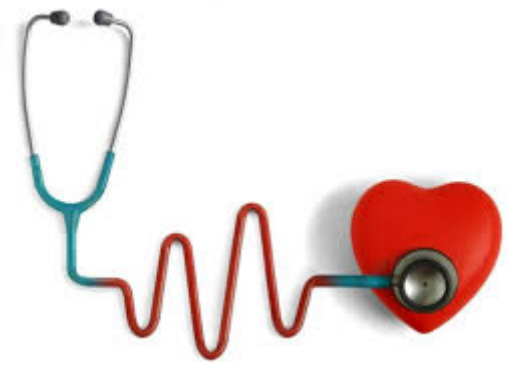
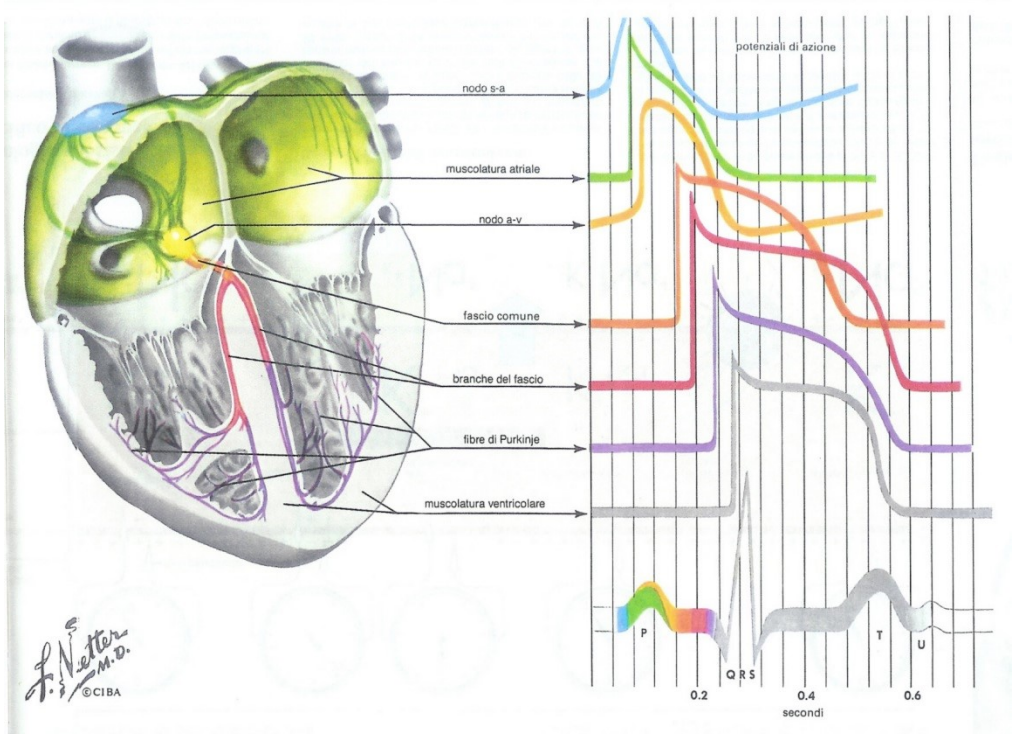
LE TACHICARDIE




potenziali di azione
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fascio comune
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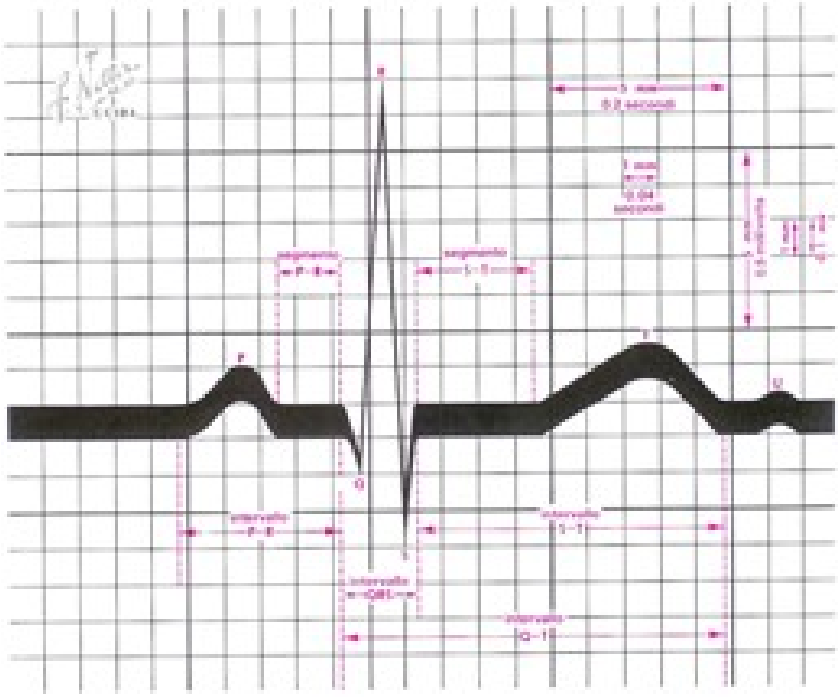

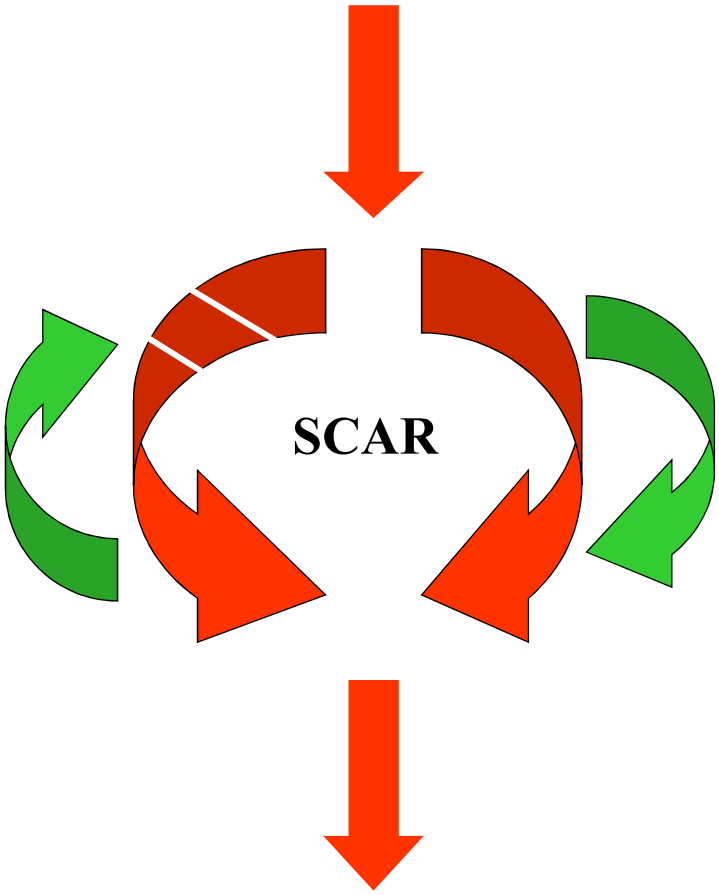
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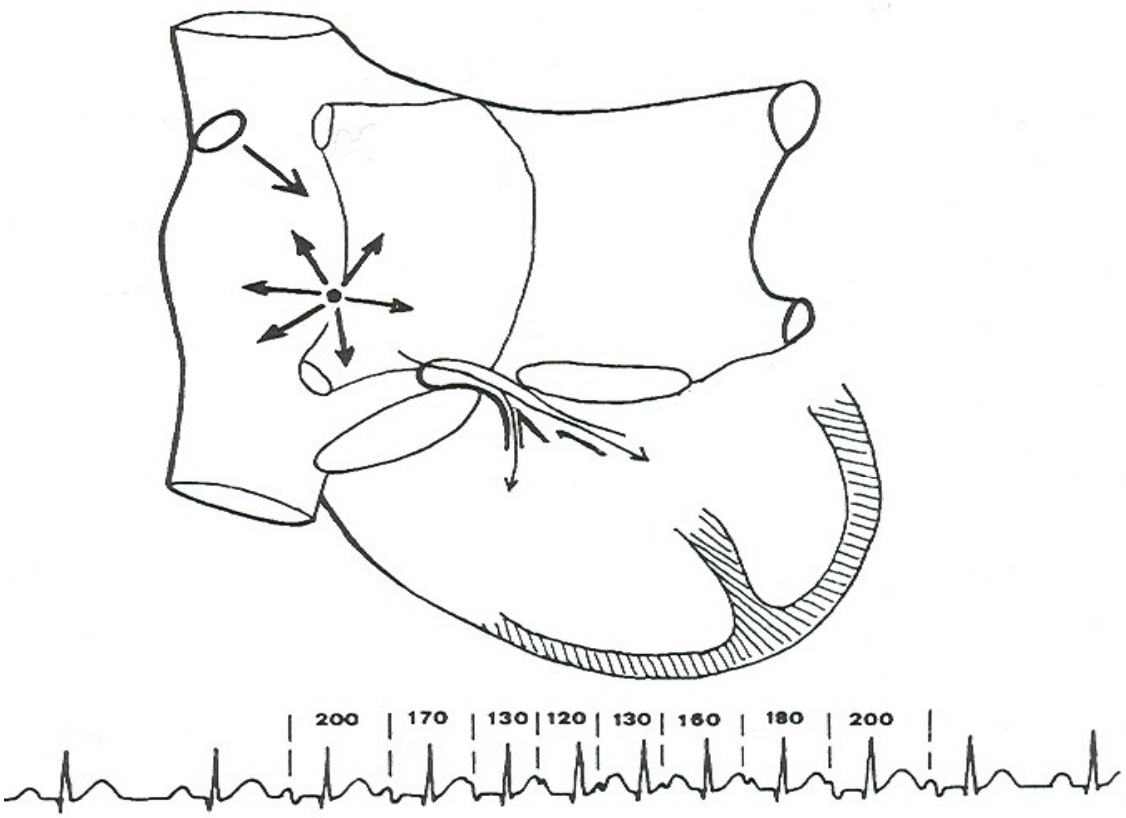
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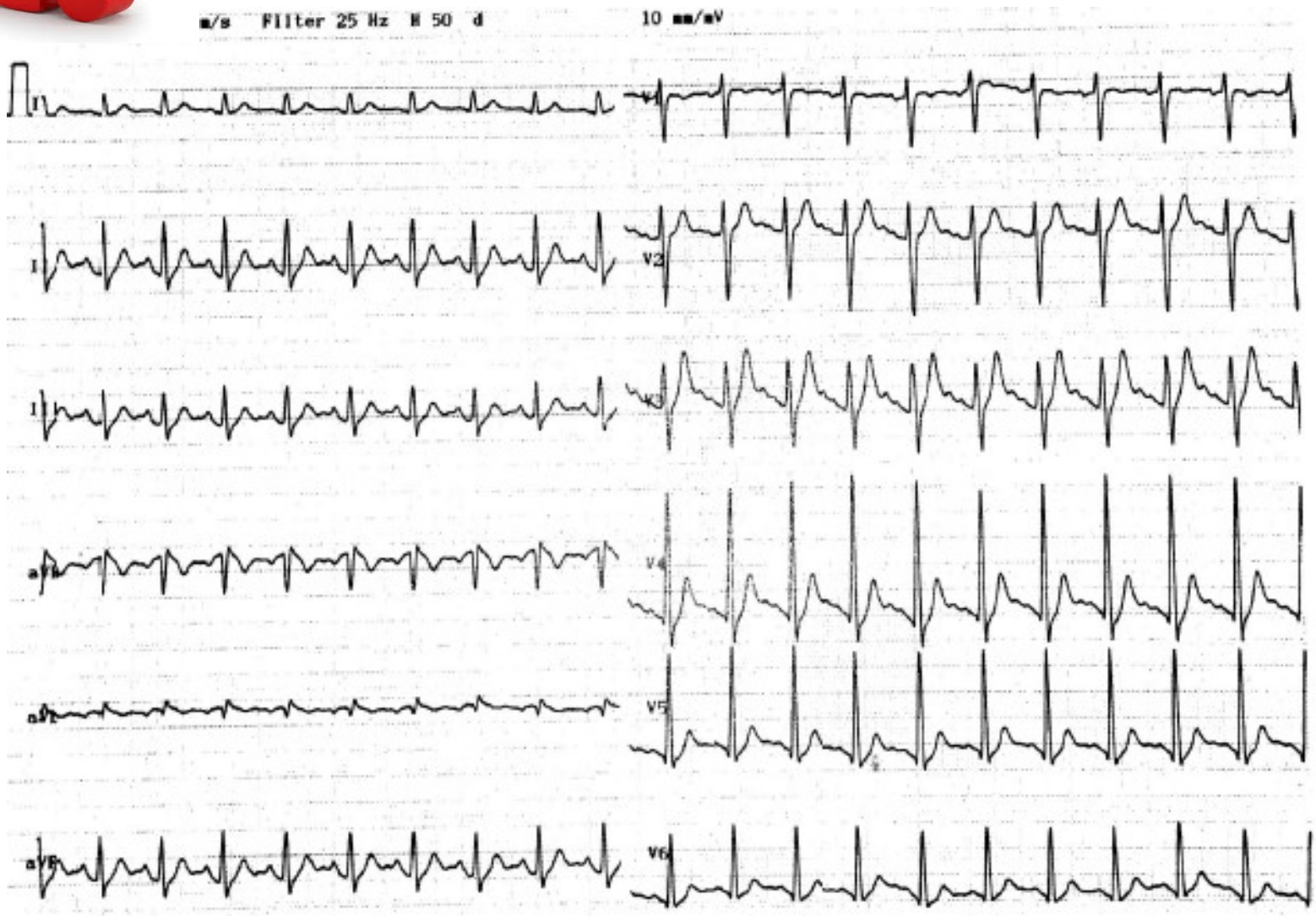
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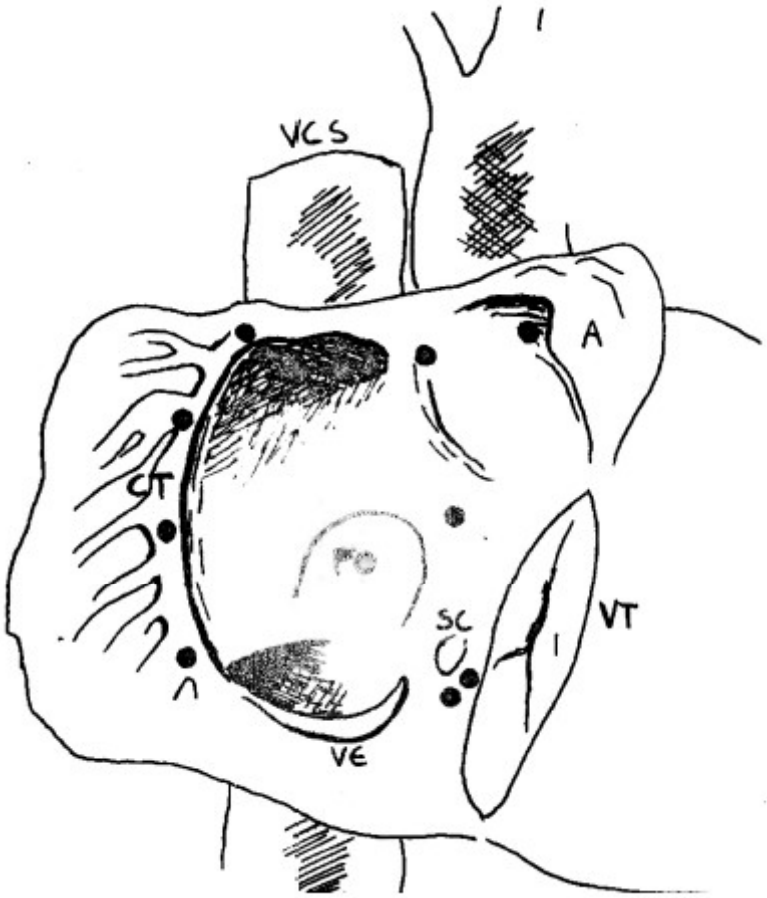
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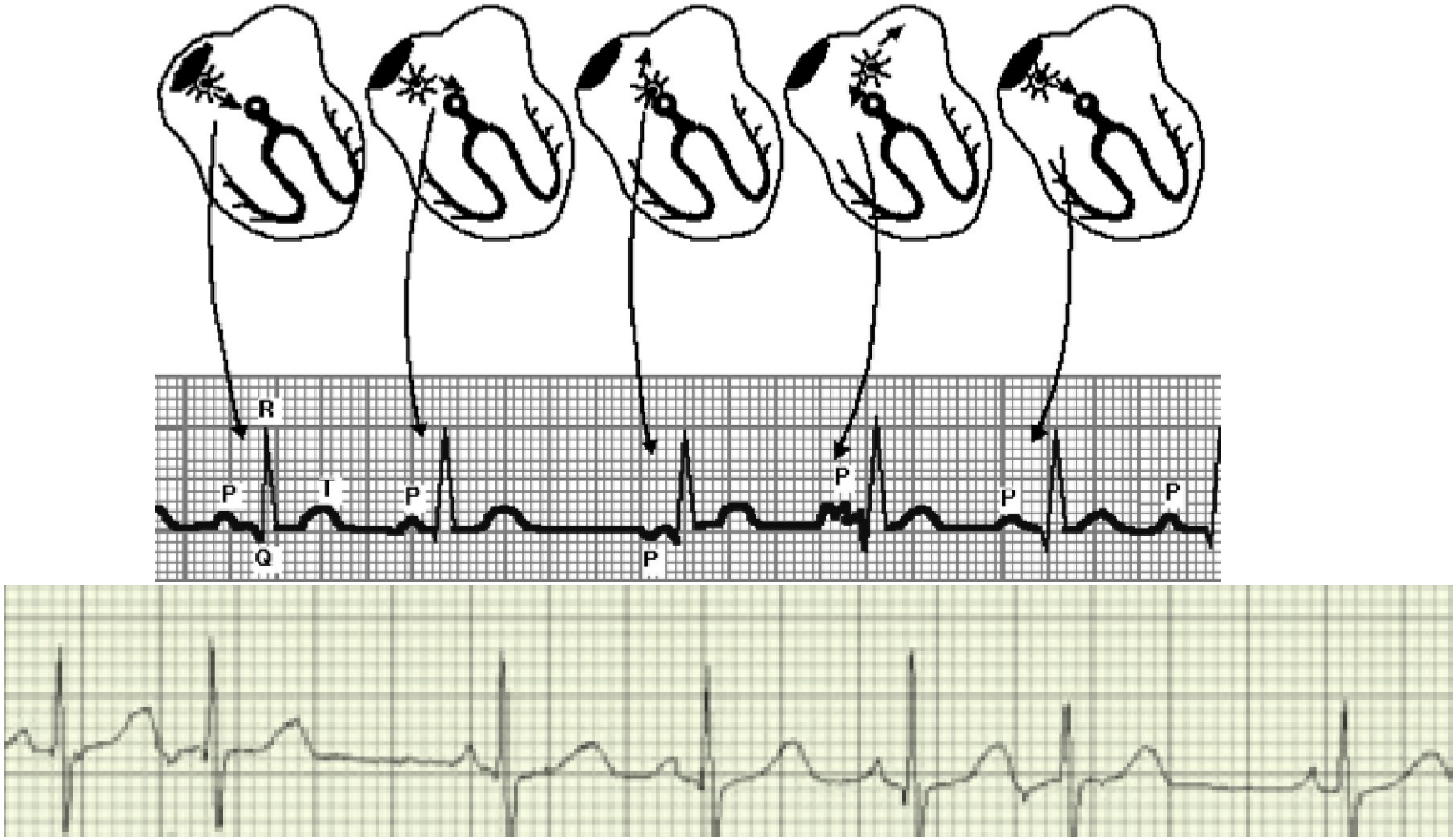
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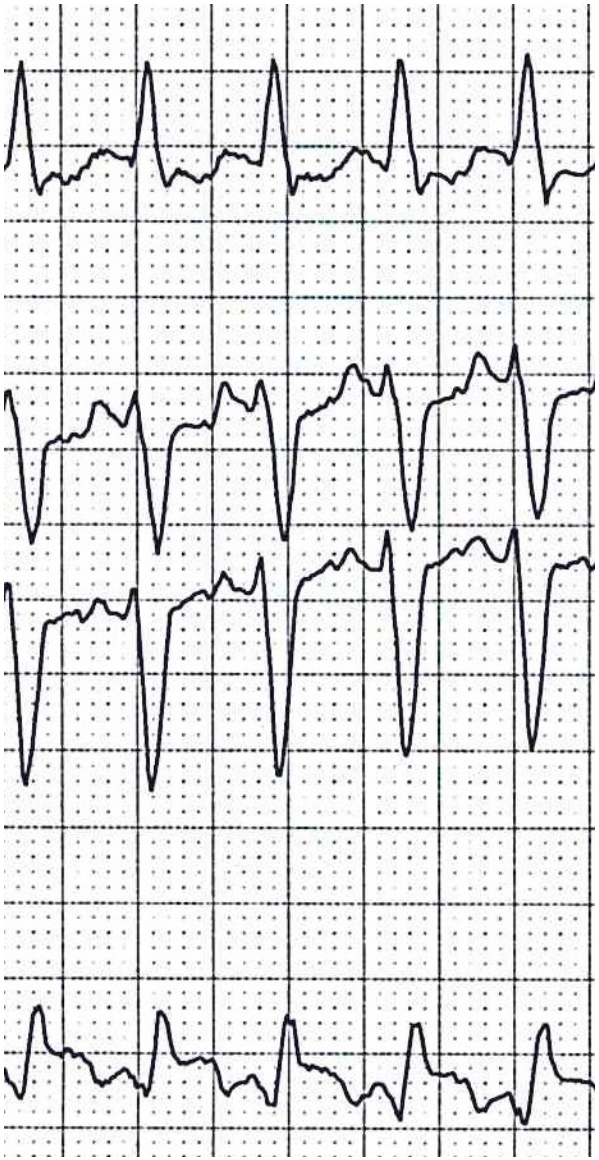

