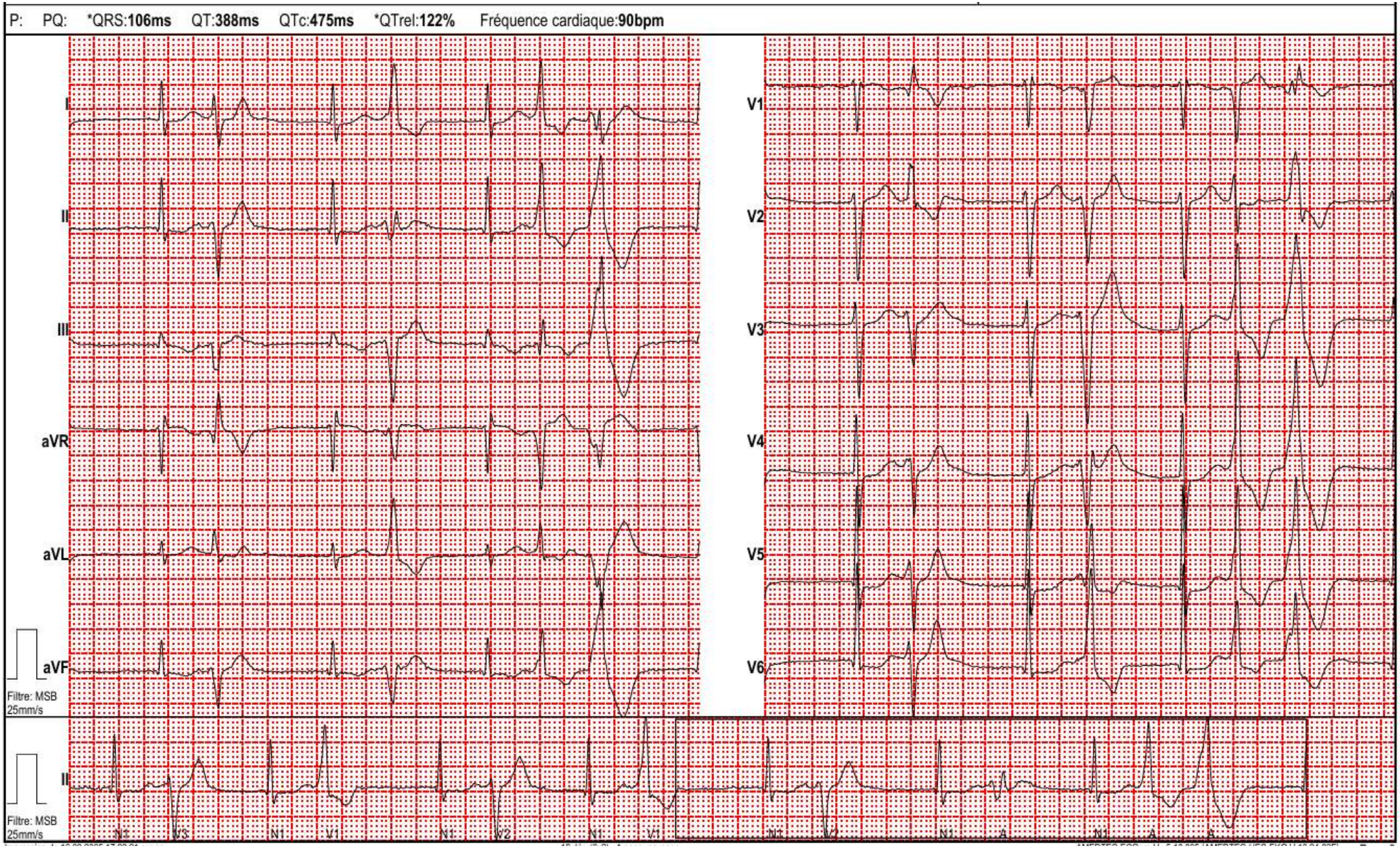
Trigger	Patient group	Test
Alcohol	Patients reporting alcohol use, physical examination signs of alcohol use	Alcohol screen, urine toxicology
Caffeine (eg, coffee or tea intake)	Patients reporting caffeine use	
Recreational/stimulating drugs	Patients in whom stimulant drug use is suspected	Drug screen (eg, for cocaine, amphetamines)
Electrolyte abnormalities (eg, potassium or magnesium)	Patients with suspected metabolic derangements (eg, vomiting, diarrhea, diuretic use, etc)	Serum electrolytes
Hypoxia	Patients with COPD or other chronic lung disease	Pulse oximetry, arterial blood gas
Uncontrolled hypertension	Patients with a history of hypertension or risk factors for hypertension	Blood pressure measurement
Hyper/hypothyroidism	Patients with symptoms/signs of hyper- or hypothyroidism	TSH
High digoxin level	Patients taking the drug	Digoxin level
Heart failure exacerbation	Patients with heart failure symptoms or physical examination signs of volume overload	Brain-type natriuretic peptide
Anemia	Patients with symptoms/signs of anemia	Complete blood count
Psychological stress/anxiety	Patients reporting increase in life stressors, anxiety	
Menopausal transition	Females in the perimenopause period	

COPD: chronic obstructive pulmonary disease; TSH: thyroid-stimulating hormone.

ESV – critères de haut risque

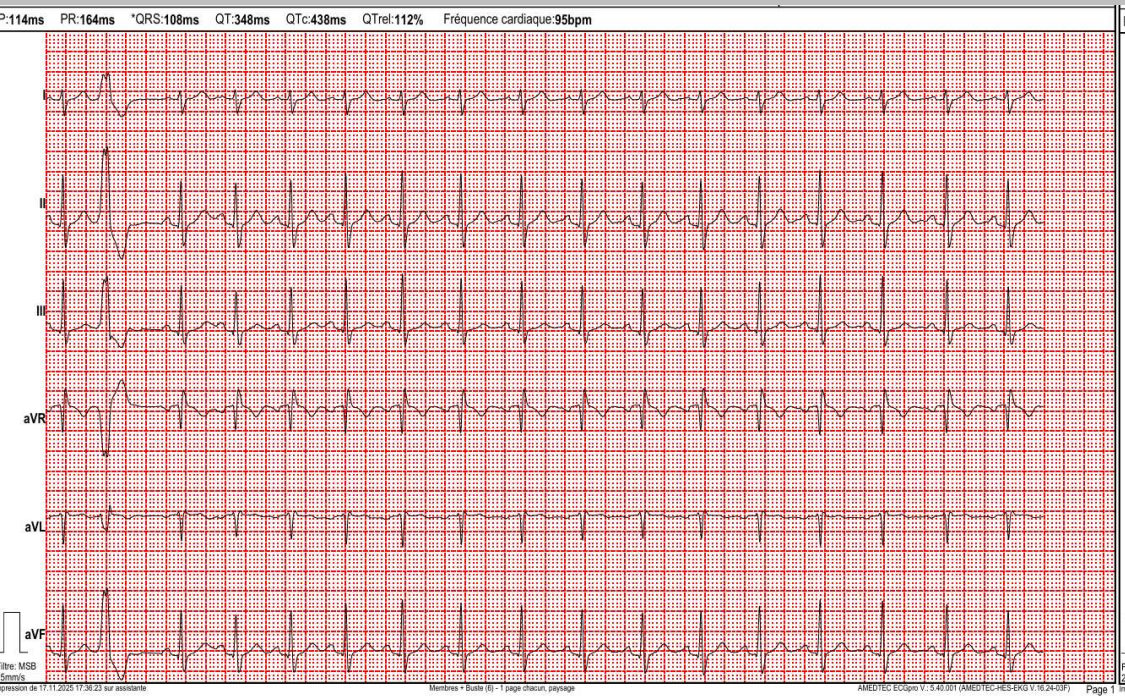
- Symptômes (palpitations, syncopes)
- Antécédents d'IM, cardiomyopathie
- AF+ pour une cardiomyopathie ou de mort subite
- Signes d'insuffisance cardiaque
- Haute incidence
- ESV complexes (multifocales, doublets)
- Couplage variable