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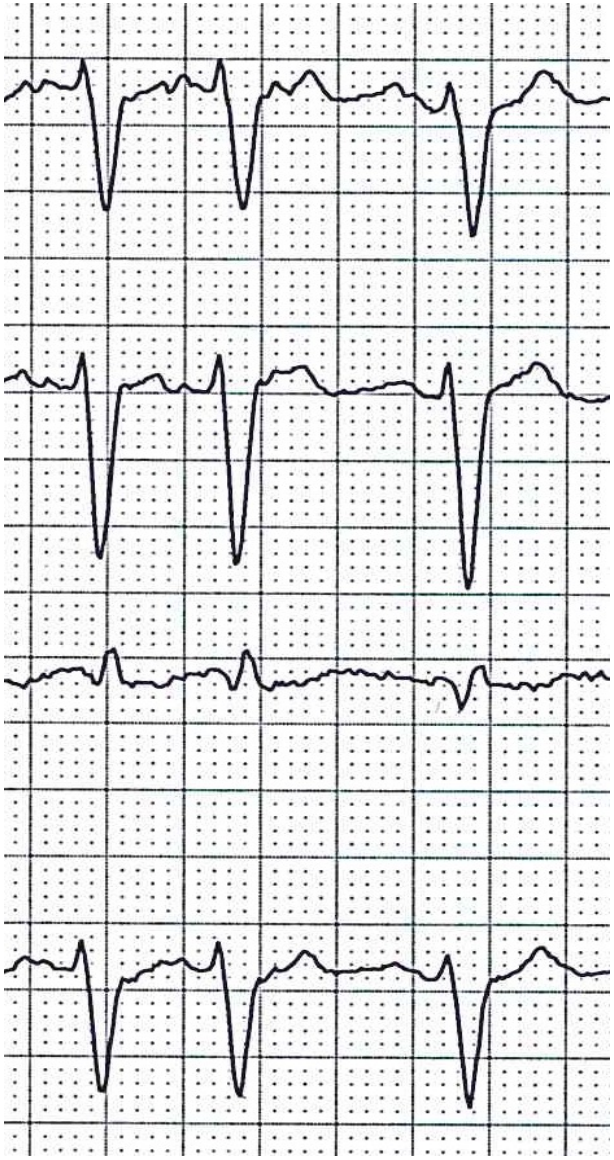
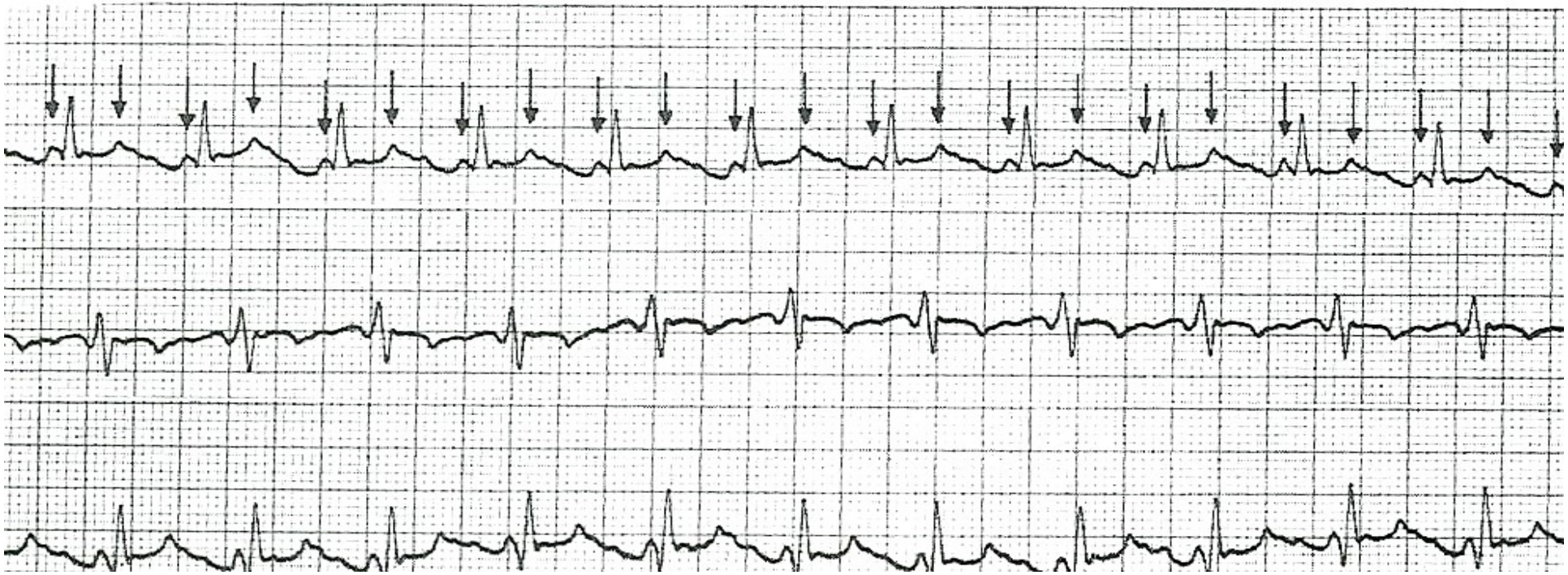
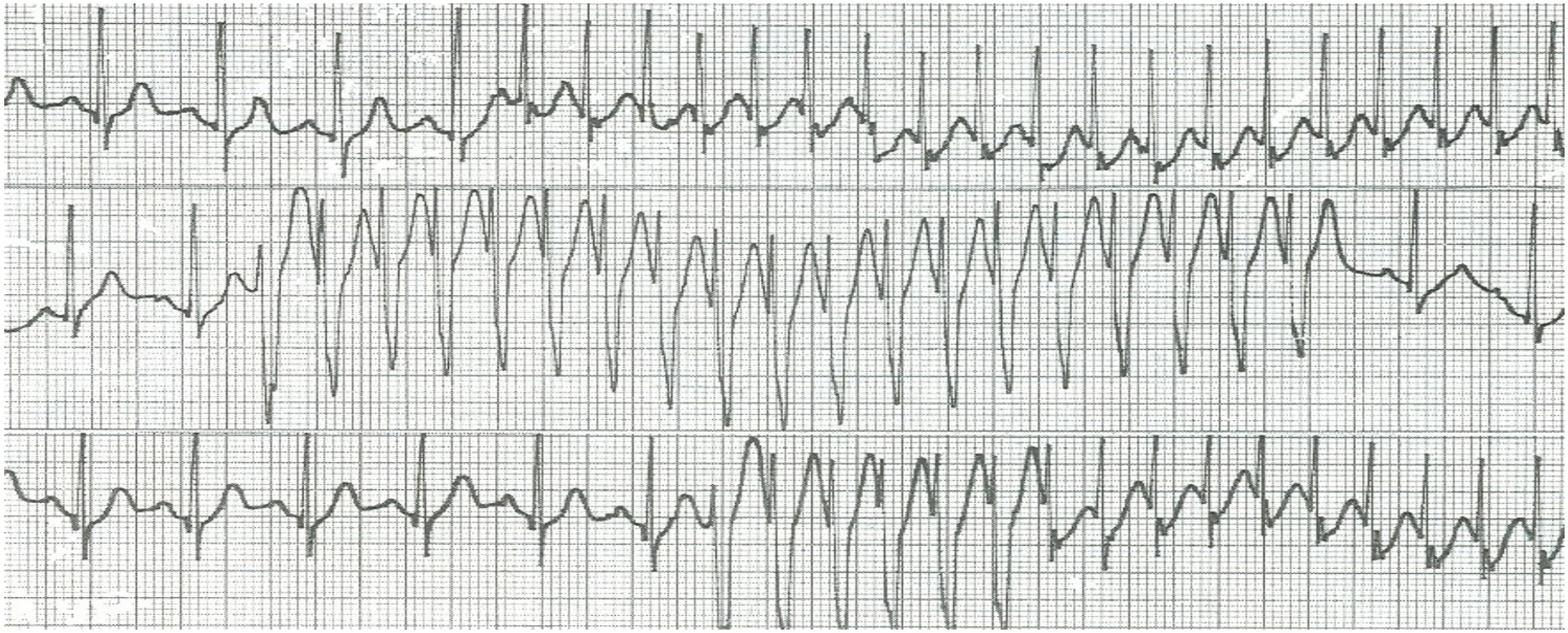






Acute Treatment: Recommendations

I	C-LD	1. Intravenous beta blockers, diltiazem, or verapamil is useful for acute treatment in hemodynamically stable patients with focal AT (107, 119-121).
I	C-LD	2. Synchronized cardioversion is recommended for acute treatment in patients with hemodynamically unstable focal AT (44, 122).
IIa	B-NR	1. Adenosine can be useful in the acute setting to either restore sinus rhythm or diagnose the tachycardia mechanism in patients with suspected focal AT (107, 121, 123).
IIb	C-LD	1. Intravenous amiodarone may be reasonable in the acute setting to either restore sinus rhythm or slow the ventricular rate in hemodynamically stable patients with focal AT (120, 124).
IIb	C-LD	2. Ibutilide may be reasonable in the acute setting to restore sinus rhythm in hemodynamically stable patients with focal AT (120, 124).

Ongoing Management: Recommendations

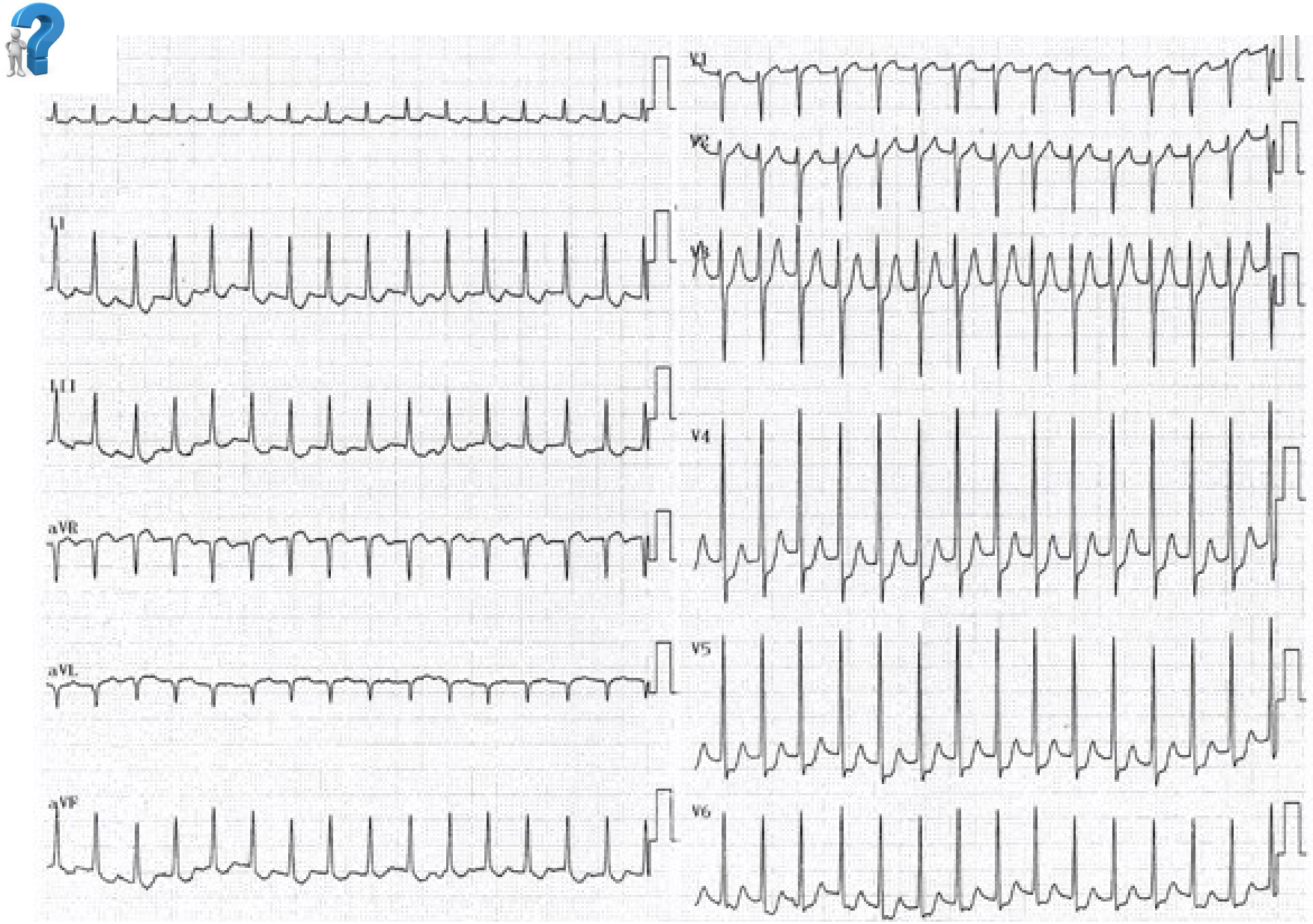
I	B-NR	1. Catheter ablation is recommended in patients with symptomatic focal AT as an alternative to pharmacological therapy (104, 107-112, 114-116, 124-126).
IIa	C-LD	1. Oral beta blockers, diltiazem, or verapamil are reasonable for ongoing management in patients with symptomatic focal AT (107, 119, 120).
IIa	C-LD	2. Flecainide or propafenone can be effective for ongoing management in patients without structural heart disease or ischemic heart disease who have focal AT (127-

IIb	C-LD	1. Oral sotalol or amiodarone may be reasonable for ongoing management in patients with focal AT (104, 129, 132-136).

Presence and severity of symptoms during focal ATs are variable among patients.

Focal AT in the adult population is usually associated with a benign prognosis, although mediated cardiomyopathy has been reported in up to 10% of patients referred for ablation of incessant SVT

Nonsustained focal AT is common and often does not require treatment.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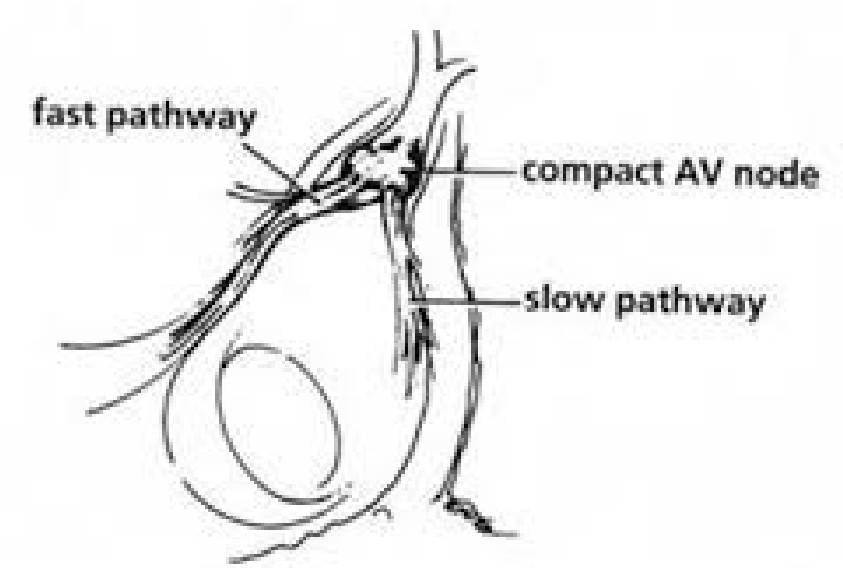
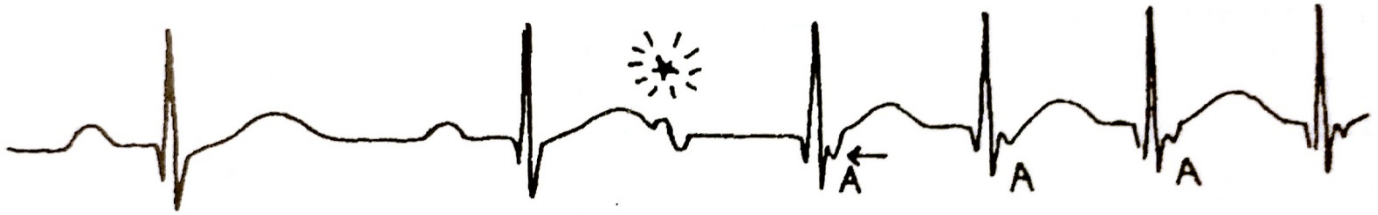

fast pathway
compact AV node
slow pathway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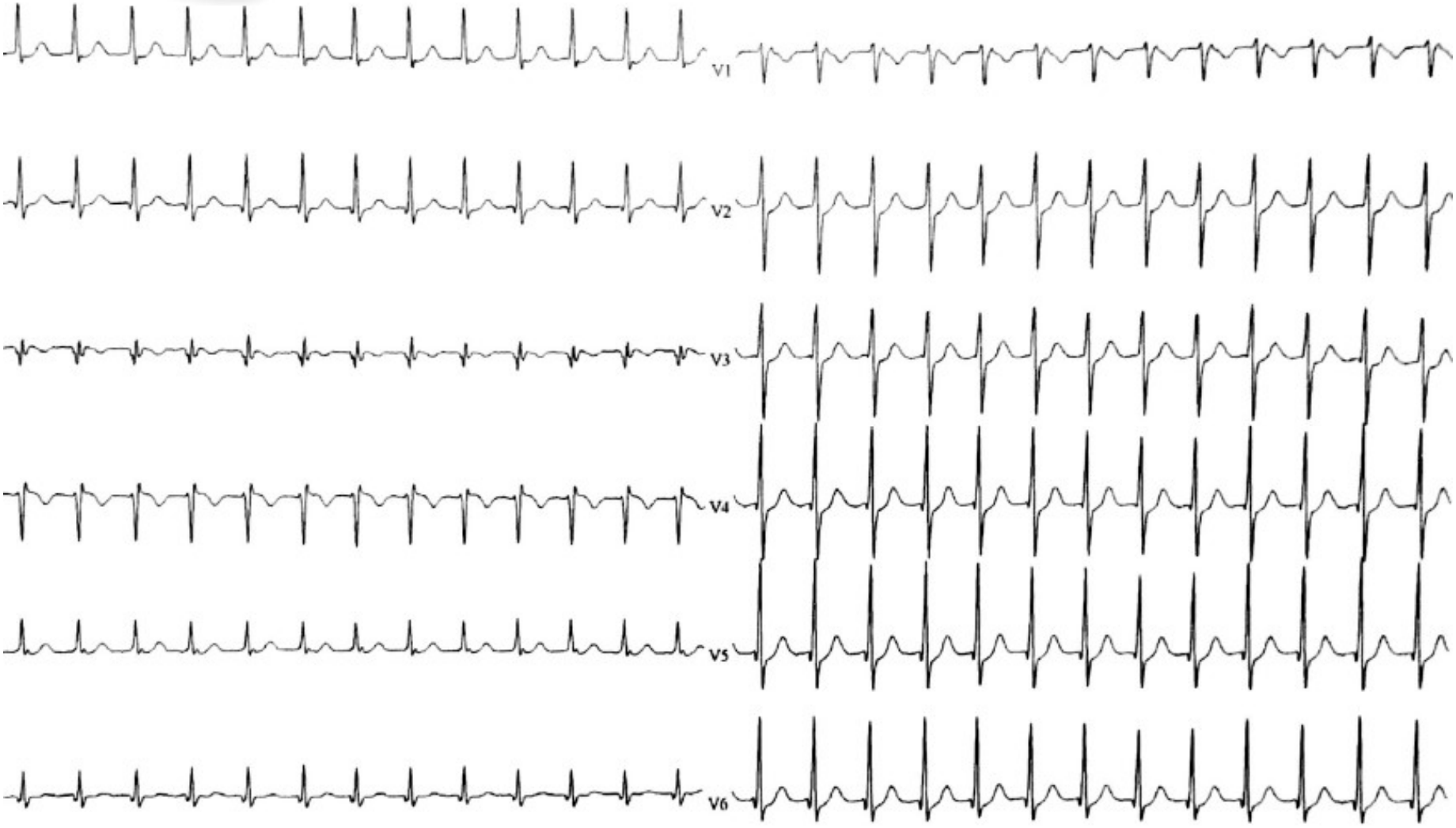
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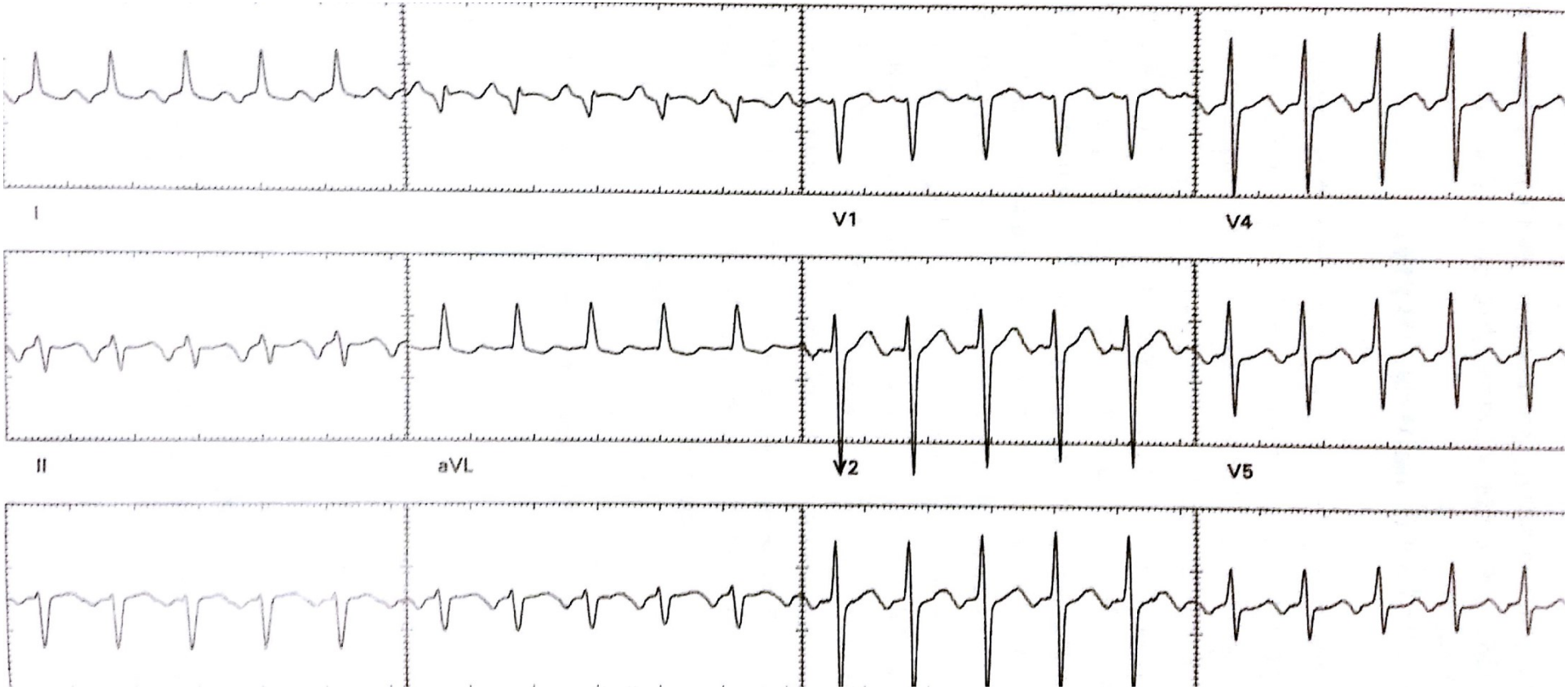
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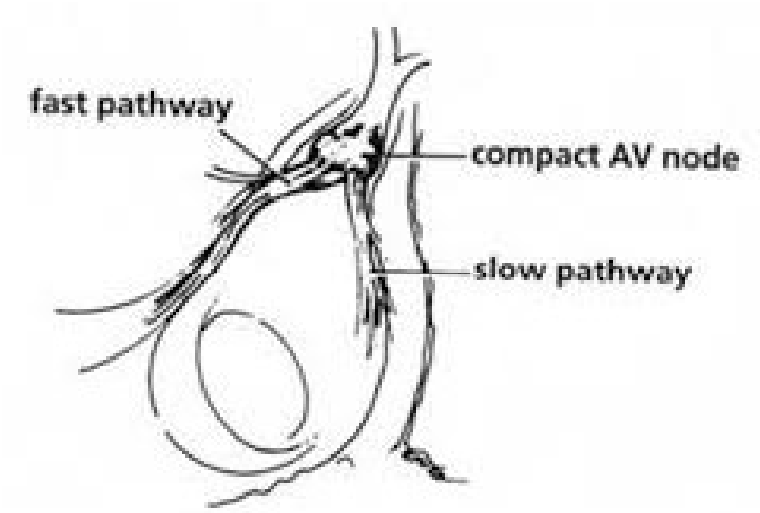
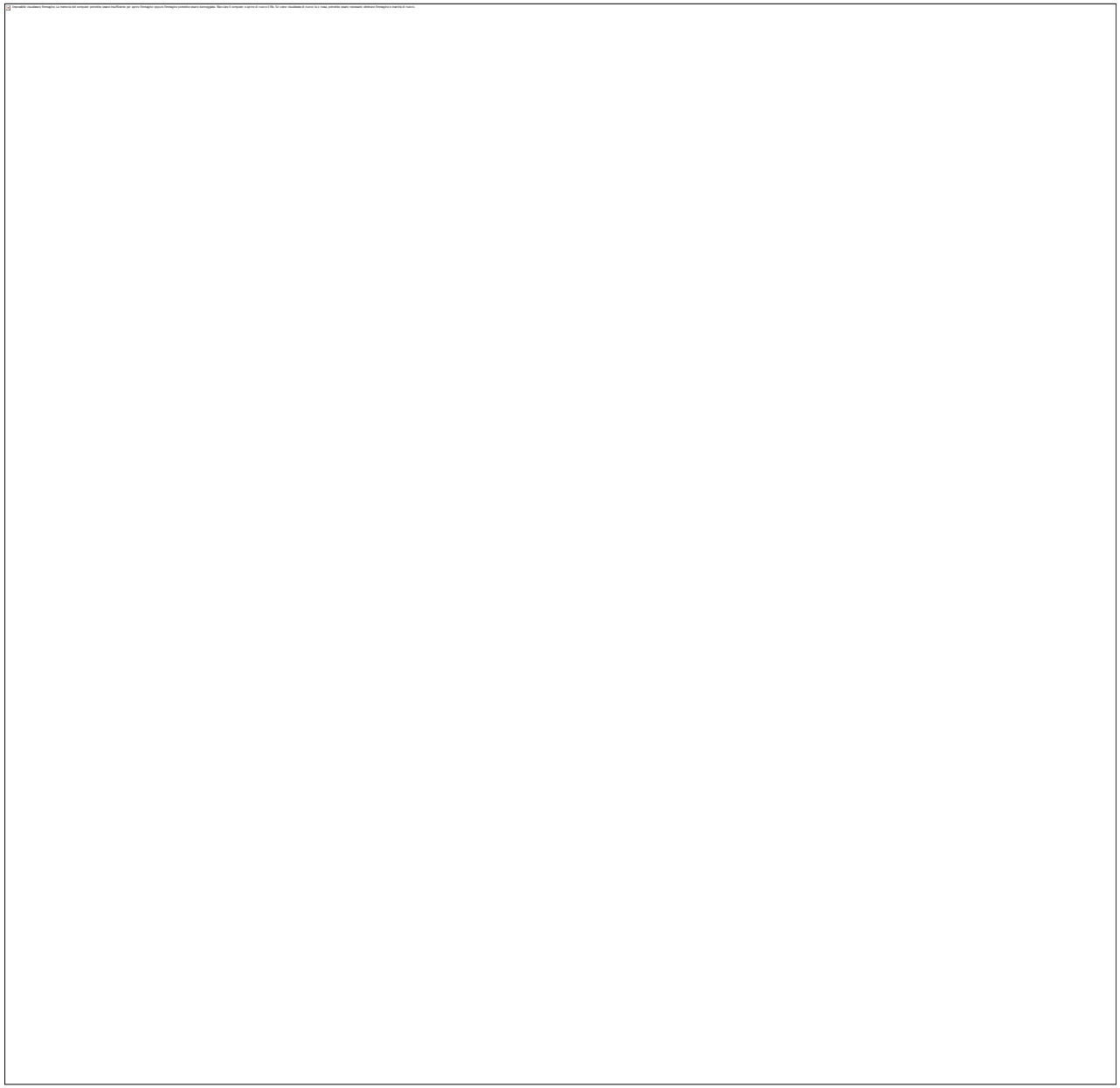


Acute Treatment: Recommendations

AVNRT is the most common SVT

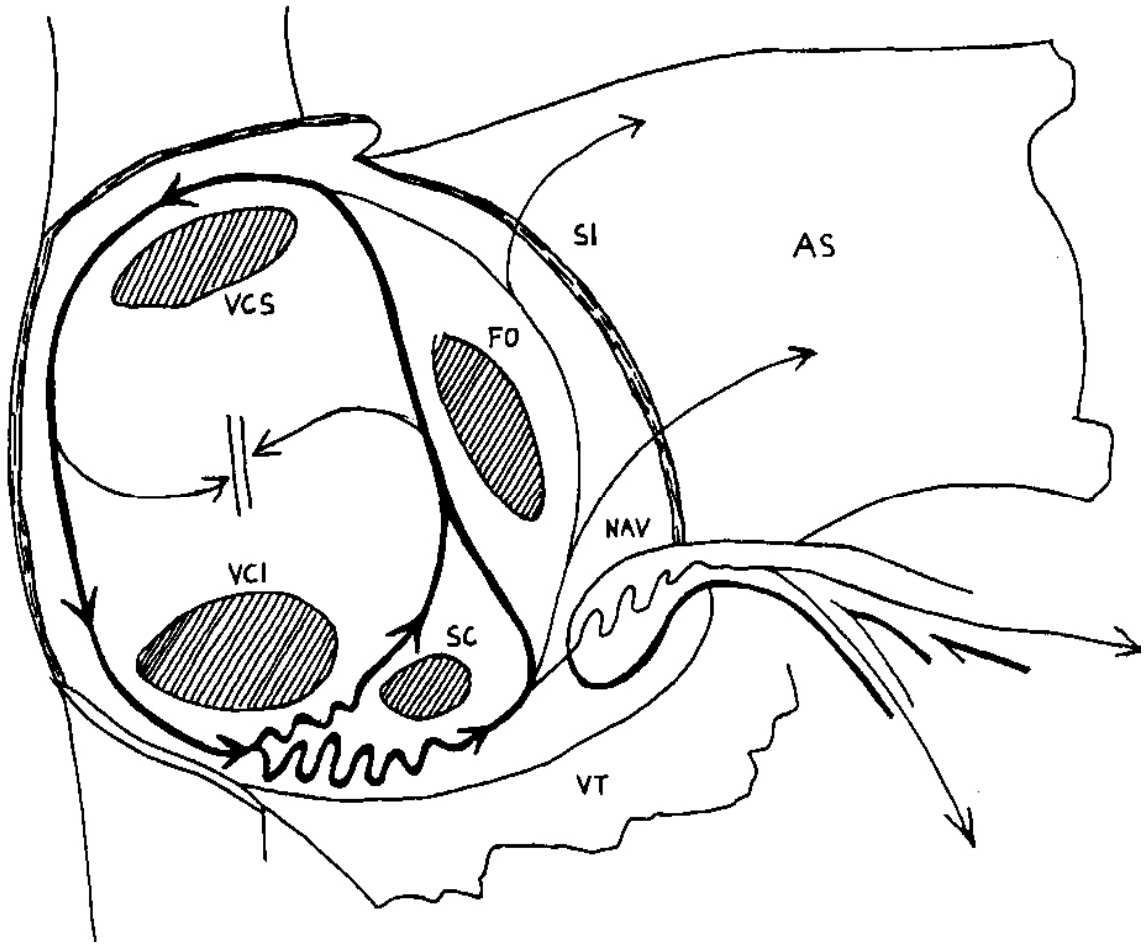
It is usually seen in young adults without structural heart disease or ischemic heart disease, and >60% of cases are observed in women.

The ventricular rate is often 180 bpm to 200 bpm but ranges from 110 bpm to >250 bpm (and in rare cases, the rate can be <100 bpm)



Ongoing Management: Recommendations

I	B-R	1. Oral verapamil or diltiazem is recommended for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (49, 50, 155, 156).
I	B-NR	2. Catheter ablation of the slow pathway is recommended in patients with AVNRT (51-58, 157-161).
I	B-R	3. Oral beta blockers are recommended for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (50).
IIa	B-R	1. Flecainide or propafenone is reasonable for ongoing management in patients without structural heart disease or ischemic heart disease who have AVNRT and
IIa	B-NR	2. Clinical follow-up without pharmacological therapy or ablation is reasonable for ongoing management in minimally symptomatic patients with AVNRT (156).
IIb	B-R	1. Oral sotalol or dofetilide may be reasonable for ongoing management in patients with AVNRT who are not candidates for, or prefer not to undergo, catheter ablation (59, 66).
IIb	B-R	2. Oral digoxin or amiodarone may be reasonable for ongoing treatment of AVNRT in patients who are not candidates for, or prefer not to undergo, catheter ablation (50, 67).
IIb	C-LD	3. Self-administered ("pill-in-the-pocket") acute doses of oral beta blockers, diltiazem, or verapamil may be reasonable for ongoing management in patients with infrequent, well-tolerated episodes of AVNRT (153, 154).