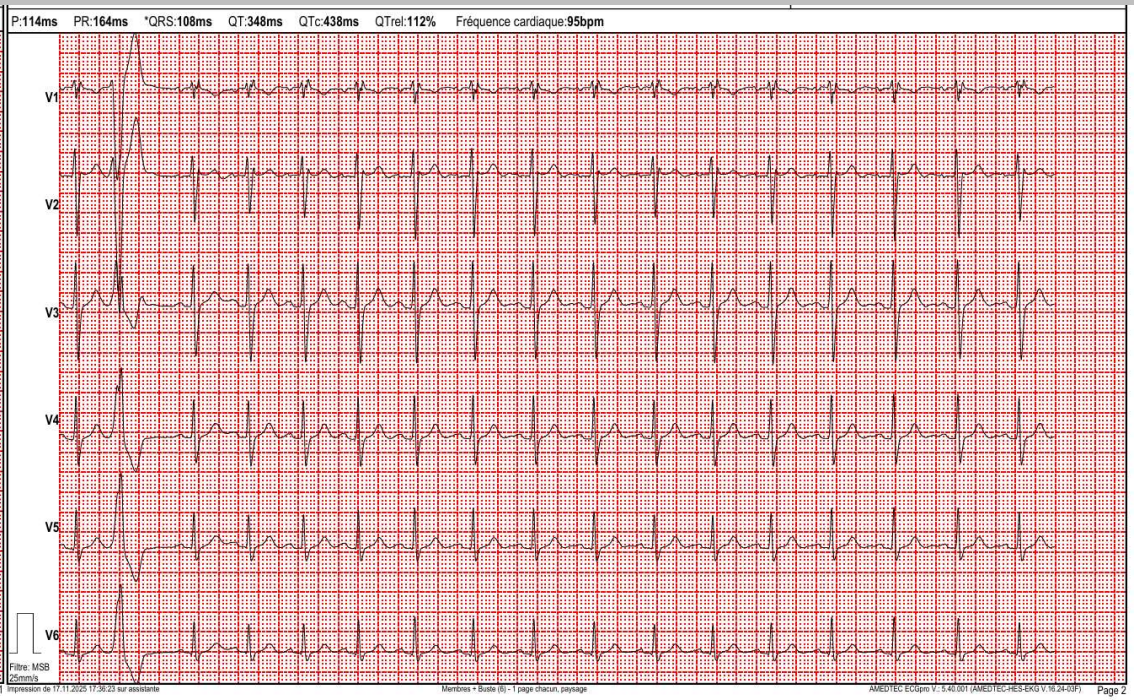
- => investigations indiquées

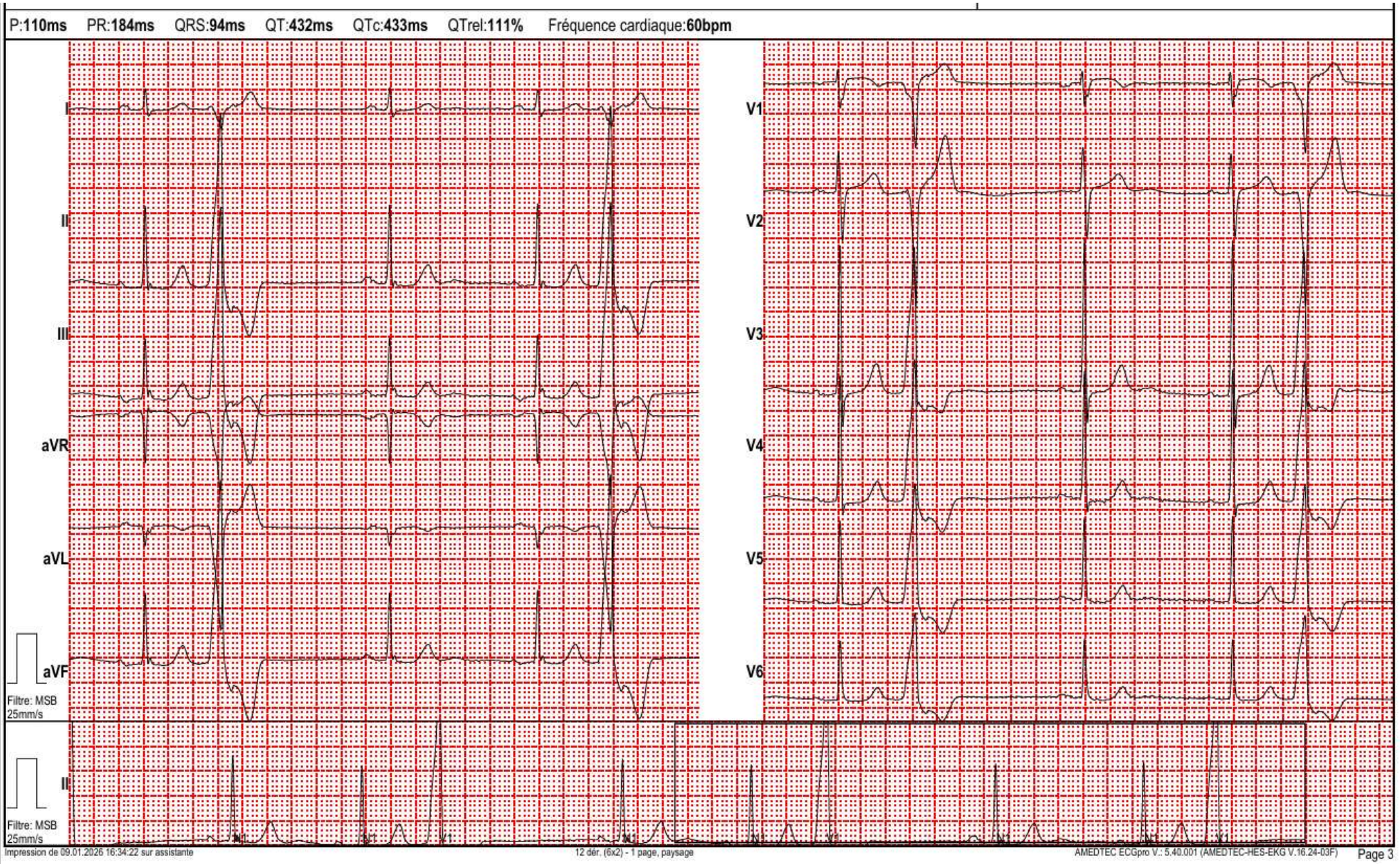

P: PQ: *QRS:106ms QT:388ms QTc:475ms *QTrel:122% Fréquence cardiaque:90bpm
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
Filtre: MSB
25mm/s
II
Filtre: MSB
25mm/s

ESV – formes souvent bénignes

- CCVD
  - Monomorphes
  - Isolées
  - Morphologie BBG axe inférieur


P:114ms PR:164ms *QRS:108ms QT:348ms QTc:438ms QTrel:112% Fréquence cardiaque:95bpm
I
II
III
aVR
aVL
aVF
Filtre: MSB
25mm/s
Impression de 17.11.2025 17:36:23 sur assistante
Membres + Buste (6) - 1 page chacun, paysage
AMEDTEC ECGpro V.: 5.40.001 (AMEDTEC-HES-EKG V.16.24-03F)
Page 1


P:114ms PR:164ms *QRS:108ms QT:348ms QTc:438ms QTrel:112% Fréquence cardiaque:95bpm
V1
V2
V3
V4
V5
V6
Filtre: MSB
25mm/s
Impression de 17.11.2025 17:36:23 sur assistante
Membres + Buste (6) - 1 page chacun, paysage
AMEDTEC ECGpro V.: 5.40.001 (AMEDTEC-HES-EKG V.16.24-03F)
Page 2


P:110ms PR:184ms QRS:94ms QT:432ms QTc:433ms QTrel:111% Fréquence cardiaque:60bpm
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
Filtre: MSB
25mm/s
II
Filtre: MSB
25mm/s

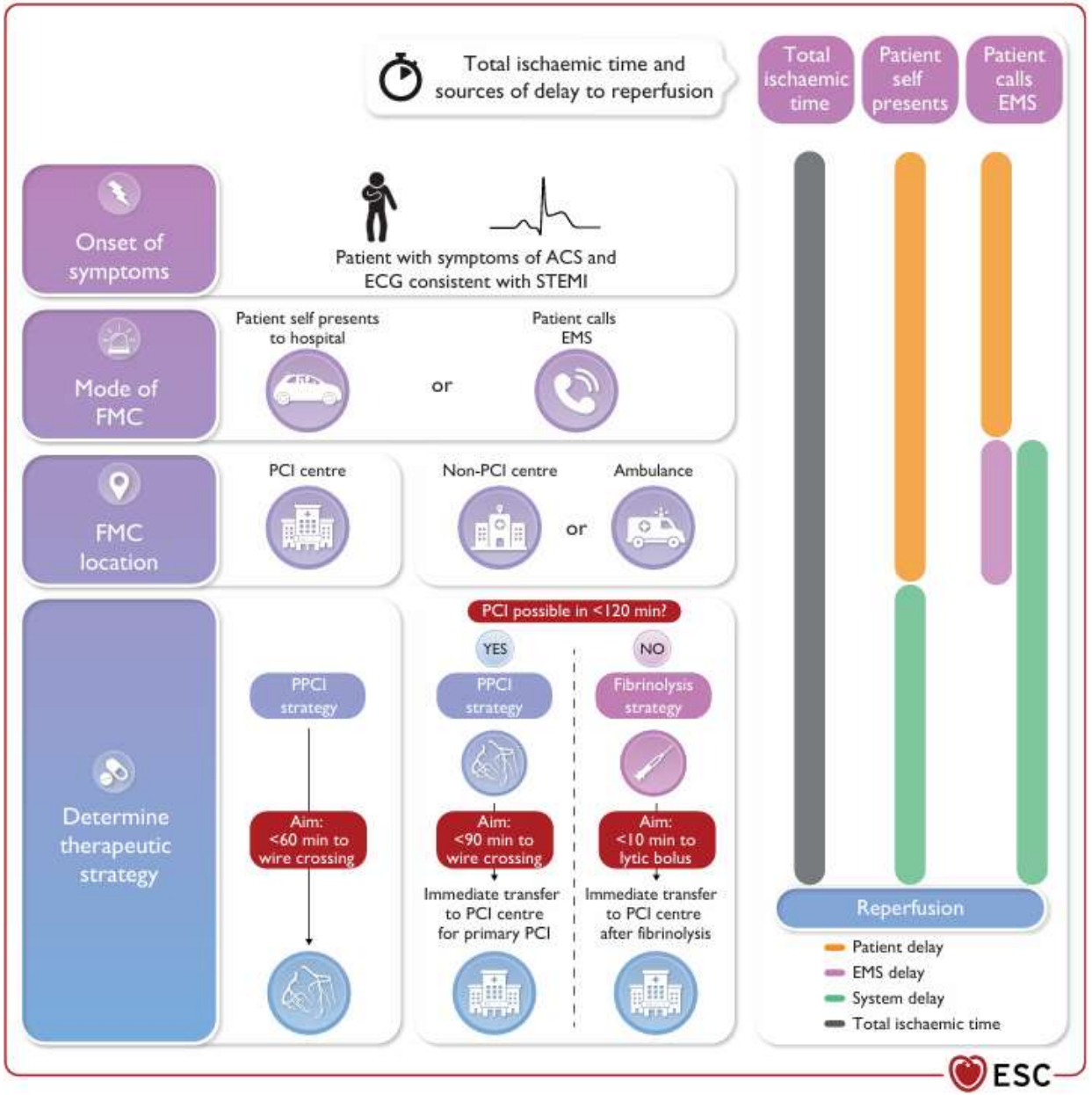
STEMI

- Nouvelle élévation du point J dans 2 dérivations contigues
- ≥2.5mm chez les hommes <40 ans, ≥2mm chez les hommes ≥40 ans, ou ≥1.5mm chez les femmes de tout âge en V2-V3
- et/ou ≥1.5mm dans les autres dérivations en l'absence d'HVG et de BBG
- Ev. V3R-V4R et V7-V8
- Sous-décalages ≥1mm in ≥6 dérivations avec sus-décalages en V1 et/ou aVR CAVE maladie pluritronculaire ou atteinte du TC
- BBG, BBD et pacing compromettent le diagnostic ECG du STEMI

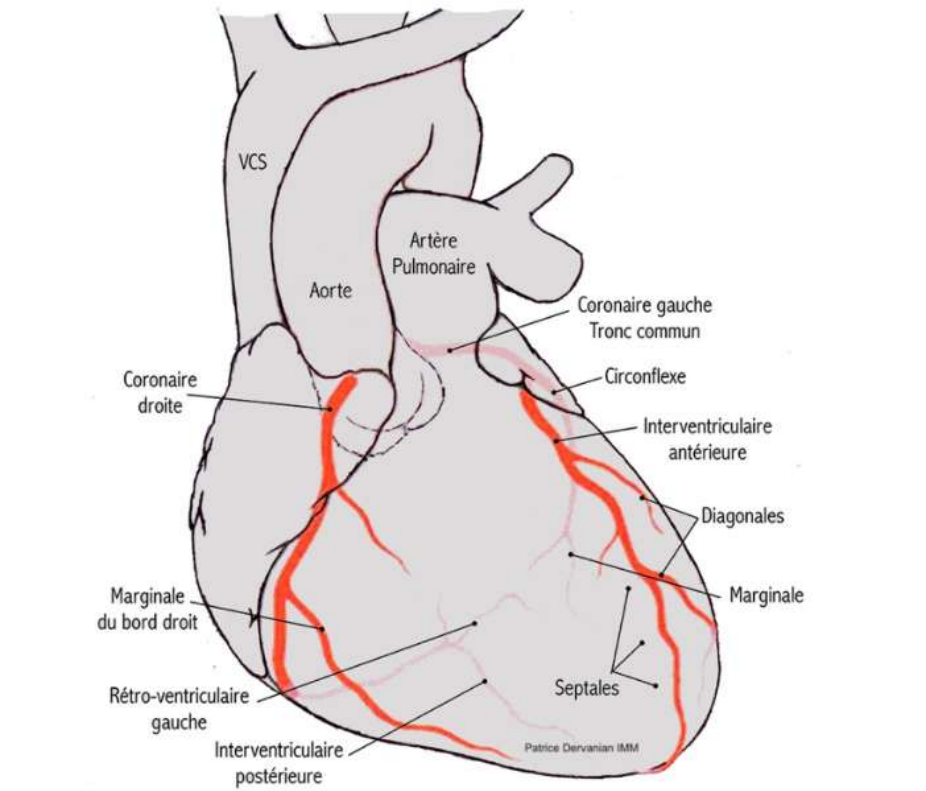
2023 ESC Guidelines for the management of acute coronary syndromes,
European Heart Journal (2023) 44,3720–3826