SI
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Cavotricuspid Isthmus-Dependent Atrial Flutter

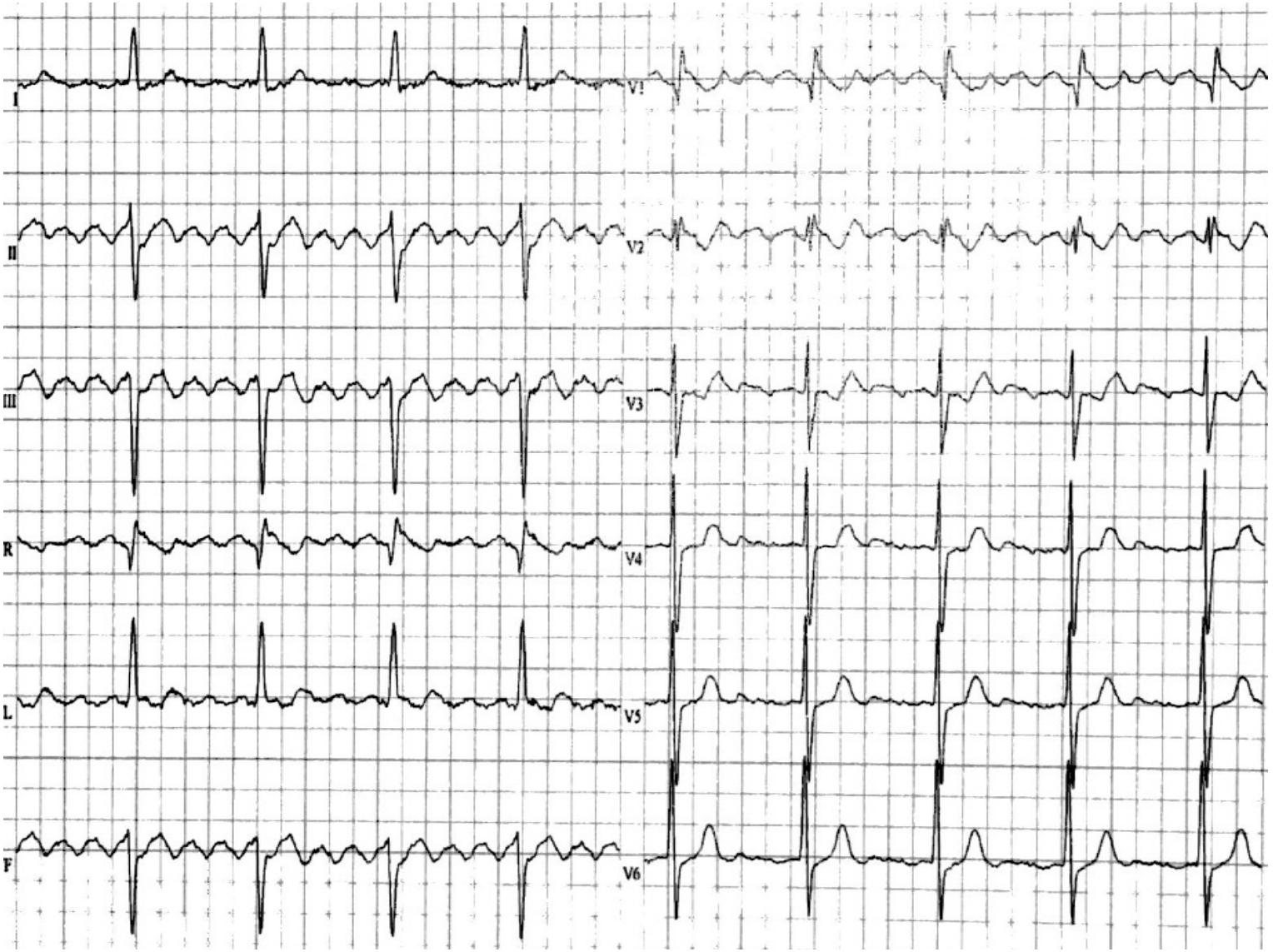
Atrial rates for flutter typically range from 250 bpm to 330 bpm, the rates *may be slower in patients with severe atrial disease or in patients taking antiarrhythmic agents or after unsuccessful catheter ablation.*

Atrial flutter can occur in clinical settings similar to those associated with AF, and atrial flutter can be triggered by AT or AF .

It is common for AF and atrial flutter to coexist in the same patient

Non–Isthmus-Dependent Atrial Flutters

Non–isthmus-dependent atrial flutter or atypical flutter describes macroreentrant ATs that are not dependent on conduction through the CTI,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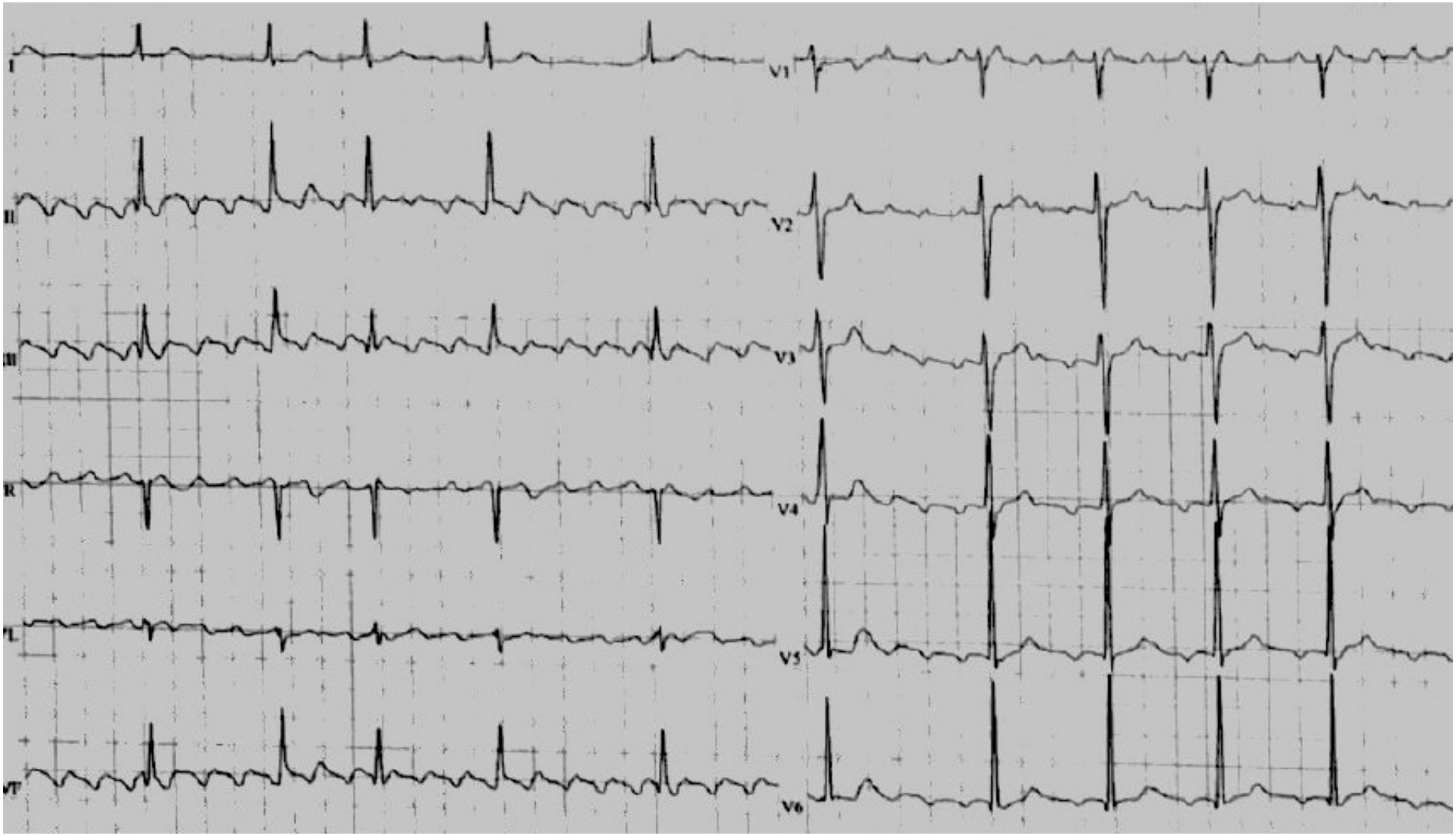
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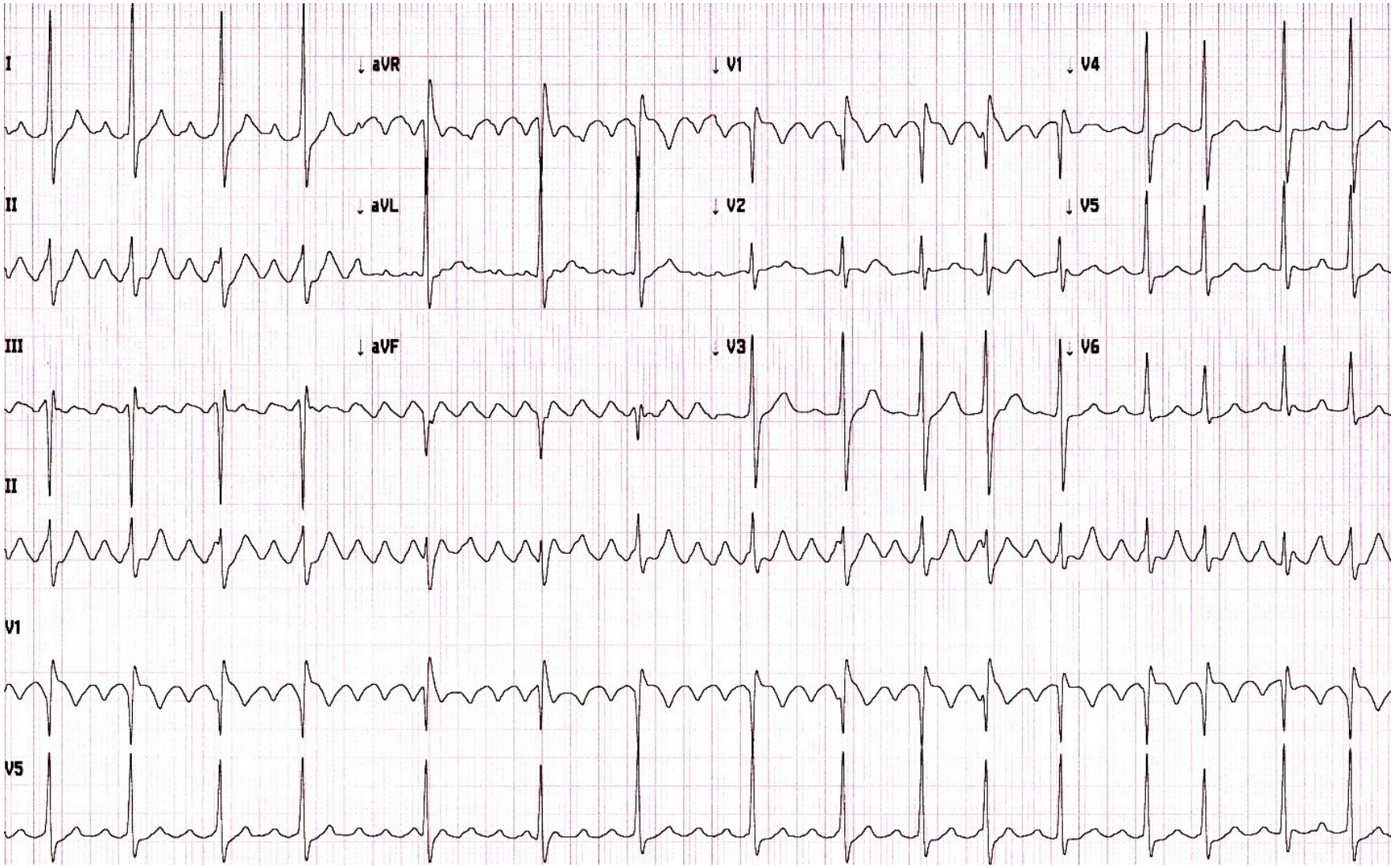
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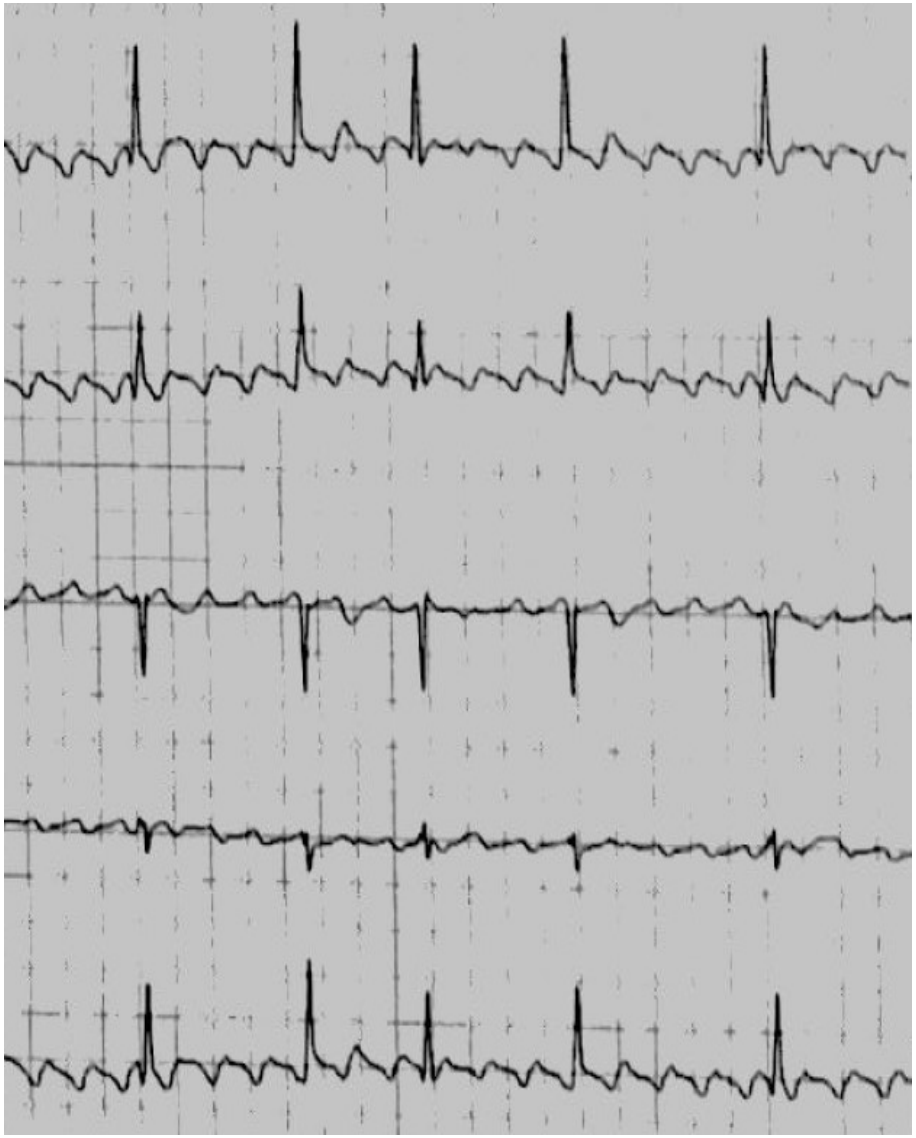

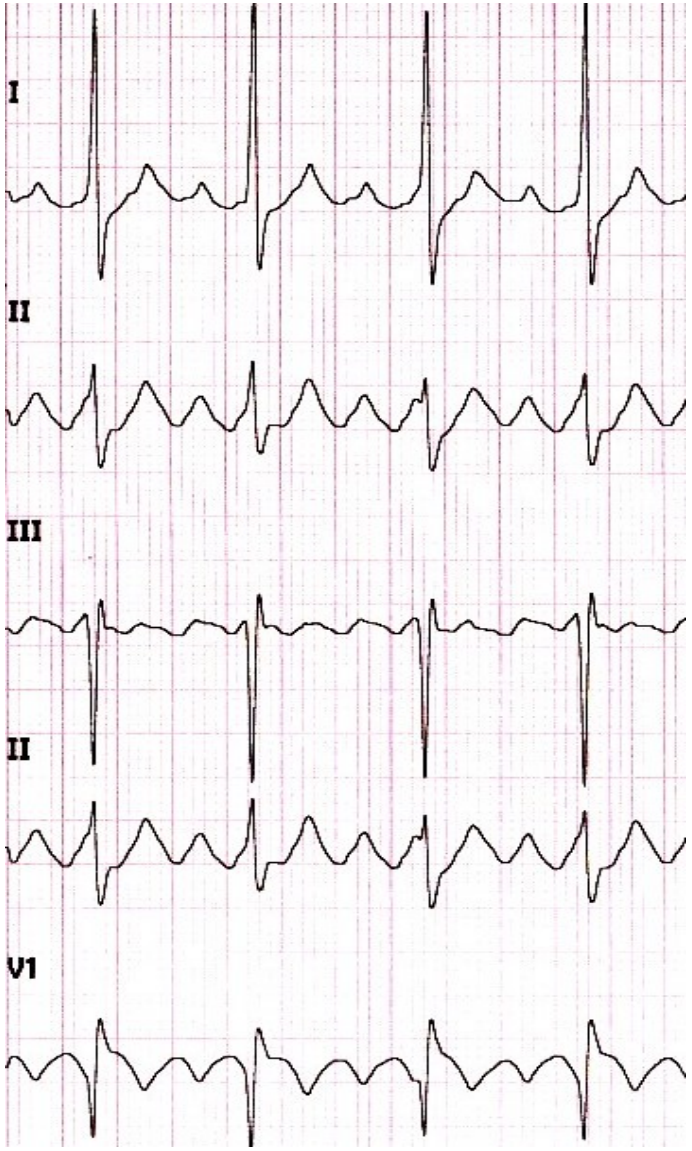
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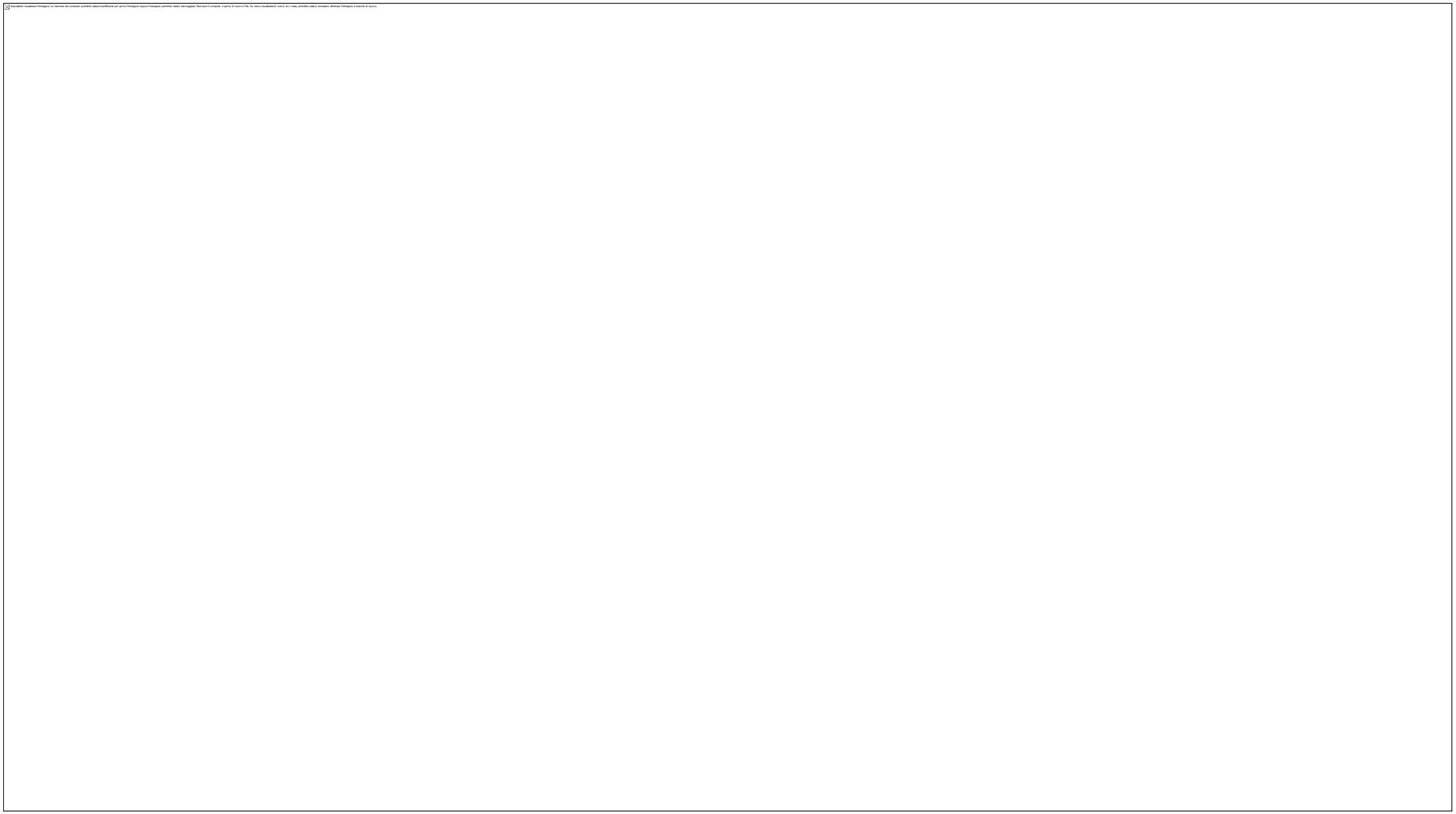

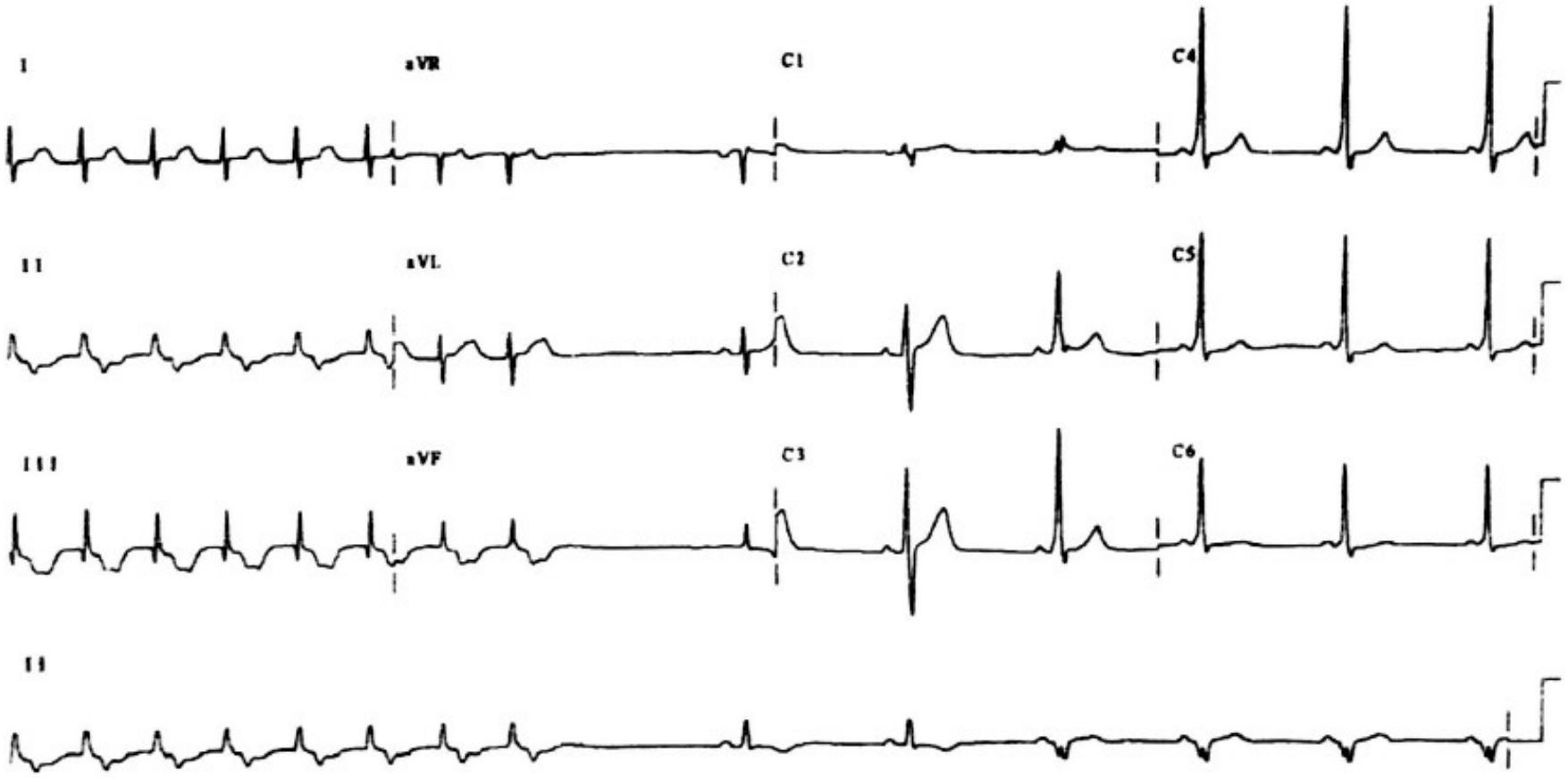
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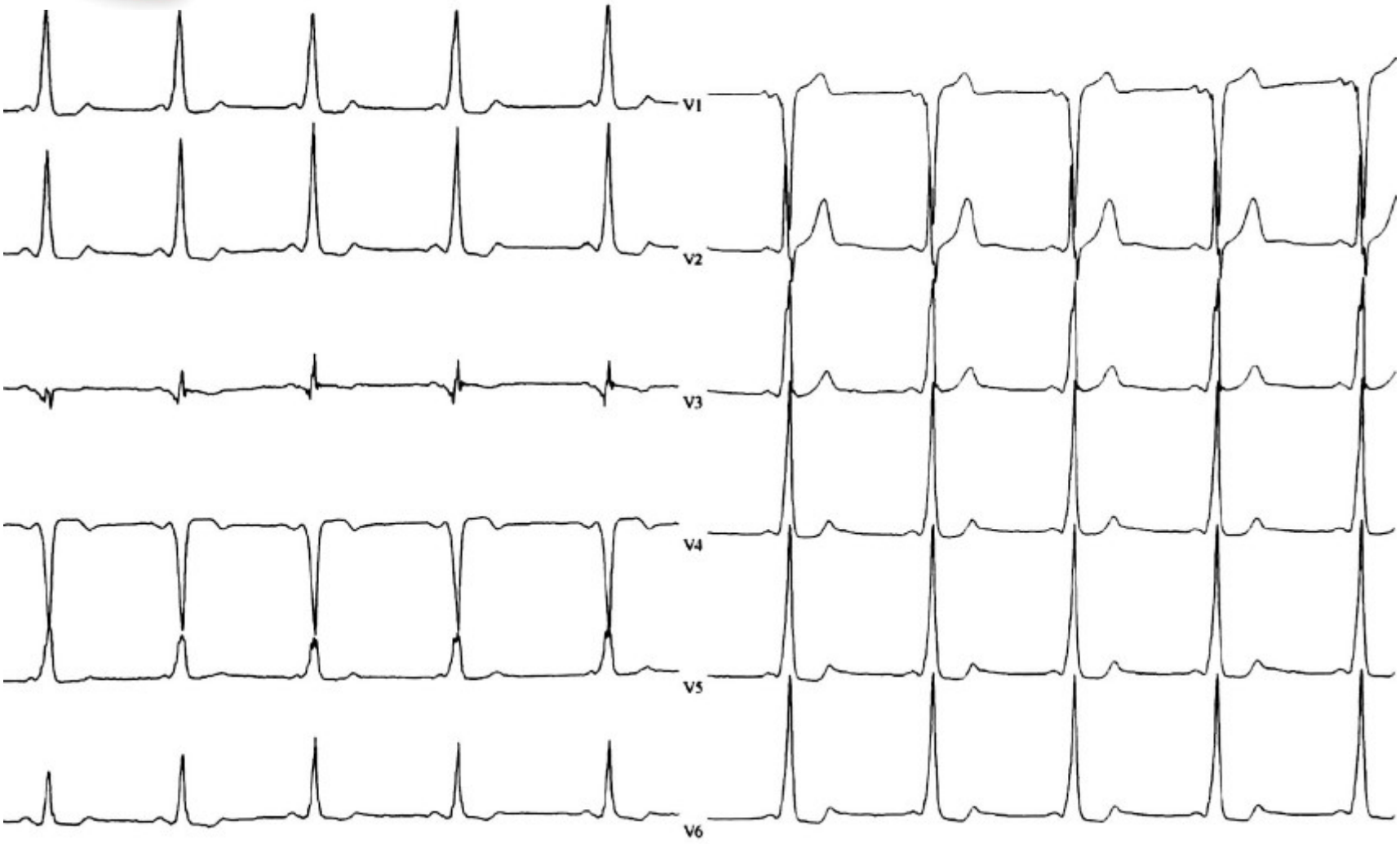
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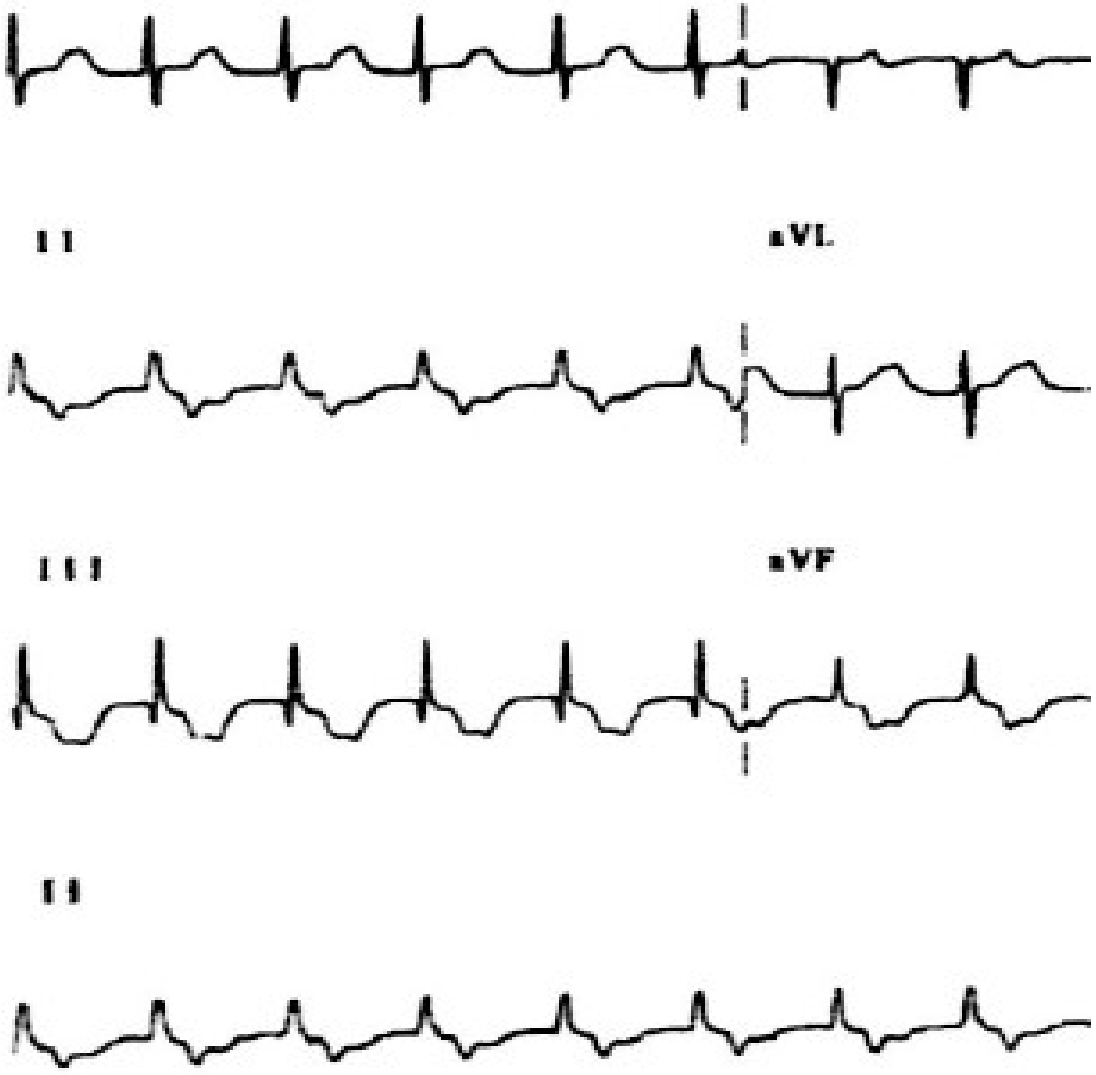
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Orthodromic AVRT accounts for approximately 90% to 95% of AVRT episodes in patients with a manifest accessory pathway.
Pre-excited AVRT, including **antidromic** AVRT, accounts for 5% of the AVRT episodes in patients with a manifest pathway and involves conduction from the atrium to the ventricle via the accessory pathway, causing a pre-excited QRS complex

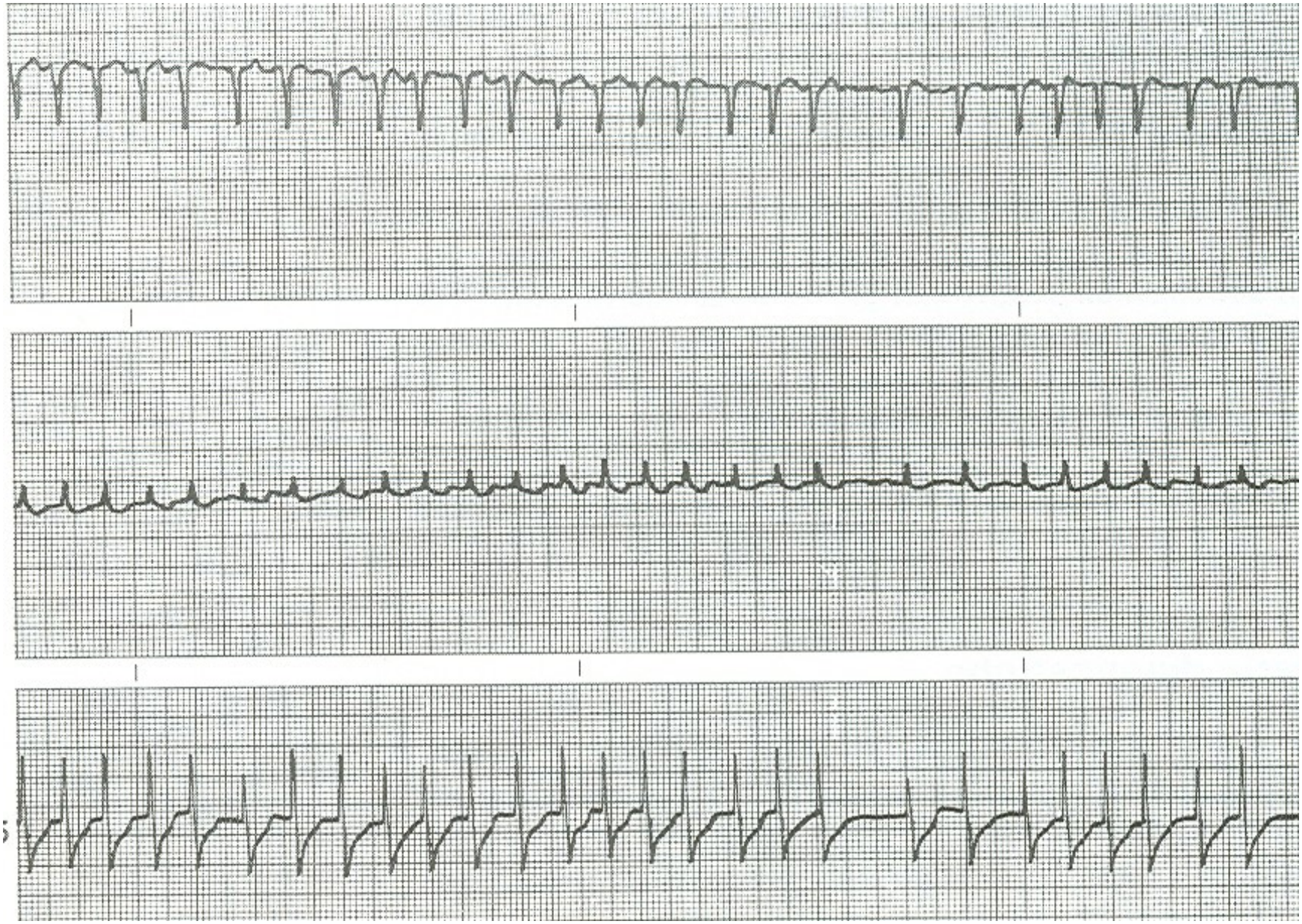
Rapid anterograde accessory pathway conduction during AF can result in SCD in patients with a manifest accessory pathway, with a 10-year risk ranging from 0.15% to 0.24%
Unfortunately, SCD may be the first presentation of patients with undiagnosed WPW. Increased risk of SCD is associated with a history of symptomatic tachycardia, multiple accessory pathways, and a shortest pre-excited R-R interval of <250 ms during AF. The risk of SCD associated with WPW appears highest in the first 2 decades of life