STEMI

2023 ESC Guidelines for the management of acute coronary syndromes,
European Heart Journal (2023) 44,3720–3826



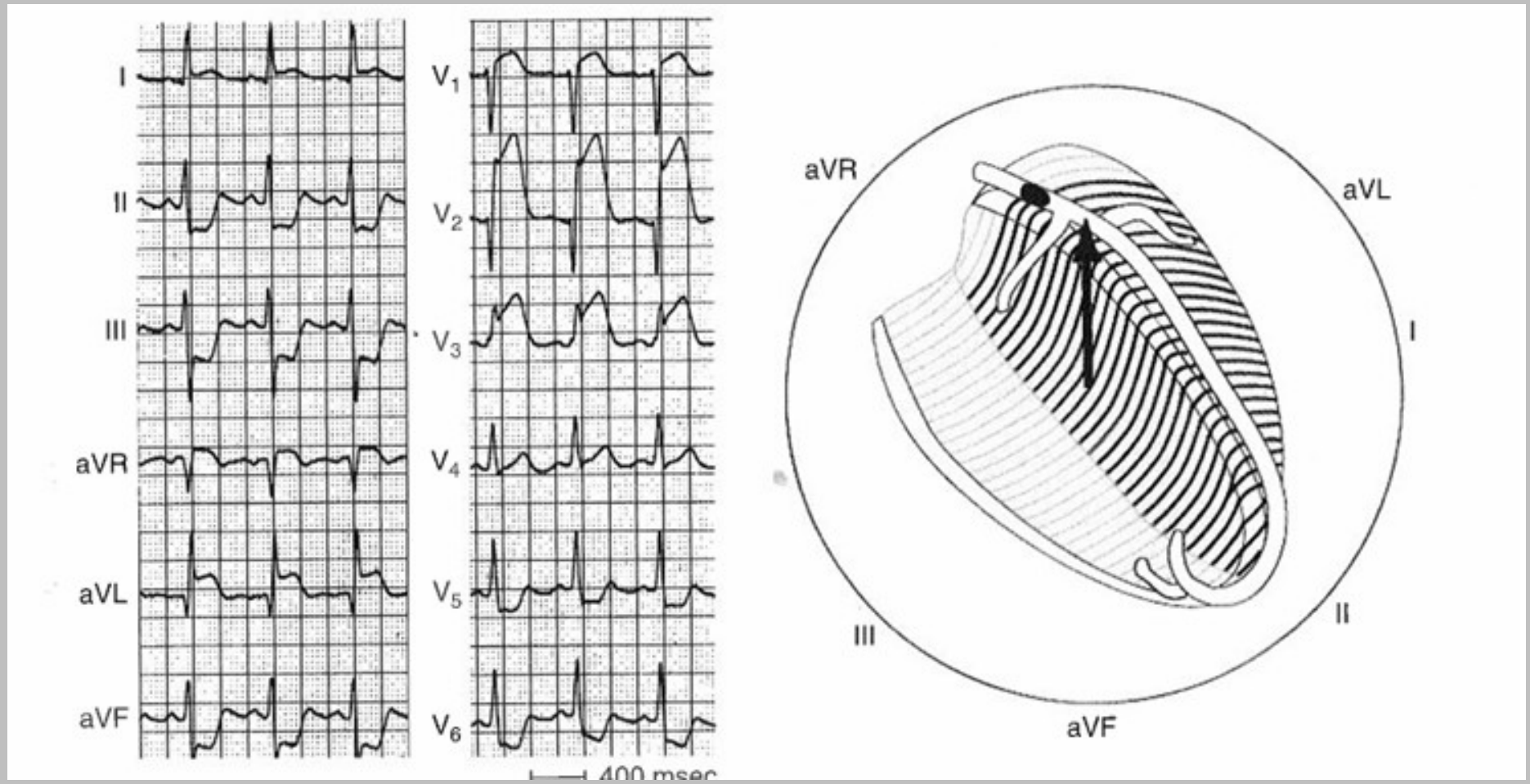
STEMI



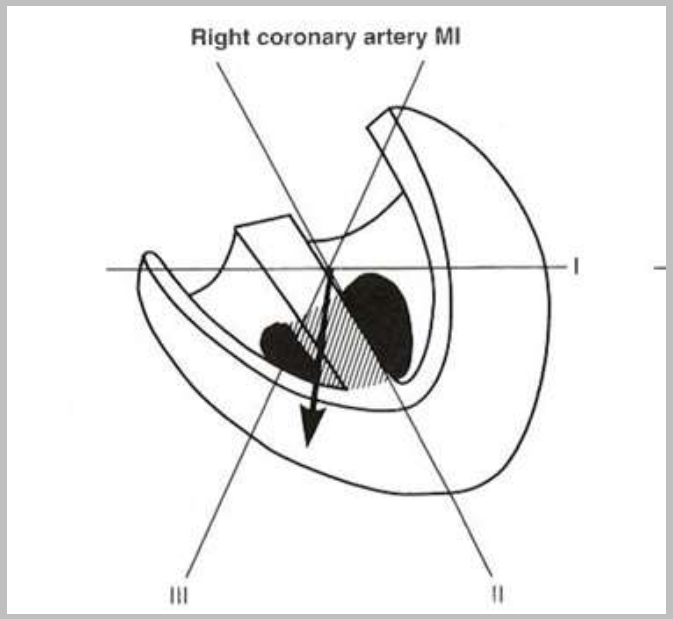
Dérivations ST+	Territoire électrique	Artère coronaire
V1 à V2	Septal	IVA moyenne (avant 1re diagonale)
V3 et V4	Apical	IVA moyenne (après 1re diagonale)
V1 à V4	Septo-apical (antéro-supérieur)	IVA moyenne
VL et D1 et/ou RS en V1(V2)	Latéral haut (antérieur moyen)	Circonflexe ou 1re diagonale
V5 et V6	Latéral bas (antéro-latéral)	Circonflexe ou marginale
V1 à V6 V1 à V6 et VL (DI)	Antérieur Antérieur étendu	IVA proximale (avant la 1re septale) ou TC
V7, V8, V9	Latéro-basal	Circonflexe ou coronaire droite
V1 à V4 et D3-VF-D2	Antéro-inférieur (ou septal profond)	IVA dominante
V3R, V4R, VE et/ou V1	Ventricule droit	CD ou marginale du bord droit
D3, VF, D2,	Inférieur	CD ou circonflexe dominante
D3-VF-D2 + VL-VL ou V5-V6 + V8-V9 ou RS V1	Inféro-latéro-basal	CD ou circonflexe dominante

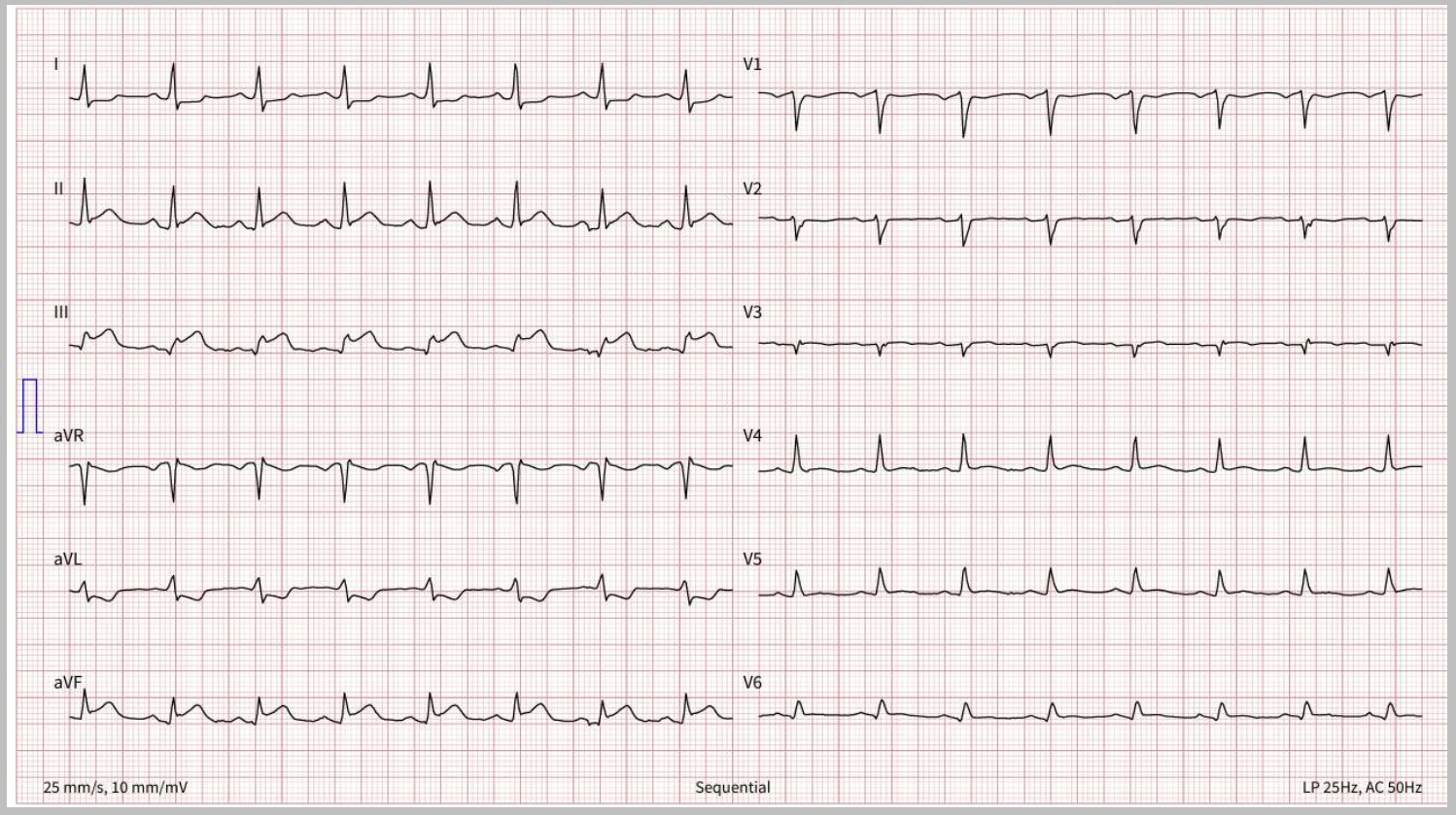
P. Taboulet. 100 ECG autour de l'infarctus

STEMI antérieur

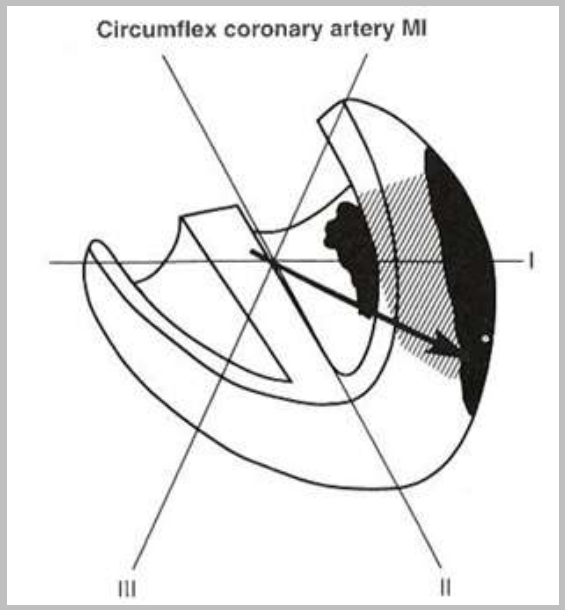


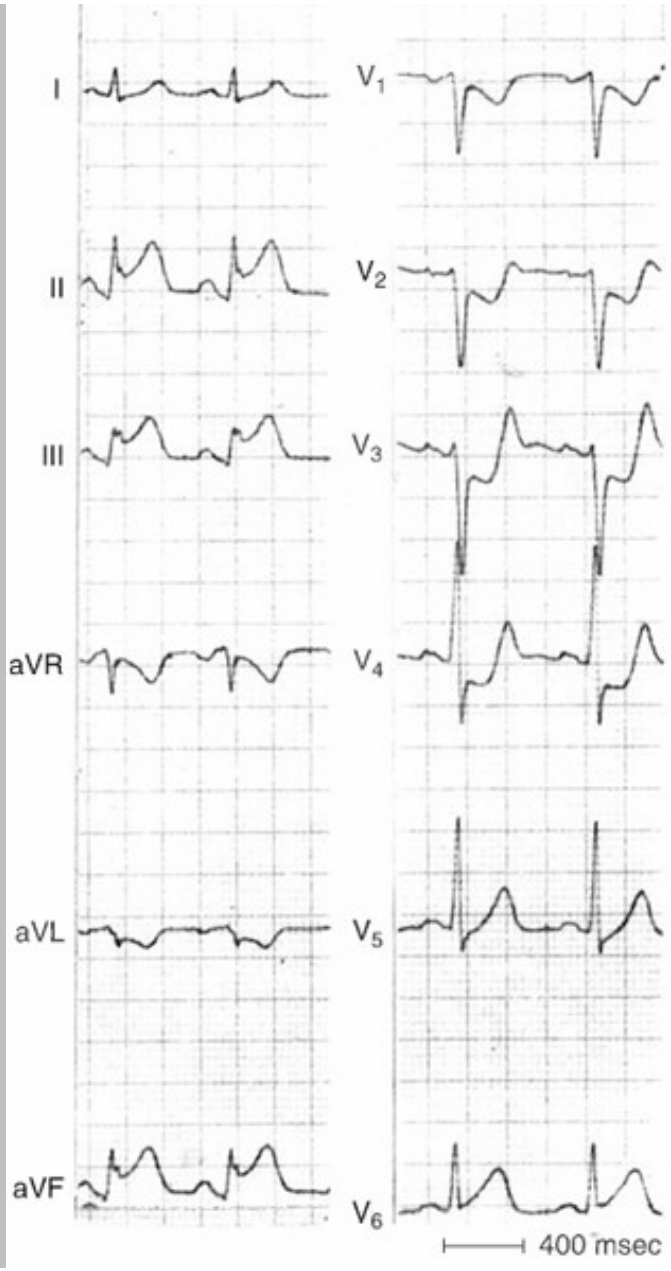
STEMI inférieur





STEMI latéral

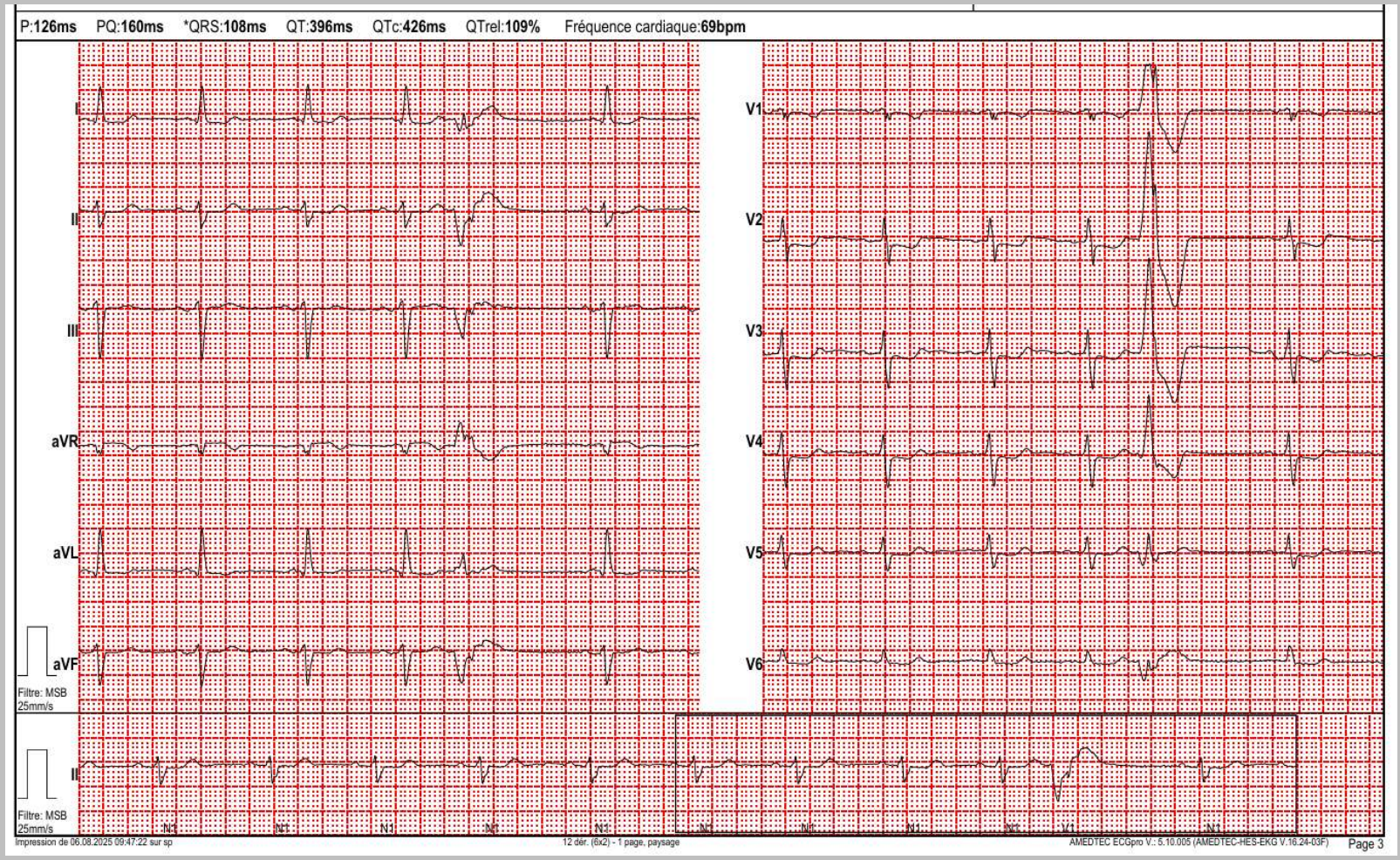




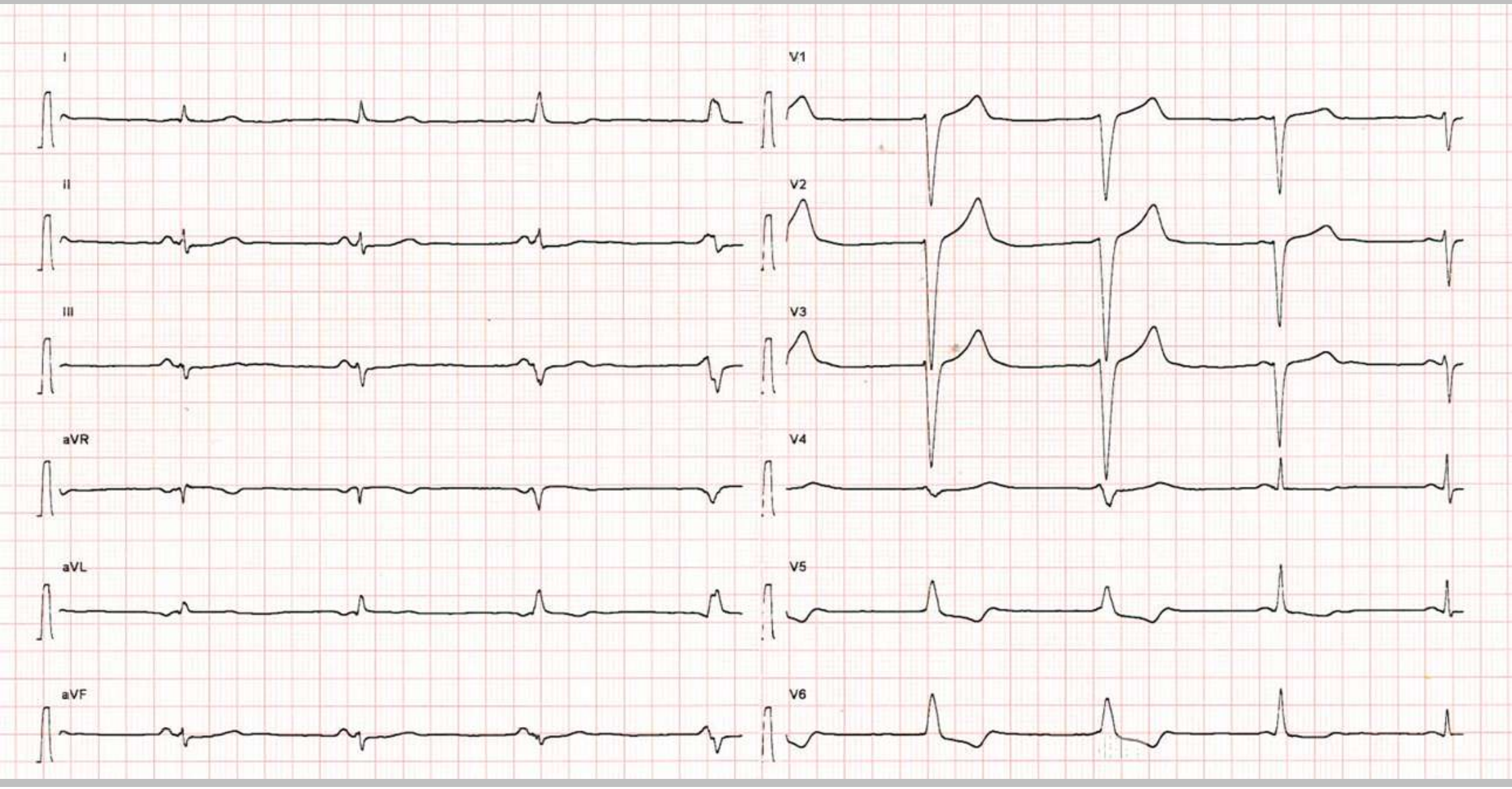
NSTEMI

- Sous-décalages ST
- Ondes T biphasiques ou profondément négatives

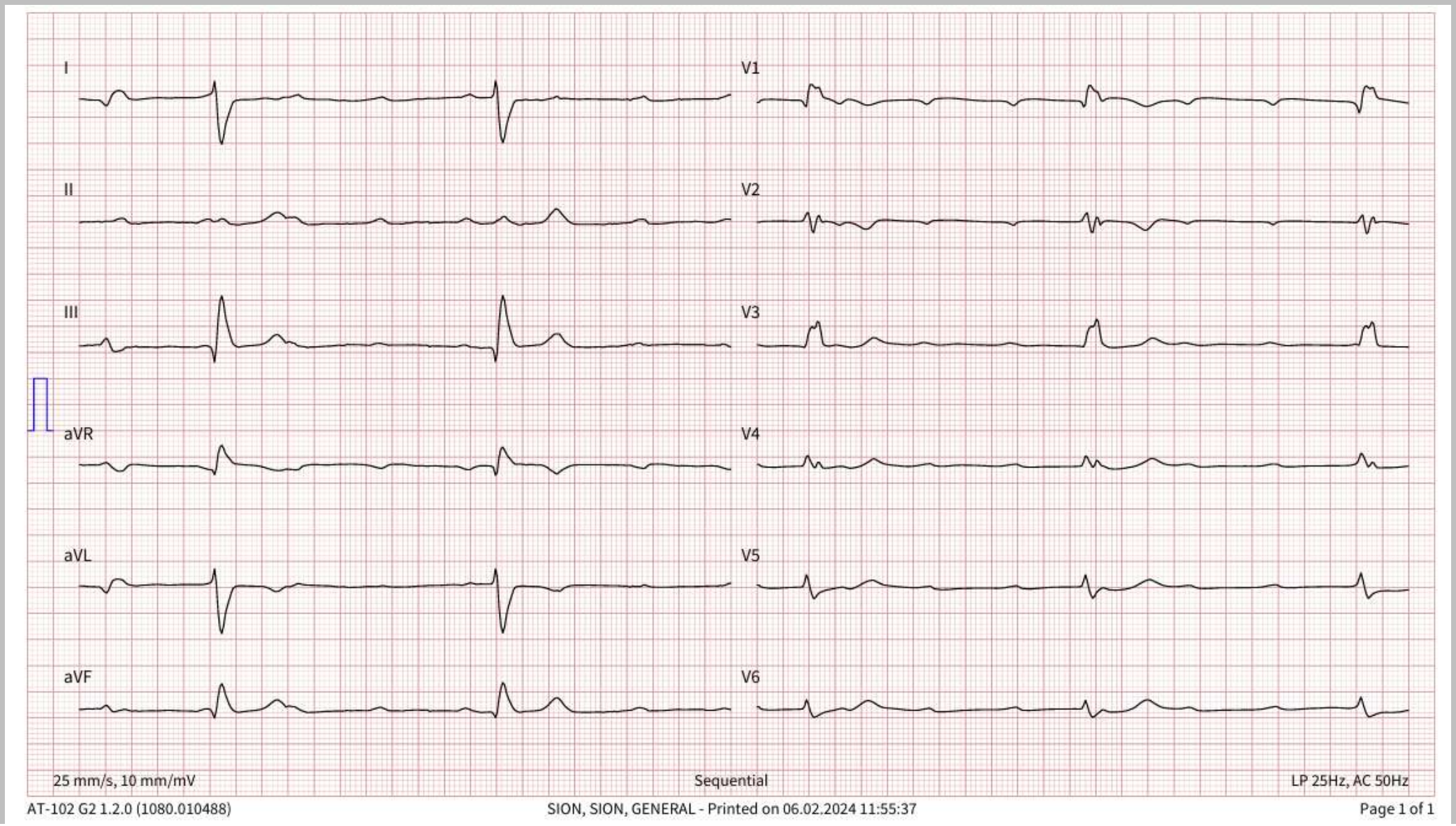
NSTEMI


P:126ms PQ:160ms *QRS:108ms QT:396ms QTc:426ms QTrel:109% Fréquence cardiaque:69bpm
I
II
III
aVR
aVL
aVF
V1
V2
V3
V4
V5
V6
Filtre: MSB
25mm/s
II
Filtre: MSB
25mm/s
Impression de 06.08.2025 09:47:22 sur sp
12 dér. (6x2) - 1 page, paysage
AMEDTEC ECGpro V.: 5.10.005 (AMEDTEC-HES-EKG V.16.24-03F)
Page 3