Acute Treatment

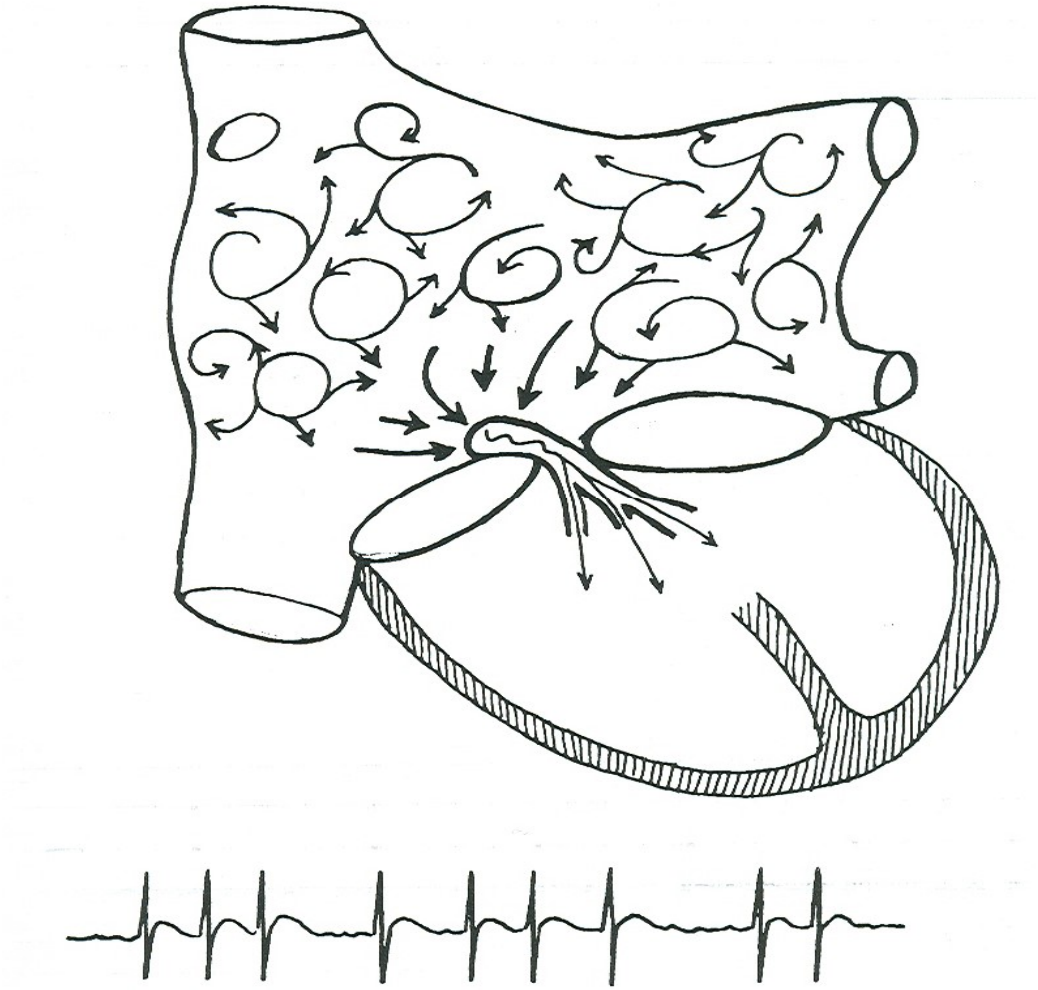
I	B-R	1. Vagal maneuvers are recommended for acute treatment in patients with orthodromic AVRT (43, 147, 170, 171).
I	B-R	2. Adenosine is beneficial for acute treatment in patients with orthodromic AVRT (43, 172, 173).
I	B-NR	3. Synchronized cardioversion should be performed for acute treatment in hemodynamically unstable patients with AVRT if vagal maneuvers or adenosine are ineffective or not feasible (170, 174, 175).
I	B-NR	4. Synchronized cardioversion is recommended for acute treatment in hemodynamically stable patients with AVRT when pharmacological therapy is ineffective or contraindicated (36, 45).
I	B-NR	5. Synchronized cardioversion should be performed for acute treatment in hemodynamically unstable patients with pre-excited AF (44, 170).
I	C-LD	6. Ibutilide (176) or intravenous procainamide (177) is beneficial for acute treatment in patients with pre-excited AF who are hemodynamically stable.
IIa	B-R C-LD	1. Intravenous diltiazem, verapamil (43, 172, 178, 179) (*Level of Evidence: B-R*) or beta blockers (180) (*Level of Evidence: C-LD*) can be effective for acute treatment in patients with orthodromic AVRT who do not have pre-excitation on their resting ECG
IIb	B-R	1. Intravenous beta blockers, diltiazem, or verapamil might be considered for acute treatment in patients with orthodromic AVRT who have pre-excitation on their resting ECG and have not responded to other therapies (43, 178, 179, 181).
III: Harm	C-LD	1. Intravenous digoxin, intravenous amiodarone, intravenous or oral beta blockers, diltiazem, and verapamil are potentially harmful for acute treatment in patients with pre-excited AF (181-186).

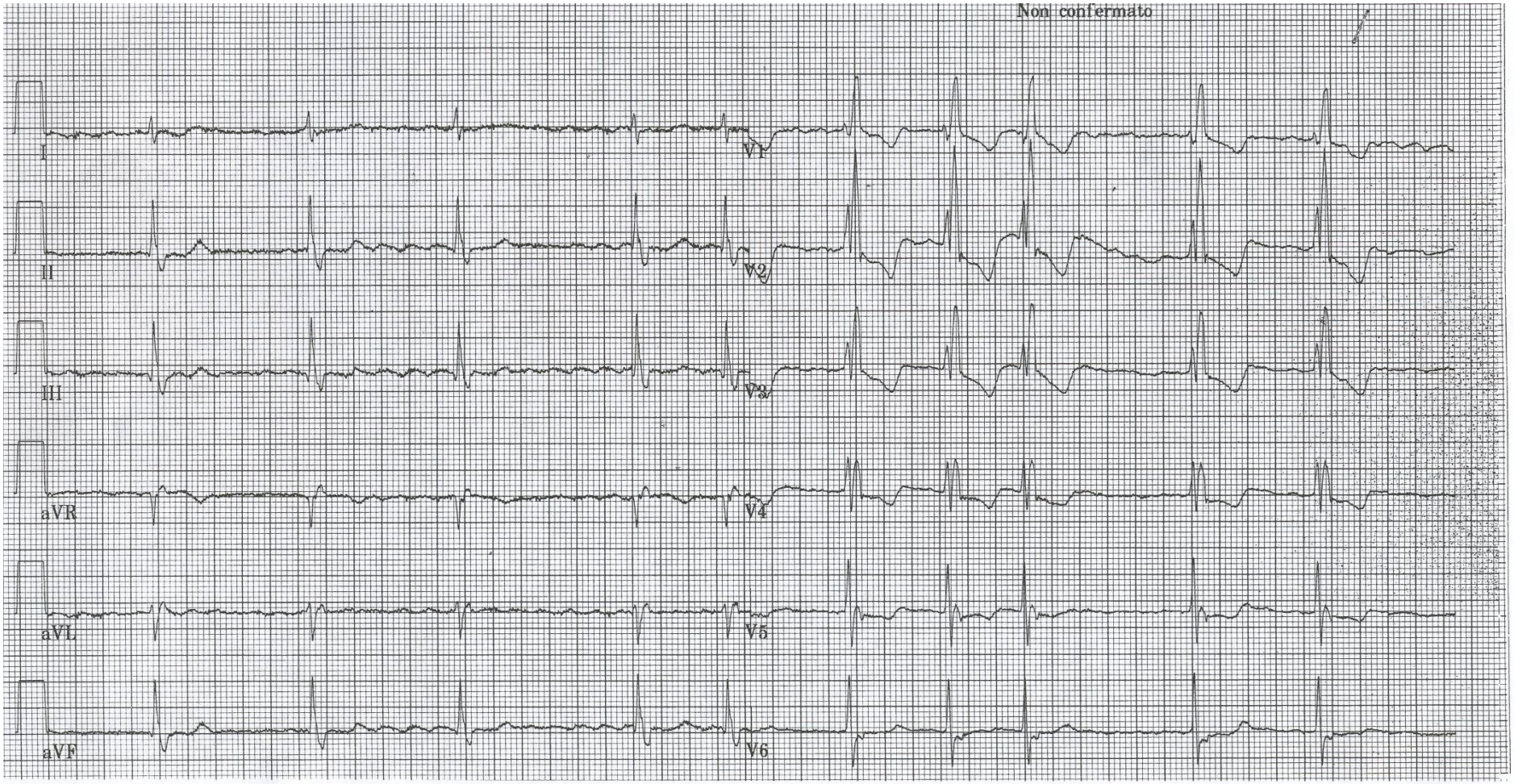
Ongoing Management

I	B-NR	1. Catheter ablation of the accessory pathway is recommended in patients with AVRT and/or pre-excited AF (55, 165, 187-193).
I	C-LD	2. Oral beta blockers, diltiazem, or verapamil are indicated for ongoing management of AVRT in patients without pre-excitation on their resting ECG (48, 194).
IIa	B-R	1. Oral flecainide or propafenone is reasonable for ongoing management in patients without structural heart disease or ischemic heart disease who have AVRT and/or pre-excited AF and are not candidates for, or prefer not to undergo, catheter ablation (60, 61, 64, 65, 195).
IIb	B-R	1. Oral dofetilide or sotalol may be reasonable for ongoing management in patients with AVRT and/or pre-excited AF who are not candidates for, or prefer not to undergo, catheter ablation (99,106).
IIb	C-LD	2. Oral amiodarone may be considered for ongoing management in patients with AVRT and/or pre-excited AF who are not candidates for, or prefer not to undergo, catheter ablation and in whom beta blockers, diltiazem, flecainide, propafenone, and verapamil are ineffective or contraindicated (196, 197).
IIb	C-LD	3. Oral beta blockers, diltiazem, or verapamil may be reasonable for ongoing management of orthodromic AVRT in patients with pre-excitation on their resting ECG who are not candidates for, or prefer not to undergo, catheter ablation (48, 194).
IIb	C-LD	4. Oral digoxin may be reasonable for ongoing management of orthodromic AVRT in patients without pre-excitation on their resting ECG who are not candidates for, or prefer not to undergo, catheter ablation (198).
III: Harm	C-LD	1. Oral digoxin is potentially harmful for ongoing management in patients with AVRT or AF and pre-excitation on their resting ECG (182).



ATRIAL FIBRILLATION

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AF pattern	Definition
First diagnosed AF	AF that has not been diagnosed before, irrespective of the duration of the arrhythmia or the presence and severity of AF-related symptoms.
Paroxysmal AF	Self-terminating, in most cases within 48 hours. Some AF paroxysms may continue for up to 7 days.[a] AF episodes that are cardioverted within 7 days should be considered paroxysmal.[a]
Persistent AF	AF that lasts longer than 7 days, including episodes that are terminated by cardioversion, either with drugs or by direct current cardioversion, after 7 days or more.
Long-standing persistent AF	Continuous AF lasting for ≥1 year when it is decided to adopt a rhythm control strategy.
Permanent AF	AF that is accepted by the patient (and physician). Hence, rhythm control interventions are, by definition, not pursued in patients with permanent AF. Should a rhythm control strategy be adopted, the arrhythmia would be re-classified as 'long-standing persistent AF'.

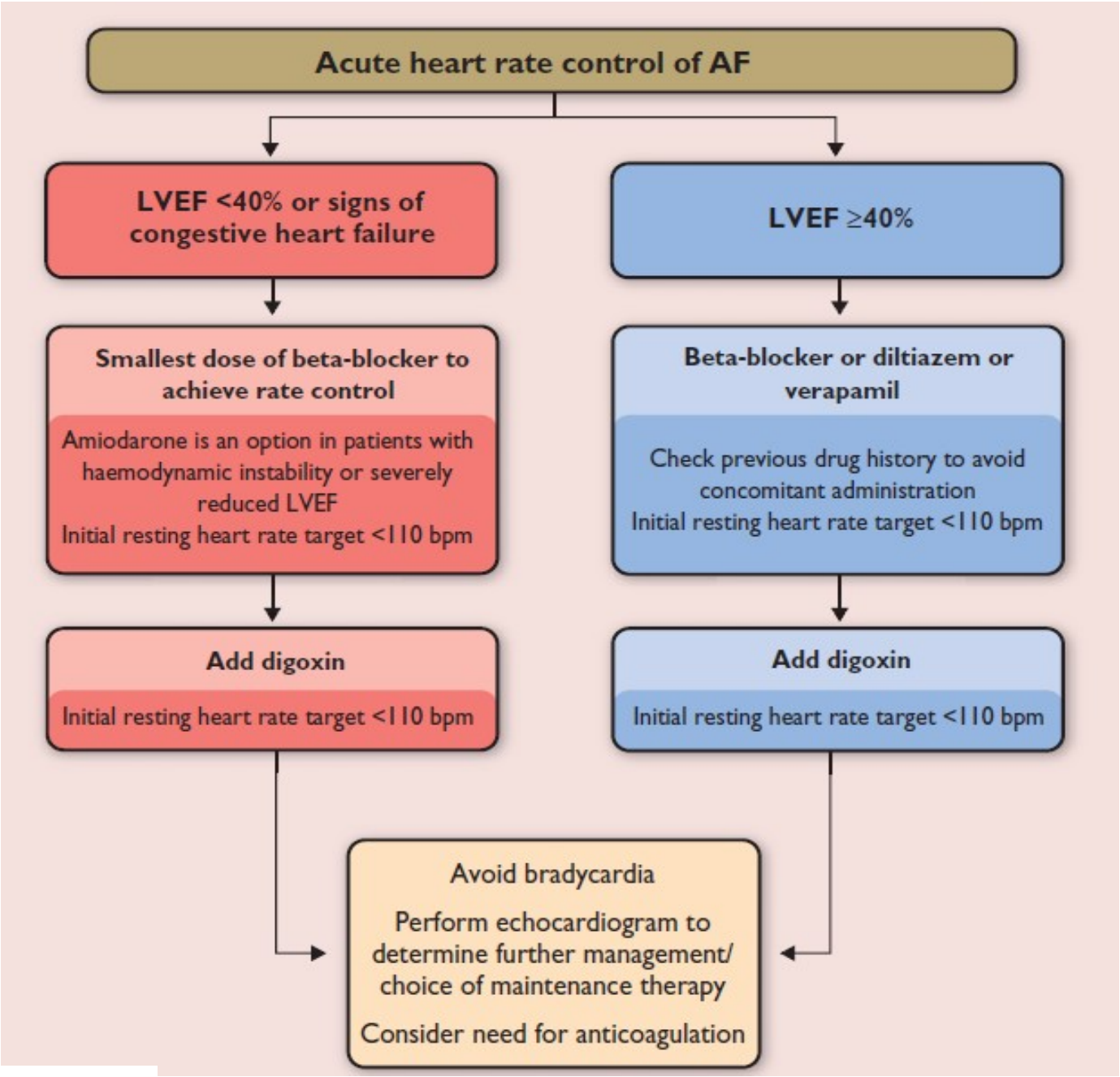
Characteristic/comorbidity	Association with AF
Genetic predisposition (based on multiple common gene variants associated with AF)[64]	HR range 0.4–3.2
Older age[19] 50–59 years 60–69 years 70–79 years 80–89 years	HR: 1.00 (reference) 4.98 (95% CI 3.49–7.10) 7.35 (95% CI 5.28–10.2) 9.33 (95% CI 6.68–13.0)
Hypertension (treated) vs. none[19]	HR 1.32 (95% CI 1.08–1.60)
Heart failure vs. none[19]	HR 1.43 (95% CI 0.85–2.40)
Valvular heart disease vs. none[205]	RR 2.42 (95% CI 1.62–3.60)
Myocardial infarction vs. none[19]	HR 1.46 (95% CI 1.07–1.98)
Thyroid dysfunction[206, 207] Hypothyroidism Subclinical hyperthyroidism Overt hyperthyroidism	(reference: euthyroid) HR 1.23 (95% CI 0.77–1.97) RR 1.31 (95% CI 1.19–1.44) RR 1.42 (95% CI 1.22–1.63)
Obesity[19, 208] None (BMI <25 kg/m^2) Overweight (BMI 25–30 kg/m^2) Obese (BMI ≥31 kg/m^2)	HR: 1.00 (reference) 1.13 (95% CI 0.87–1.46) 1.37 (95% CI 1.05–1.78)

European Heart Journal (2016)

Diabetes mellitus vs. none[19]	HR 1.25 (95% CI 0.98–1.60)
Chronic obstructive pulmonary disease[209]	RR:
FEV1 ≥80%	1.00 (reference)
FEV1 60–80%	1.28 (95% CI 0.79–2.06)
FEV1 <60%	2.53 (95% CI 1.45–4.42)
Obstructive sleep apnoea vs. none[210]	HR 2.18 (95% CI 1.34–3.54)
Chronic kidney disease[211]	OR:
None	1.00 (reference)
Stage 1 or 2	2.67 (95% CI 2.04–3.48)
Stage 3	1.68 (95% CI 1.26–2.24)
Stage 4 or 5	3.52 (95% CI 1.73–7.15)
Smoking[212]	HR:
Never	1.00 (reference)
Former	1.32 (95% CI 1.10–1.57)
Current	2.05 (95% CI 1.71–2.47)
Alcohol consumption[213]	RR:
None	1.00 (reference)
1– 6 drinks/week	1.01 (95% CI 0.94–1.09)
7–14 drinks/week	1.07 (95% CI 0.98–1.17)
15–21 drinks/week	1.14 (95% CI 1.01–1.28)
>21 drinks/week	1.39 (95% CI 1.22–1.58)
Habitual vigorous exercise[214]	RR:
Non-exercisers	1.00 (reference)
<1 day/week	0.90 (95% CI 0.68–1.20)
1–2 days/week	1.09 (95% CI 0.95–1.26)
3–4 days/week	1.04 (95% CI 0.91–1.19)
5–7 days/week	1.20 (95% CI 1.02–1.41)

European Heart Journal (2016)