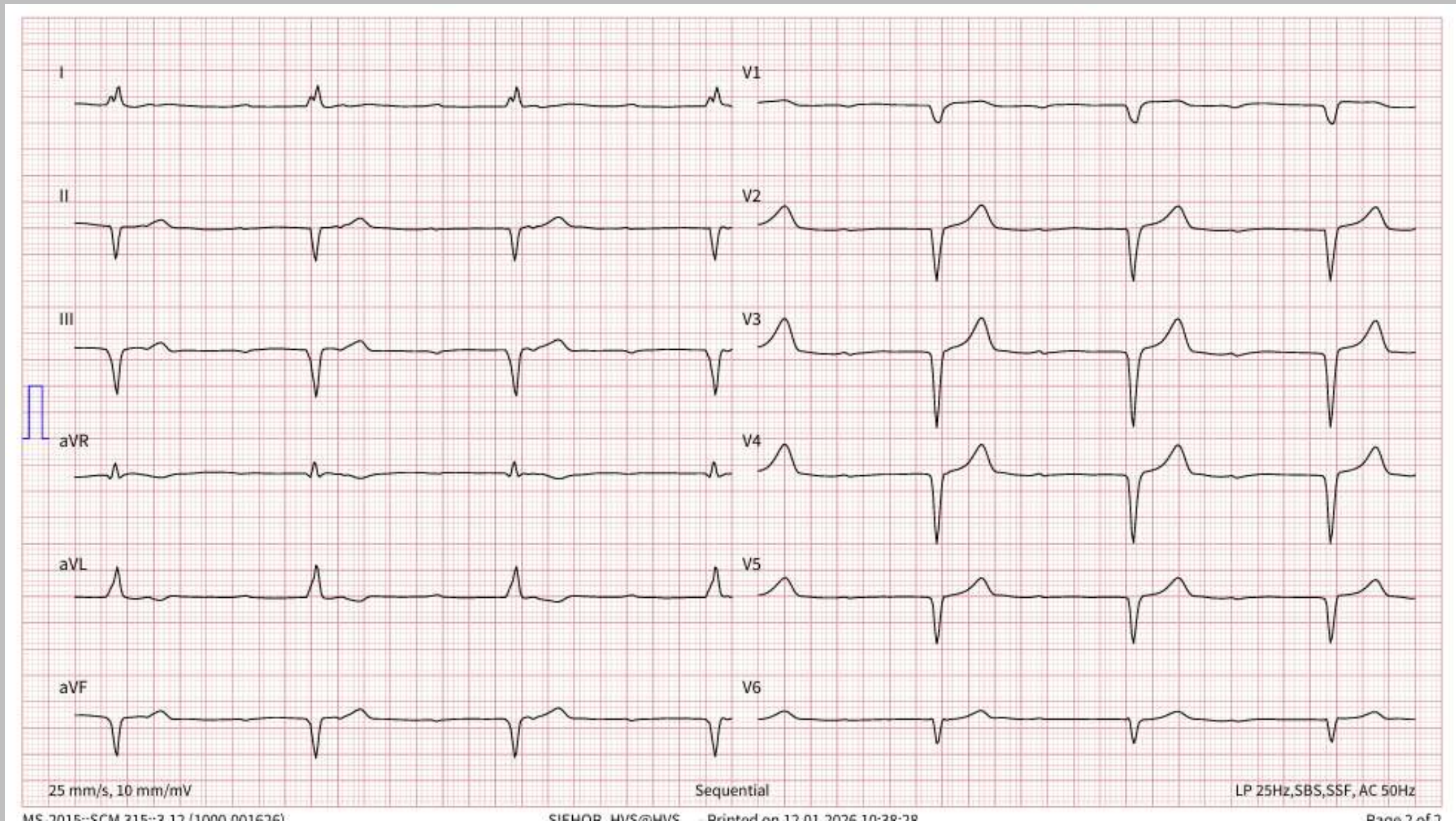
C. A. (f) 28.01.1972



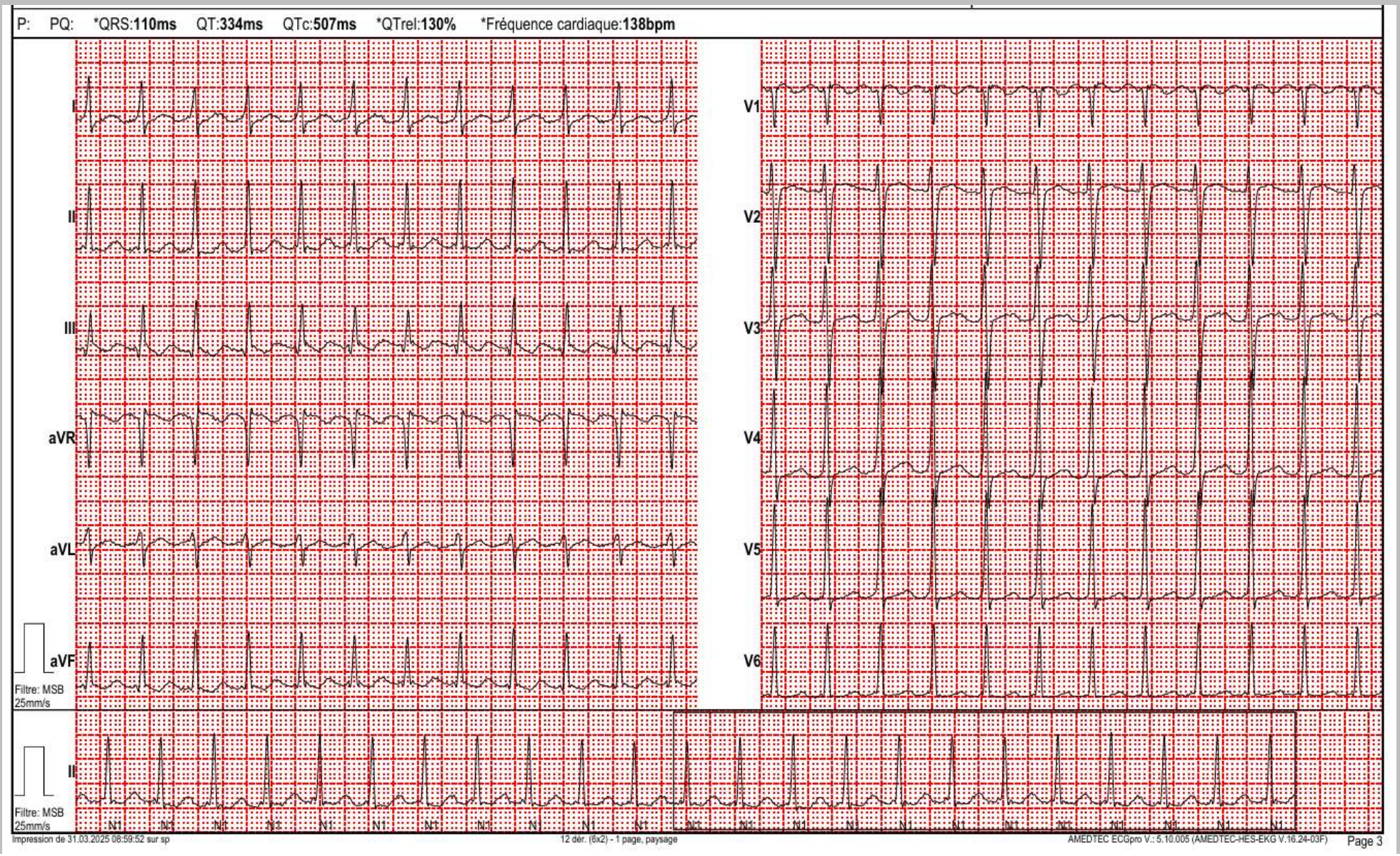
E. B. (m) 30.03.1935



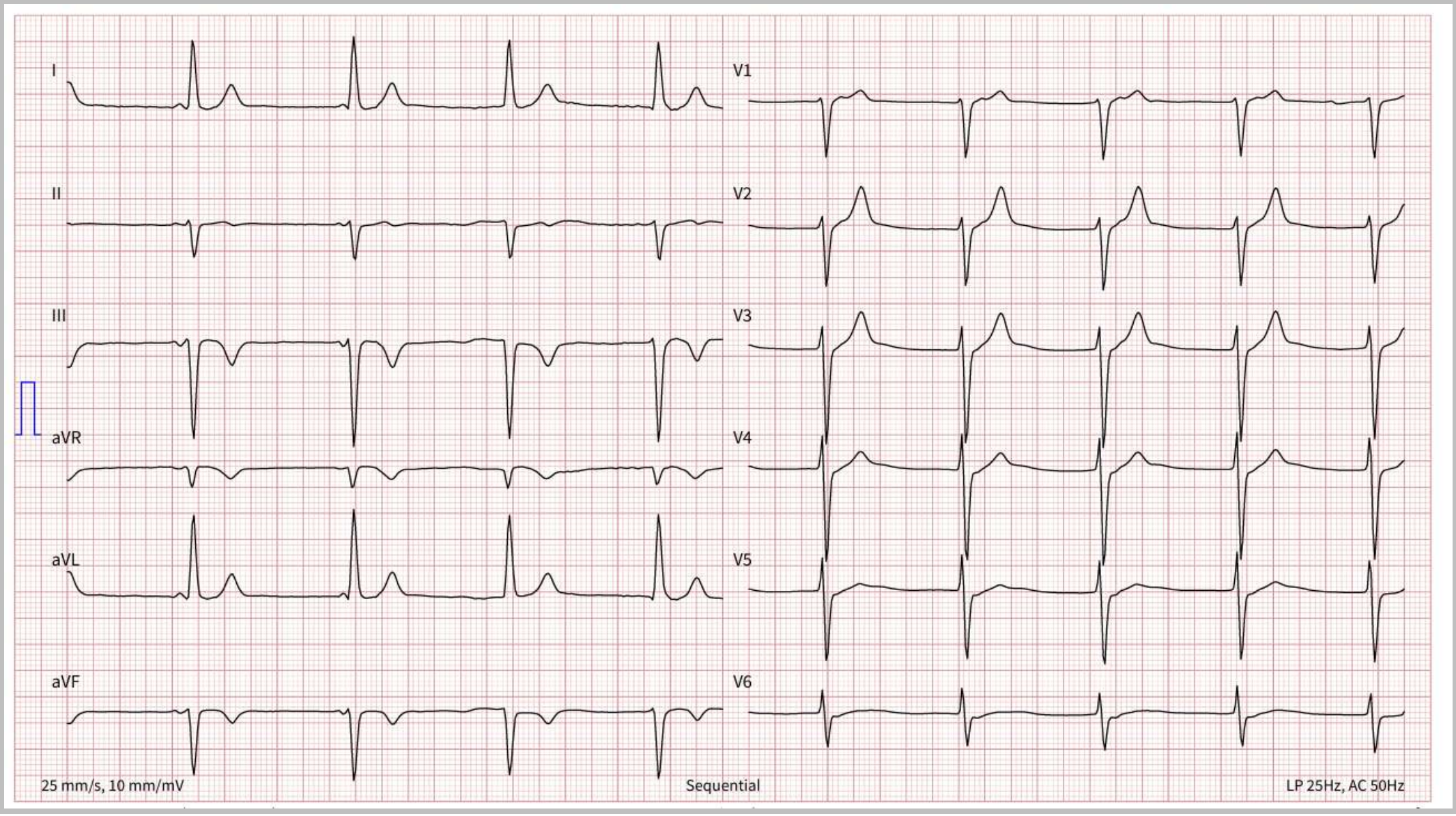
A. W. (f) 18.11.1928



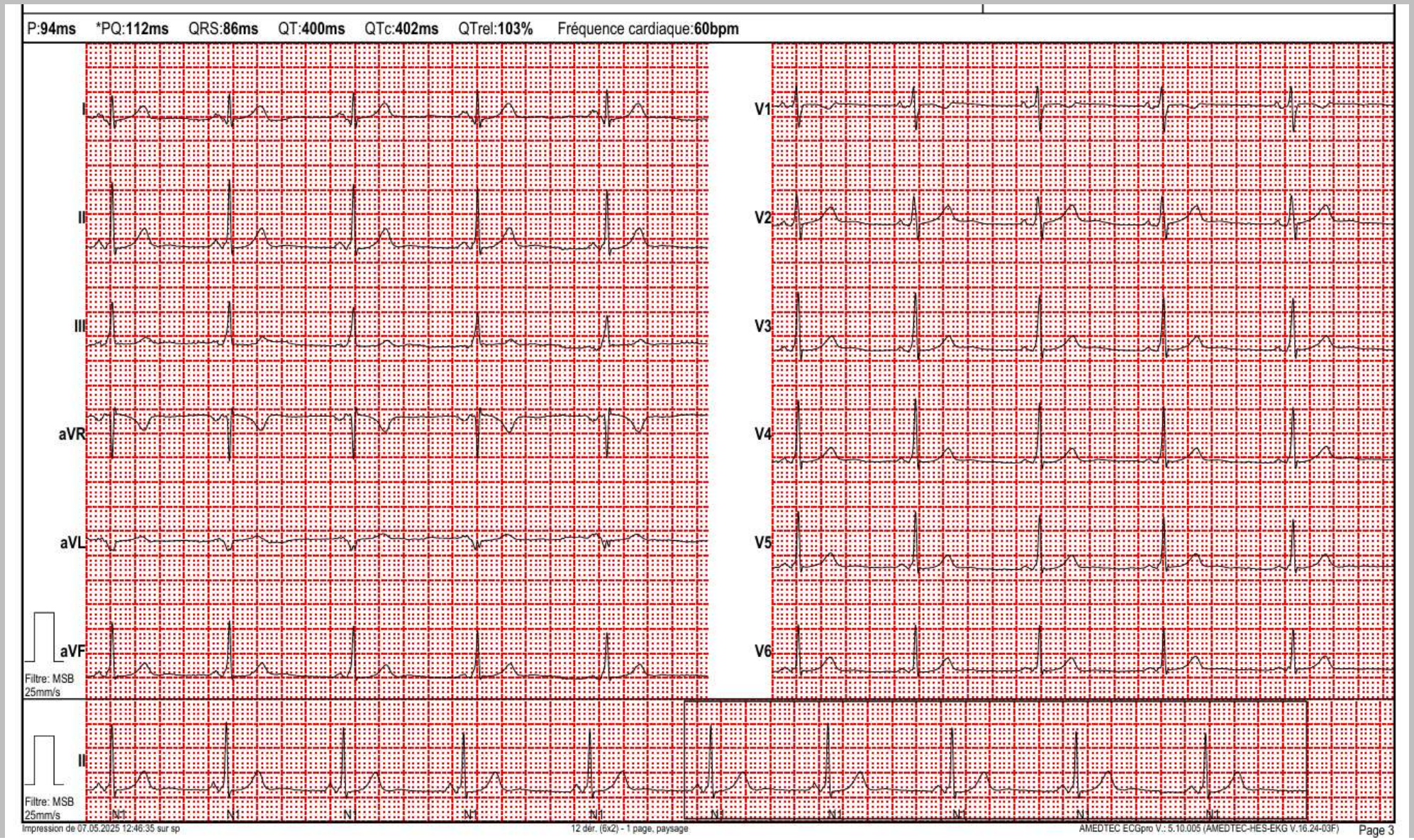