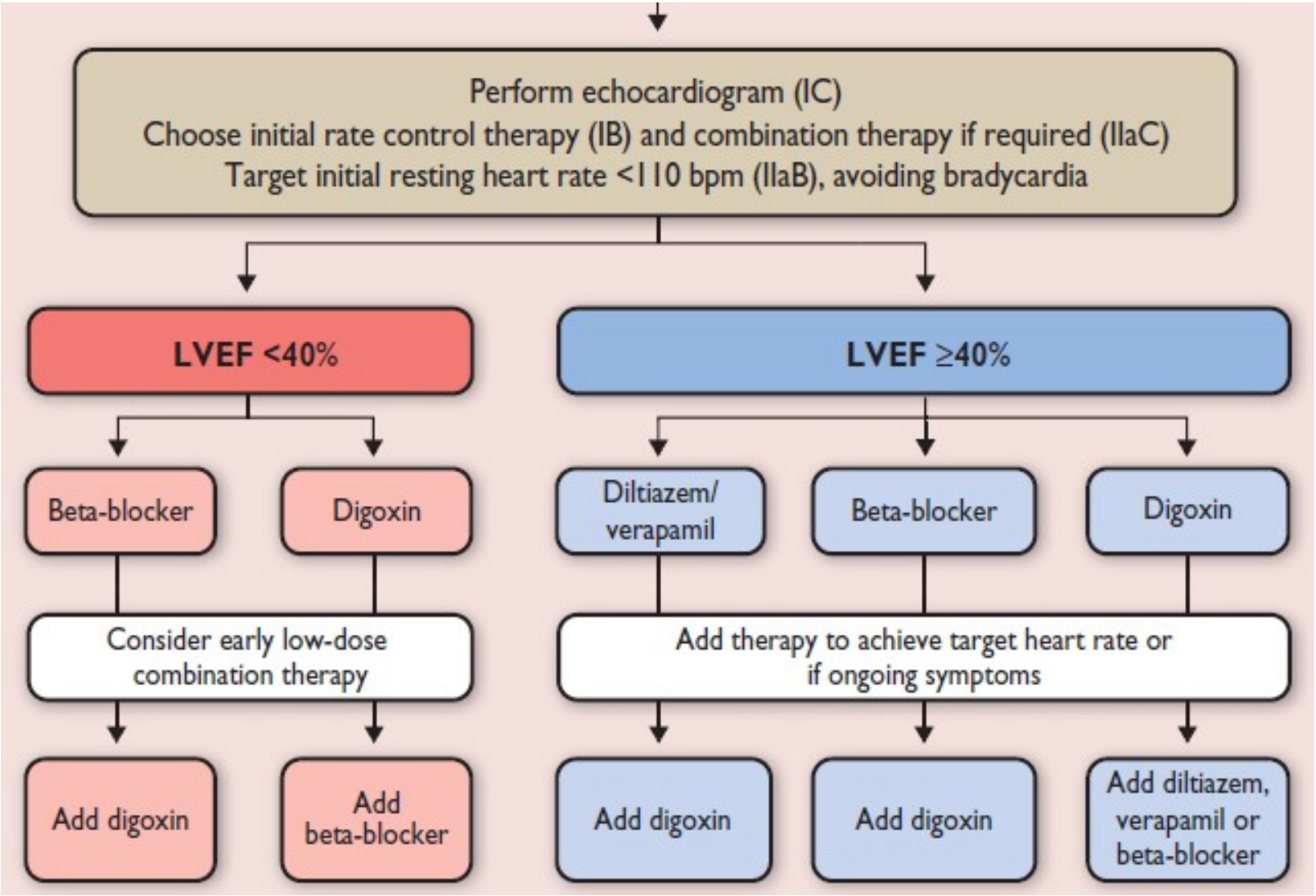
RATE CONTROL



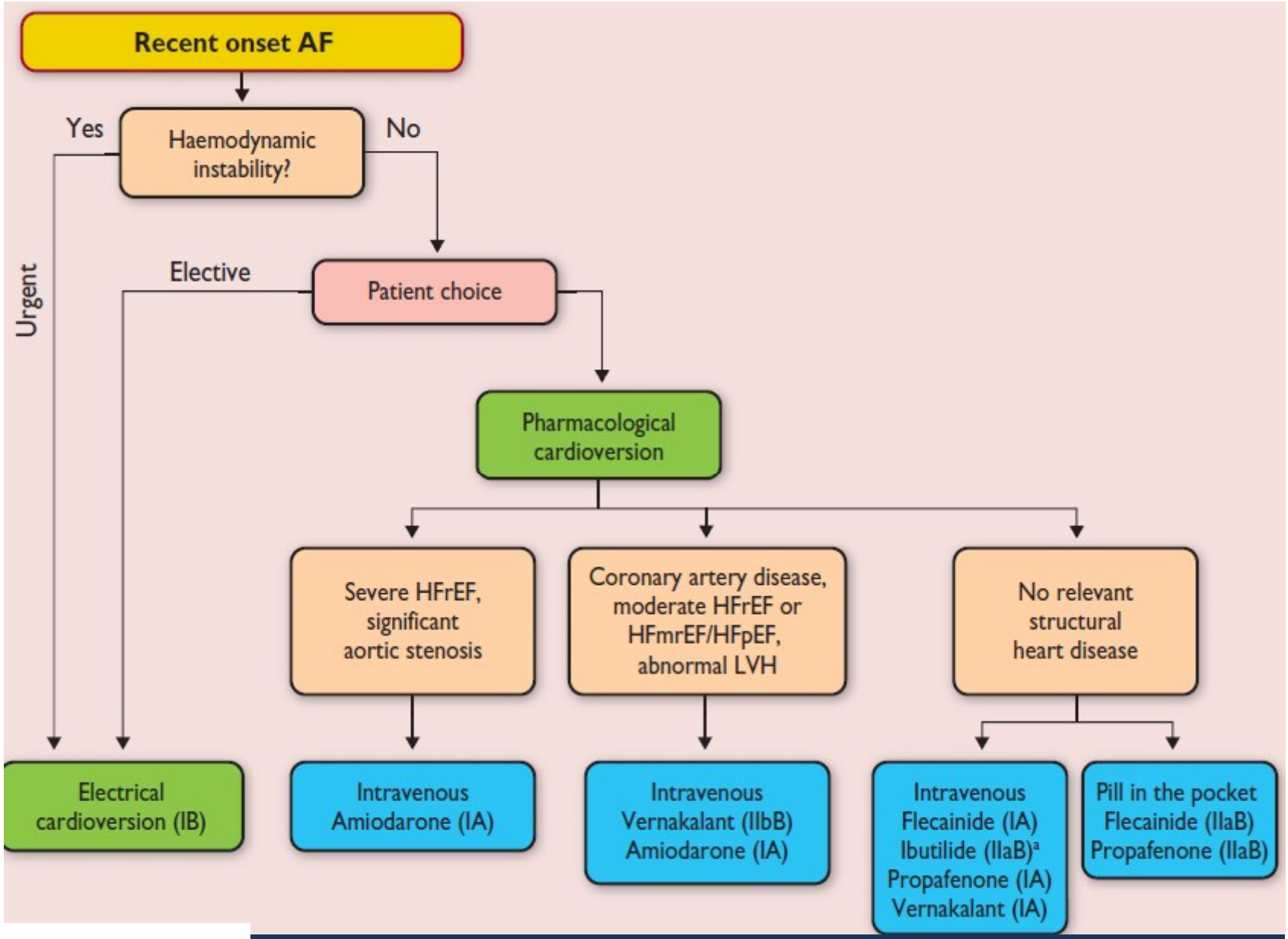
European Heart Journal (2016)

Long-term heart rate control of AF

RATE CONTROL



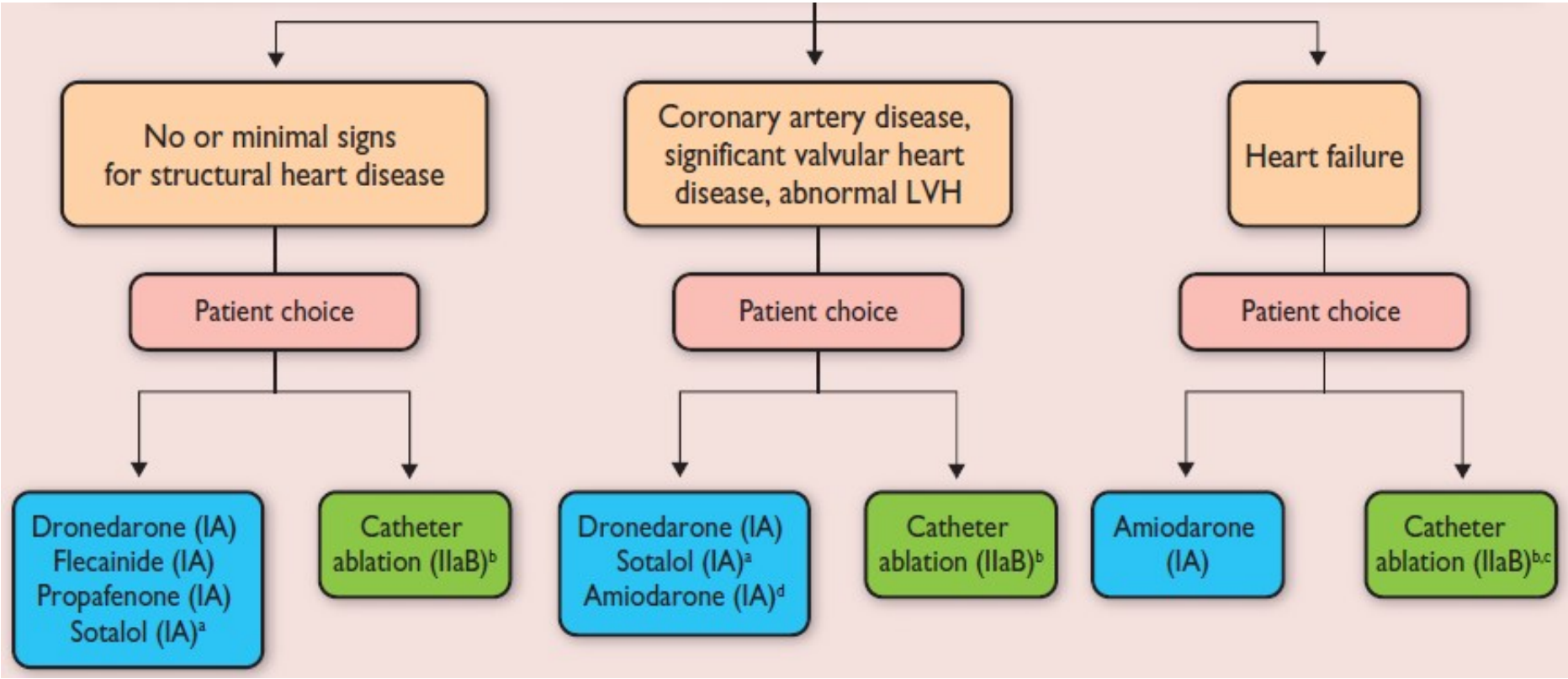
European Heart Journal (2016)



European Heart Journal (2016)

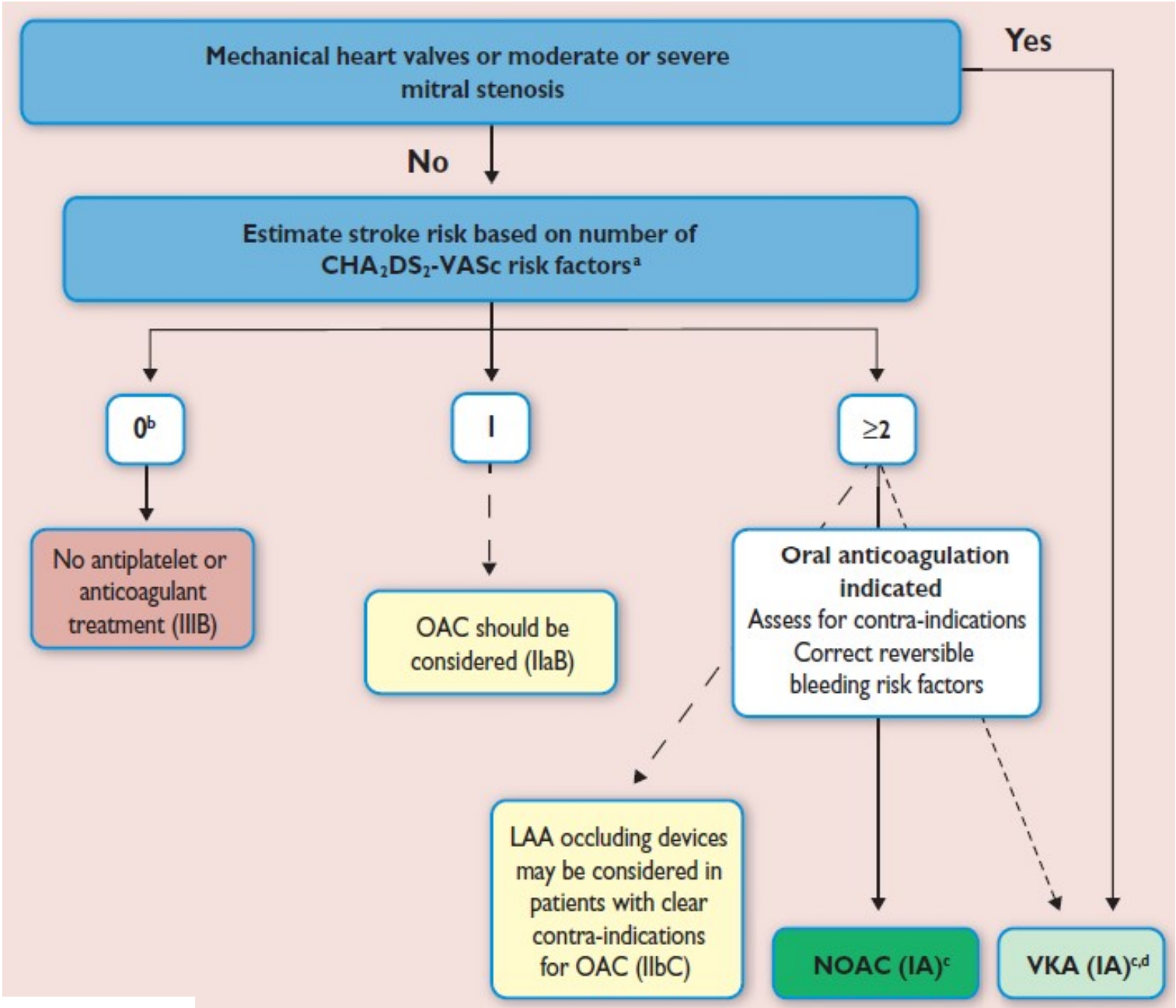
rhythm control

Initiation of long term rhythm control therapy to improve symptoms in AF



Antiarrhythmic drugs for pharmacological cardioversion

Drug	Route	1st dose	Follow-up dose	Risks
Flecainide	Oral IV	200–300 mg 1.5–2 mg/kg over 10 min	N/A	Hypotension, atrial flutter with 1:1 conduction, QT prolongation. Avoid in patients with IHD and/or significant structural heart disease.
Amiodarone	IV[a]	5–7 mg/kg over 1–2 hours	50 mg/hour to a maximum of 1.0 g over 24 hours	Phlebitis, hypotension, bradycardia/AV block. Will slow ventricular rate. Delayed conversion to sinus rhythm (8–12 hours).
Propafenone	IV Oral	1.5–2 mg/kg over 10 min 450–600 mg		Hypotension, atrial flutter with 1:1 conduction, QRS prolongation (mild). Avoid in patients with IHD and/or significant structural heart disease.



European Heart Journal (2016)

LE ARITMIE VENTRICOLARI

Sono presenti quasi sempre nelle gravi malattie cardiache

Di solito sono scatenate da BEV soprattutto se multifocali.

Spesso una TV si trasforma in uno stesso paziente in Flutter ventricolare o FV e viceversa.

I termini di forme **sostenute** o **non sostenute** è secondaria alla persistenza dell'aritmia per almeno 30 secondi

EXTRASISTOLI VENTRICOLARI

Indipendentemente dal meccanismo di innesco possono trarre origine da ogni punto dei ventricoli.

L'aspetto è influenzato dal punto di origine.

Generalmente il QRS supera i 0,16 sec.