F. D. (m) 18.12.1960



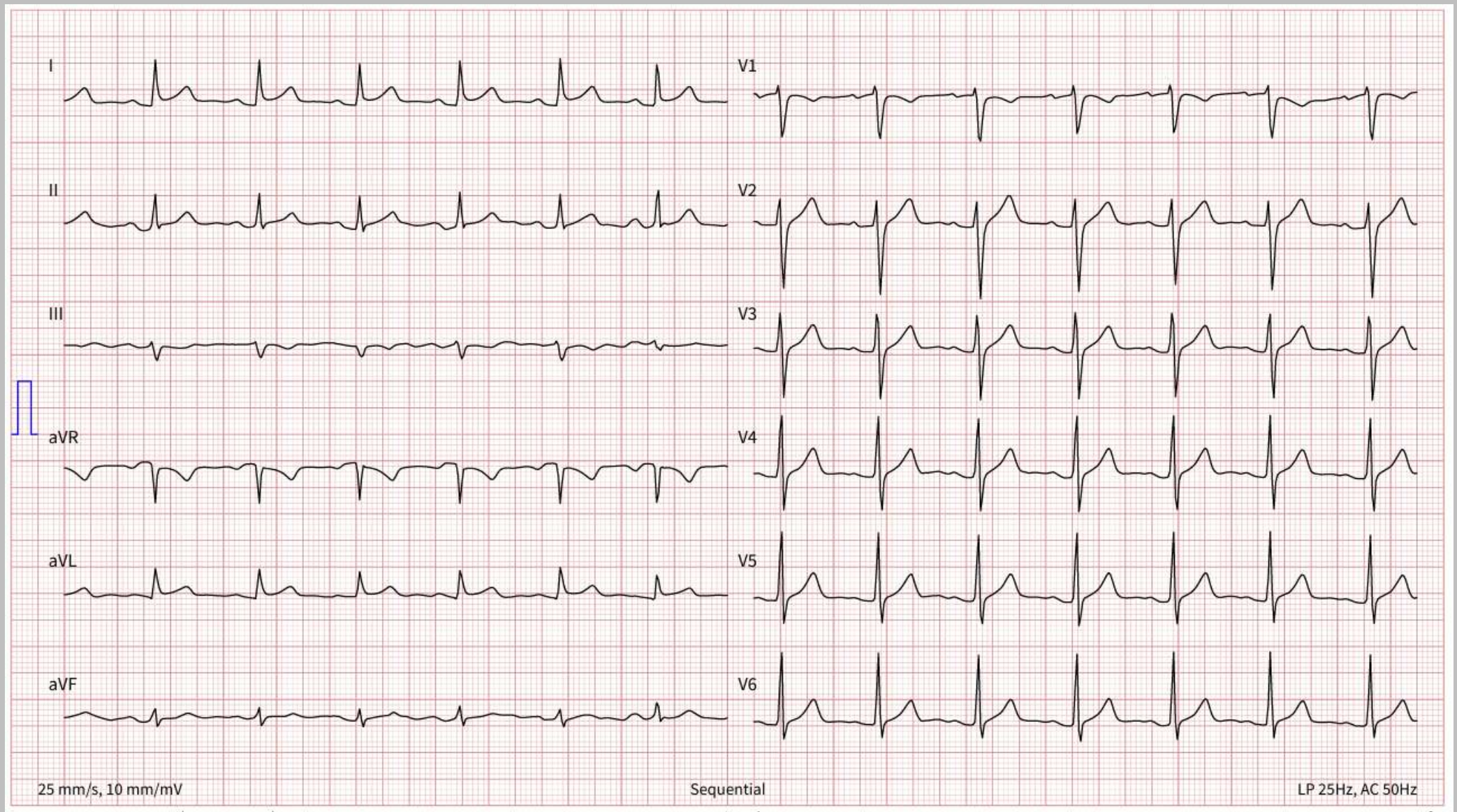
F. P. (m) 11.10.1952



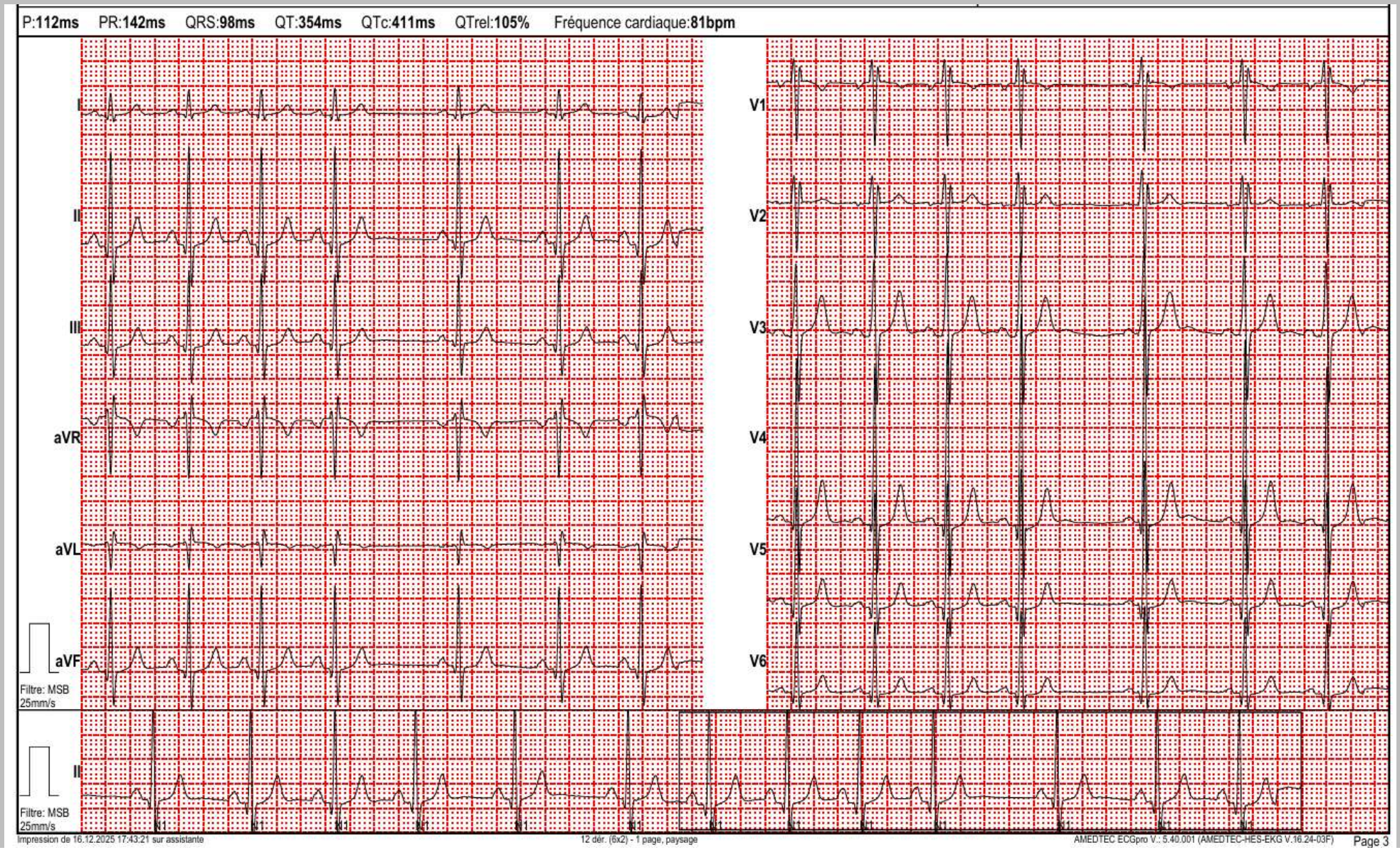
J. E. (f) 25.03.1998



S. V. (f) 08.08.1976

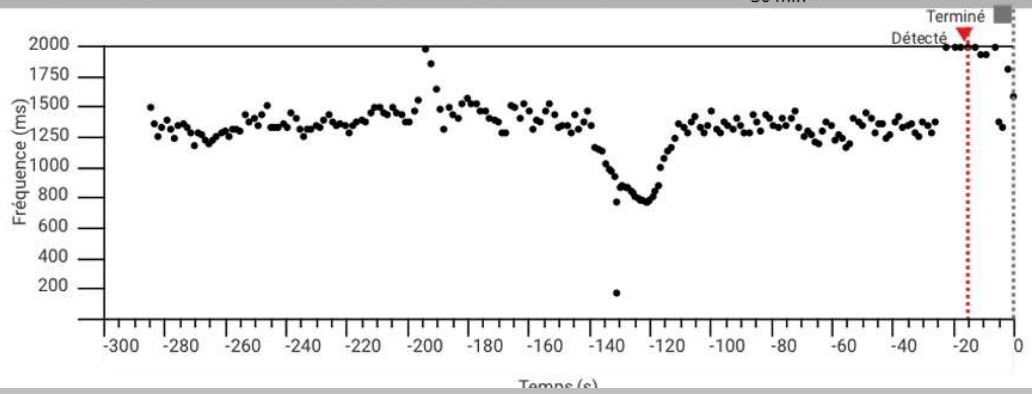


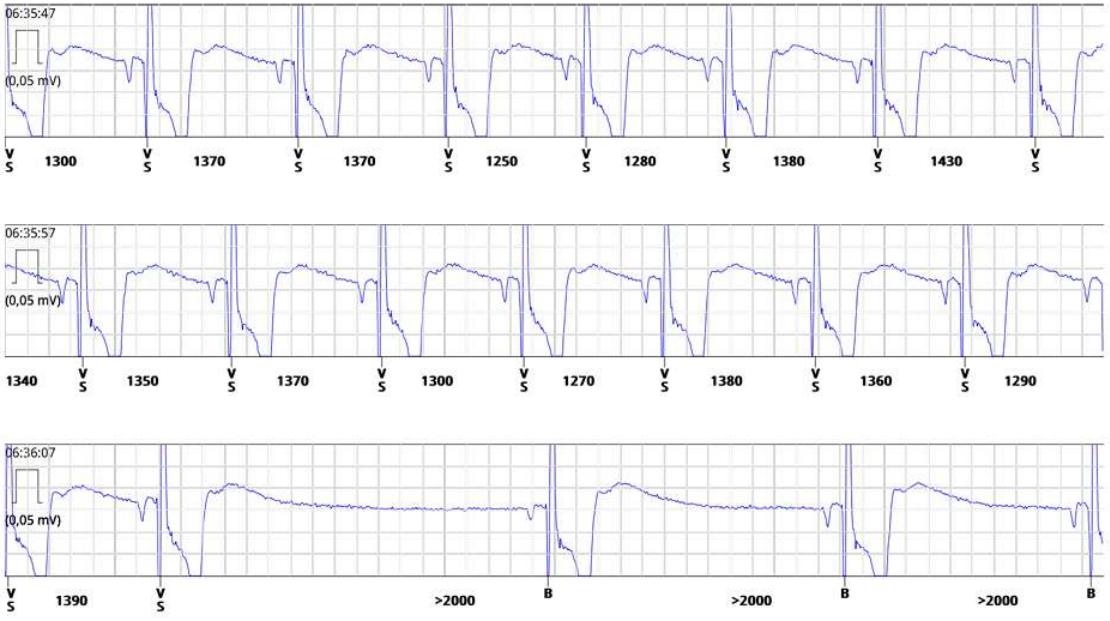
C. S. (m) 24.10.2006



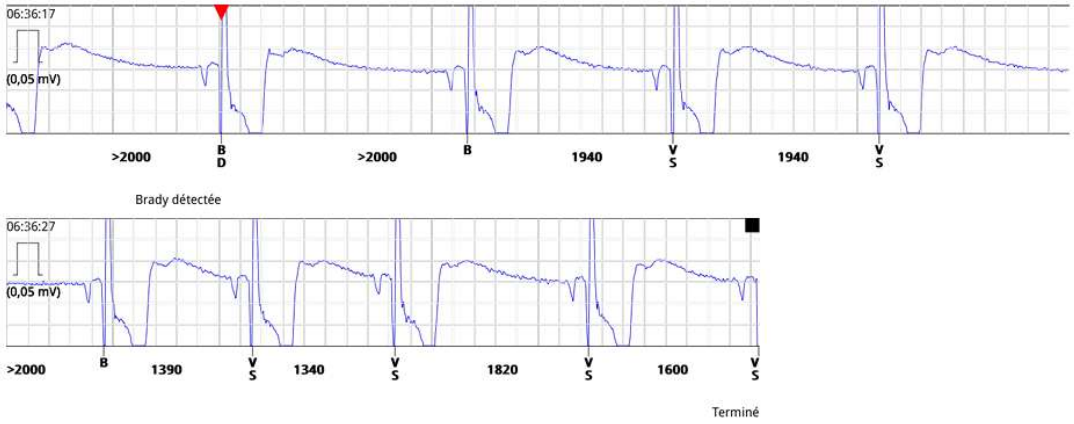
T. S. (m) 23.12.1989

N° ID	Type	Date	Heure HH:MM	Durée HH:MM:SS	Fréquence max.	Fréquence moy.
1654	Brady	21 nov. 2023	06:36	:17	Fréquence min. <30 min-1	43 min-1



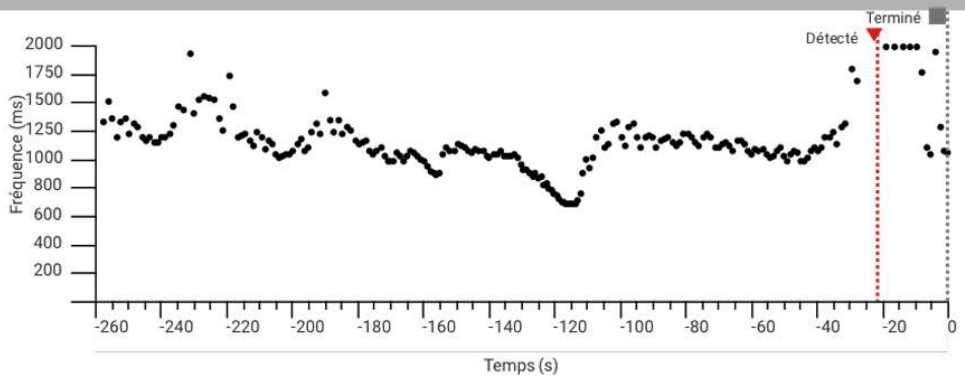


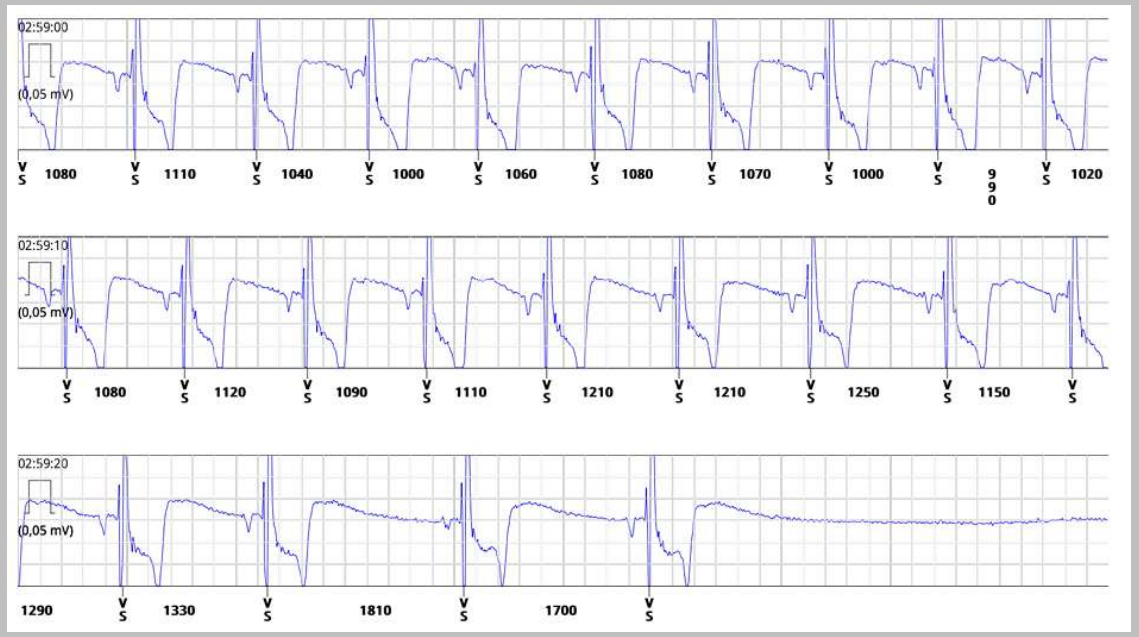
Brady(ID #1654) suite

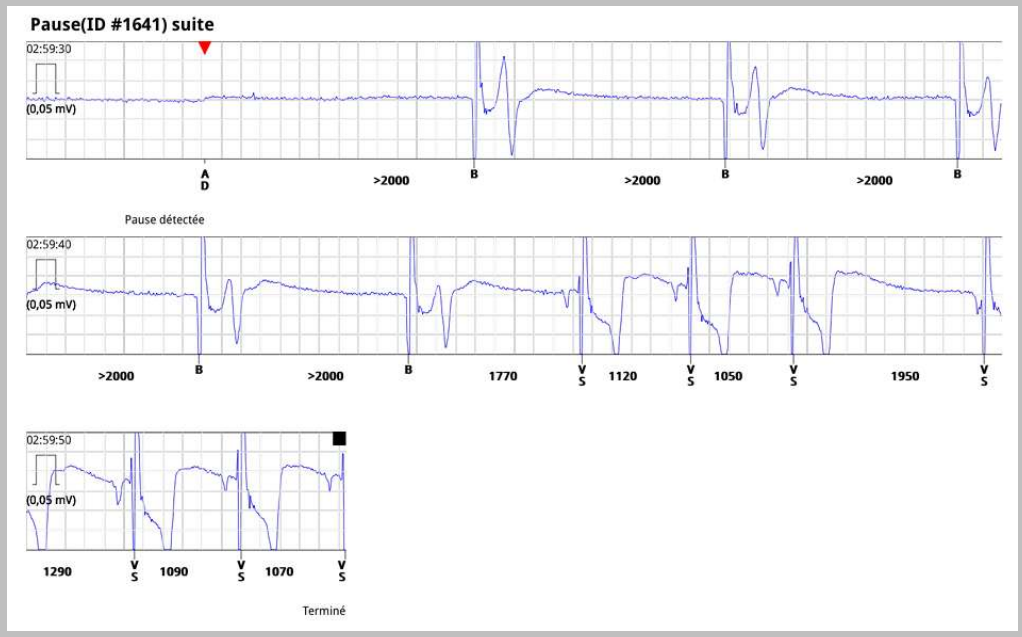


T. S. (m) 23.12.1989

Nº ID	Type	Date	Heure HH:MM	Durée HH:MM:SS	Fréquence max.	Fréquence moy.
1641	Pause	10 nov. 2023	02:59	:09	- - -	50 min-1

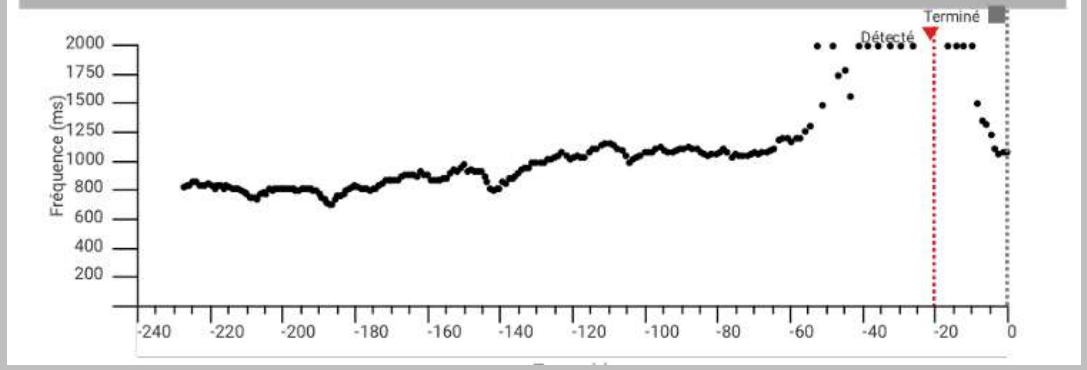


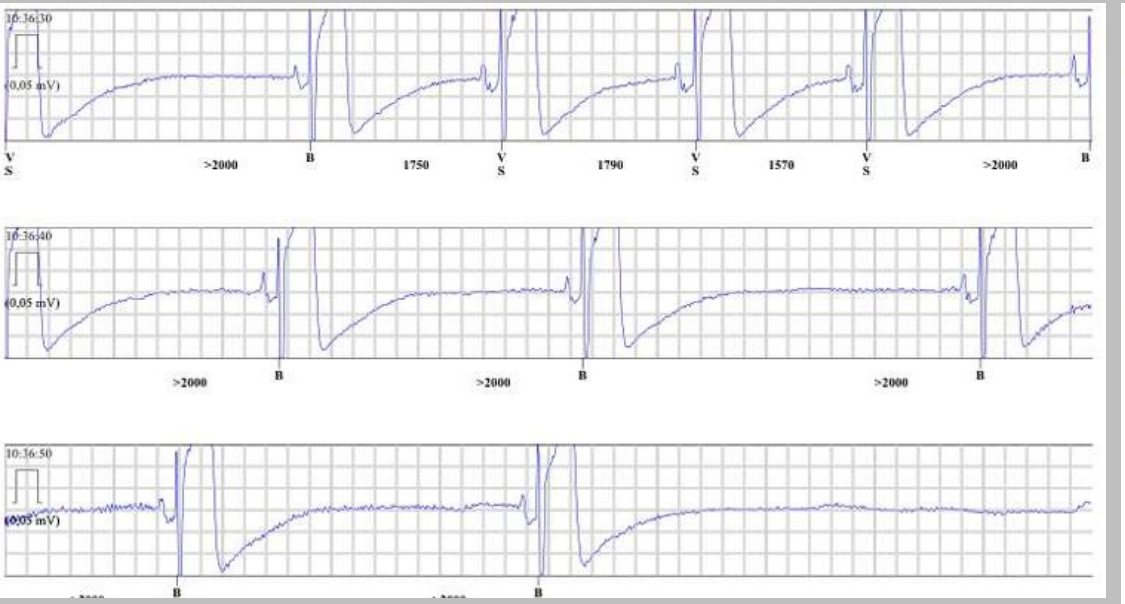


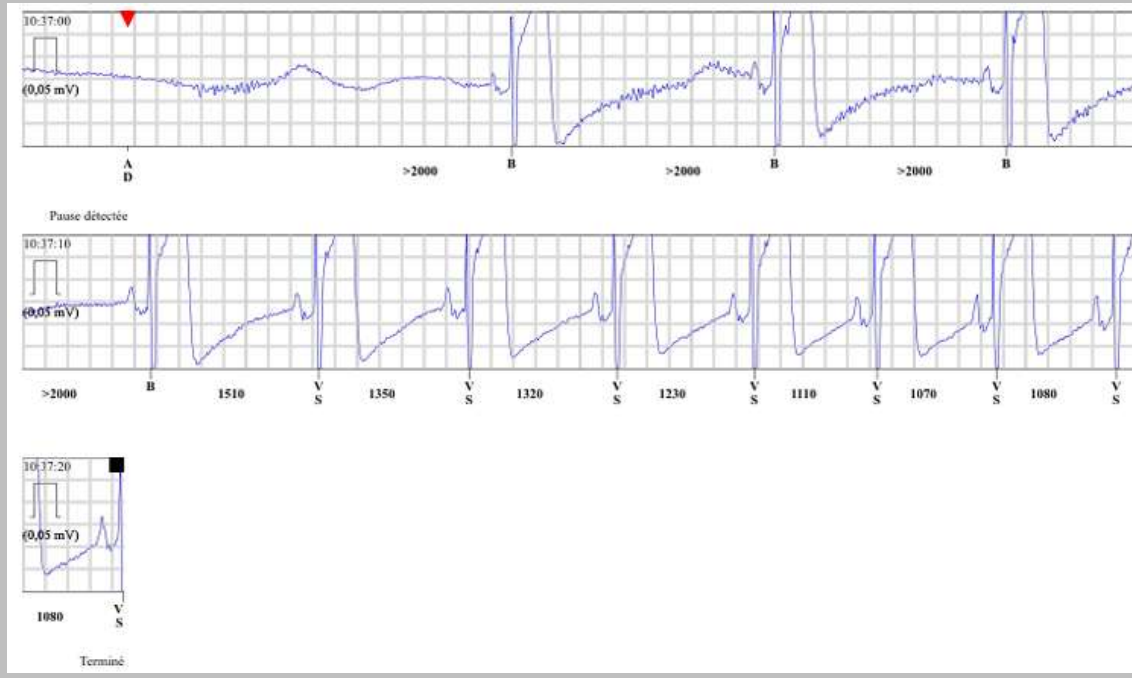


L. D. (m) 02.12.1950

N° ID	Type	Date	Heure HH:MM	Durée HH:MM:SS	Fréquence max.	Fréquence moy.
1	Pause	19 mai 2024	10:37	:09	- - -	<30 min-¹







Merci pour votre attention!