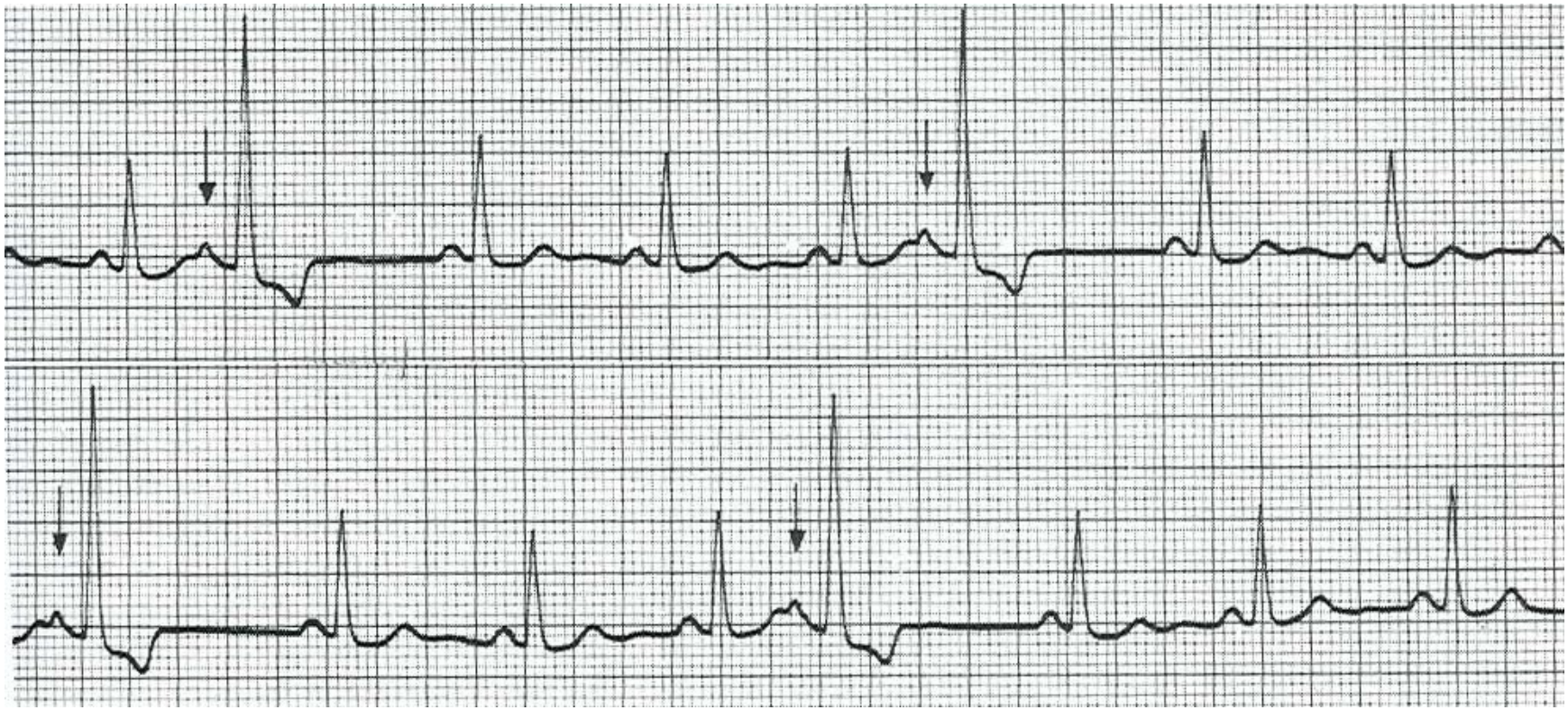
Sono a Blocco di branca sx se provengono dal ventricolo dx e a Blocco di branca dx se iniziano dal ventricolo sx

Piena pausa compensatoria in corso di ritmo sinusale

Assenza di P ectopiche precedenti i QRS larghi

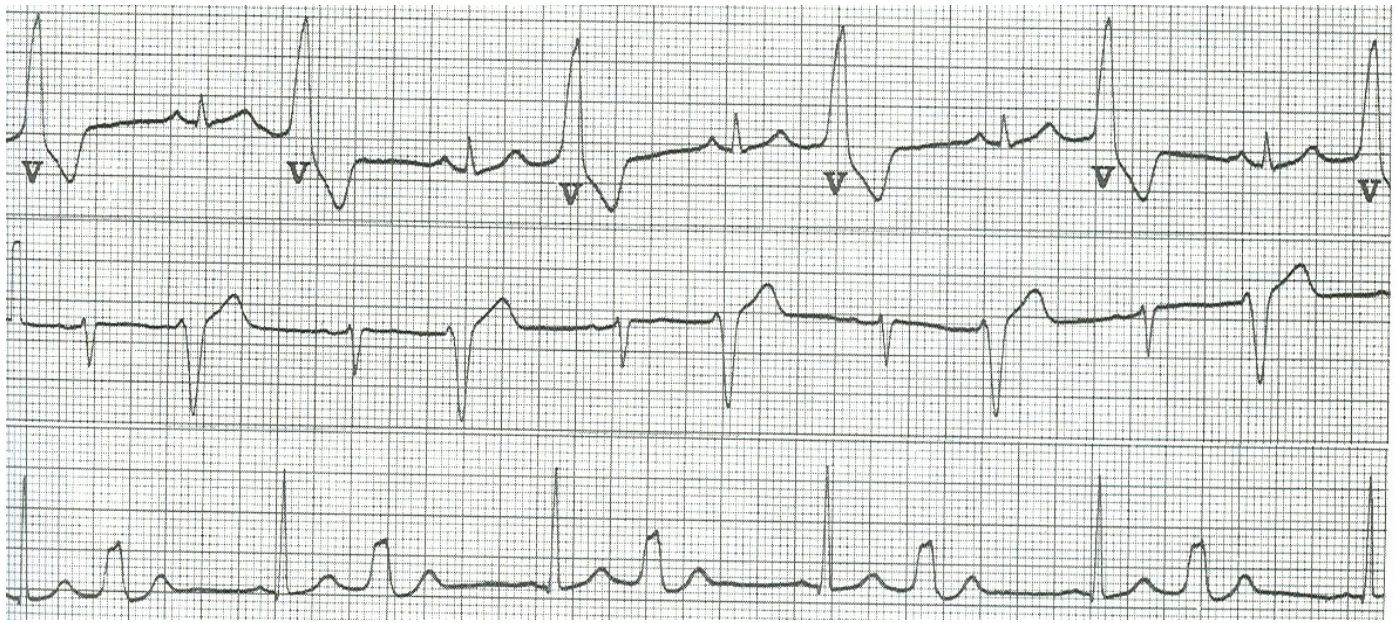
P retrocondotte dopo QRS

EXTRASISTOLI VENTRICOLARI ?



EXTRASISTOLI VENTRICOLARI

BIGEMINISMO



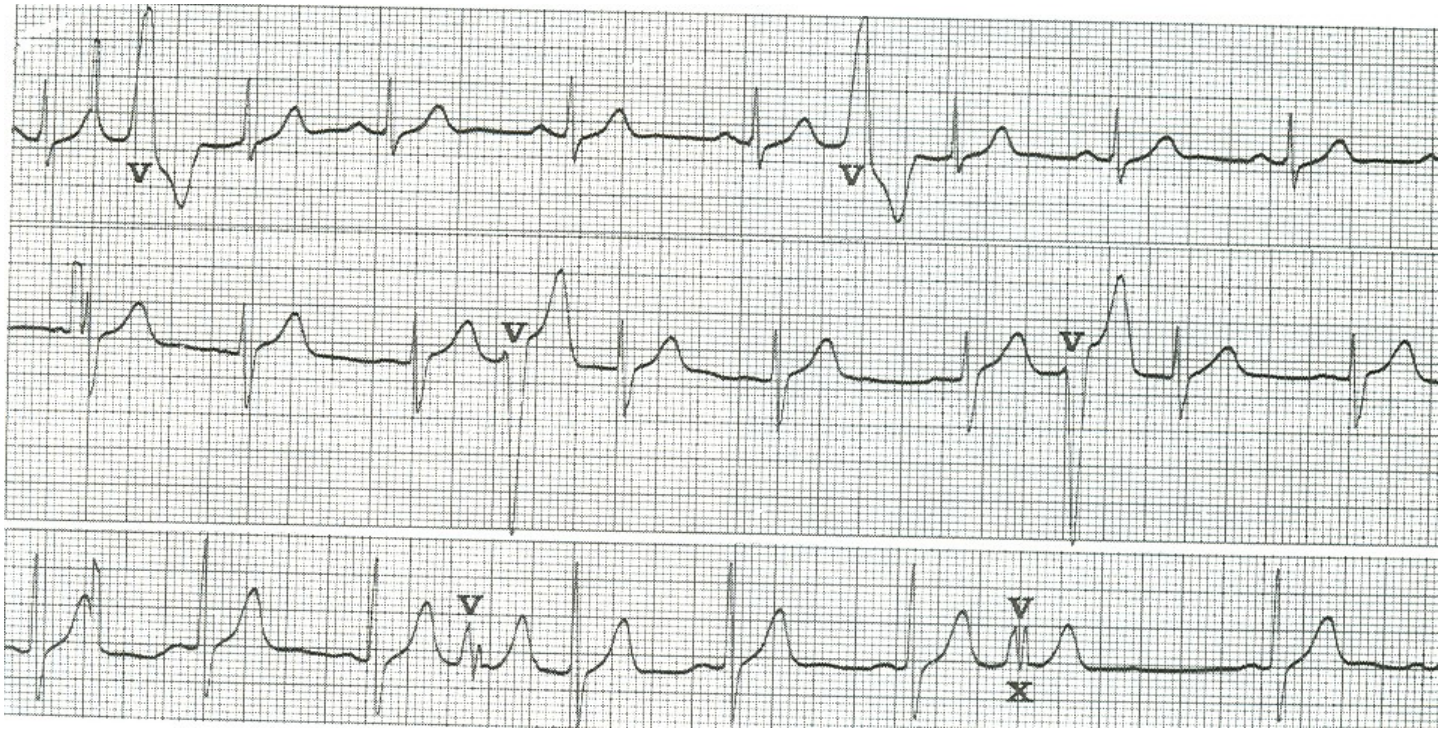
Battito prematuro non preceduto da P, con QRS largo.

Talvolta interpolato. Raramente seguito da P in ECO.

Sempre con pausa compensatoria.

EXTRASISTOLI VENTRICOLARI

INTERPOLATE

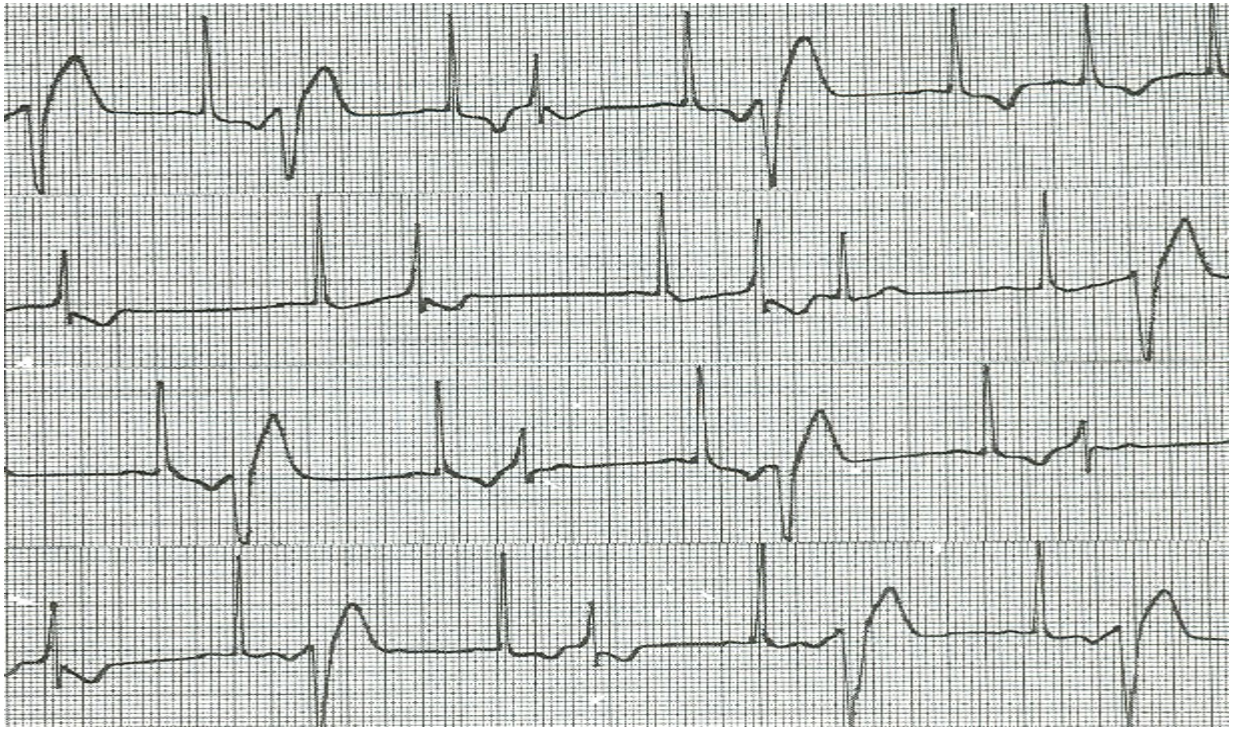


L’intervallo RR fra 2 battiti sinusali è leggermente più lungo.

Il ciclo sinusale PP non è disturbato da BEV interpolato.

EXTRASISTOLI VENTRICOLARI

BIGEMINISMO POLIMORFO

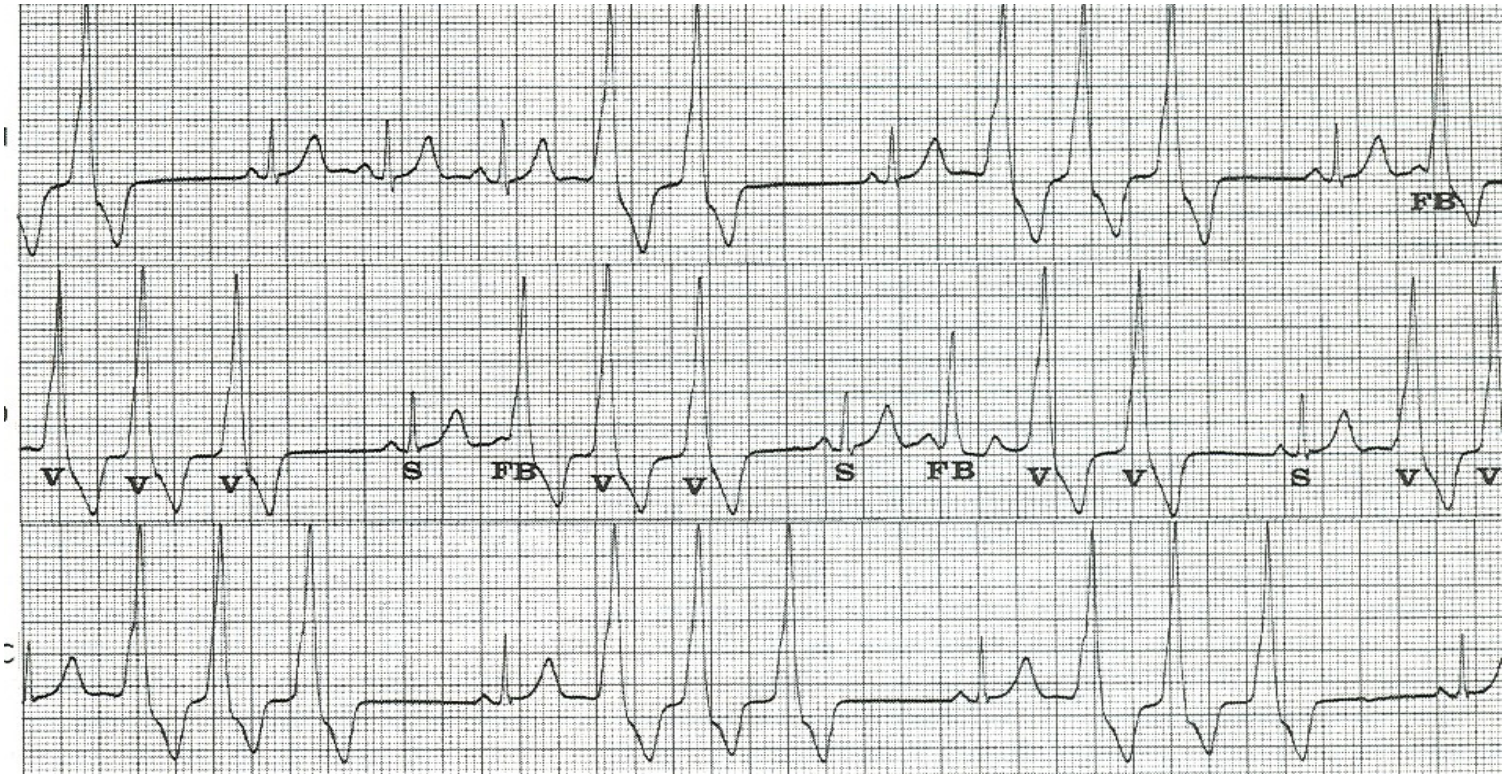


Generalmente in cardiopatici. 2 o più focolai.

Intervalli di accoppiamento variabili

EXTRASISTOLI VENTRICOLARI

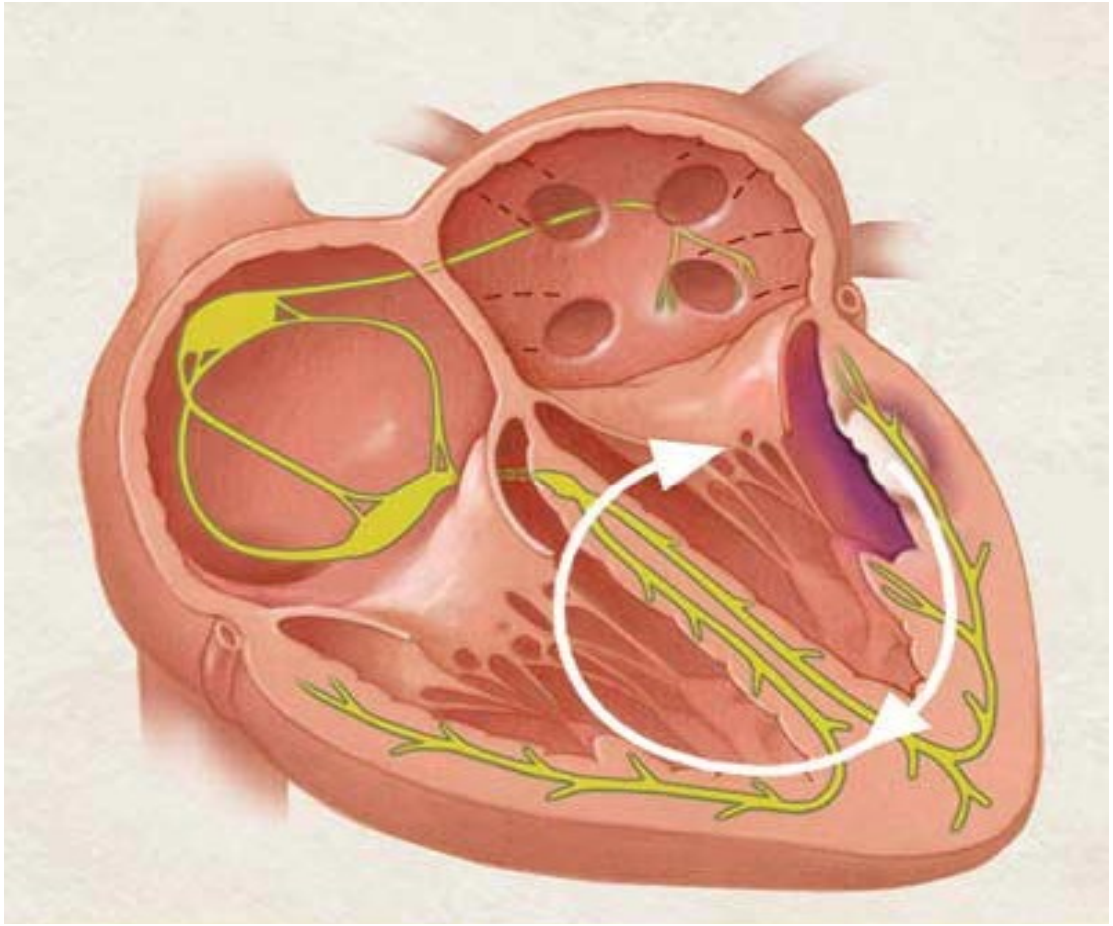
Coppie e triplette



Da 2 a 5 battiti consecutivi. Aspetto dei BEV costante o variabile.

Di solito seguiti da pausa ventricolare significativa.n
PRESENZA DI BATTITI DI FUSIONE

TACHICARDIA VENTRICOLARE



TACHICARDIA VENTRICOLARE

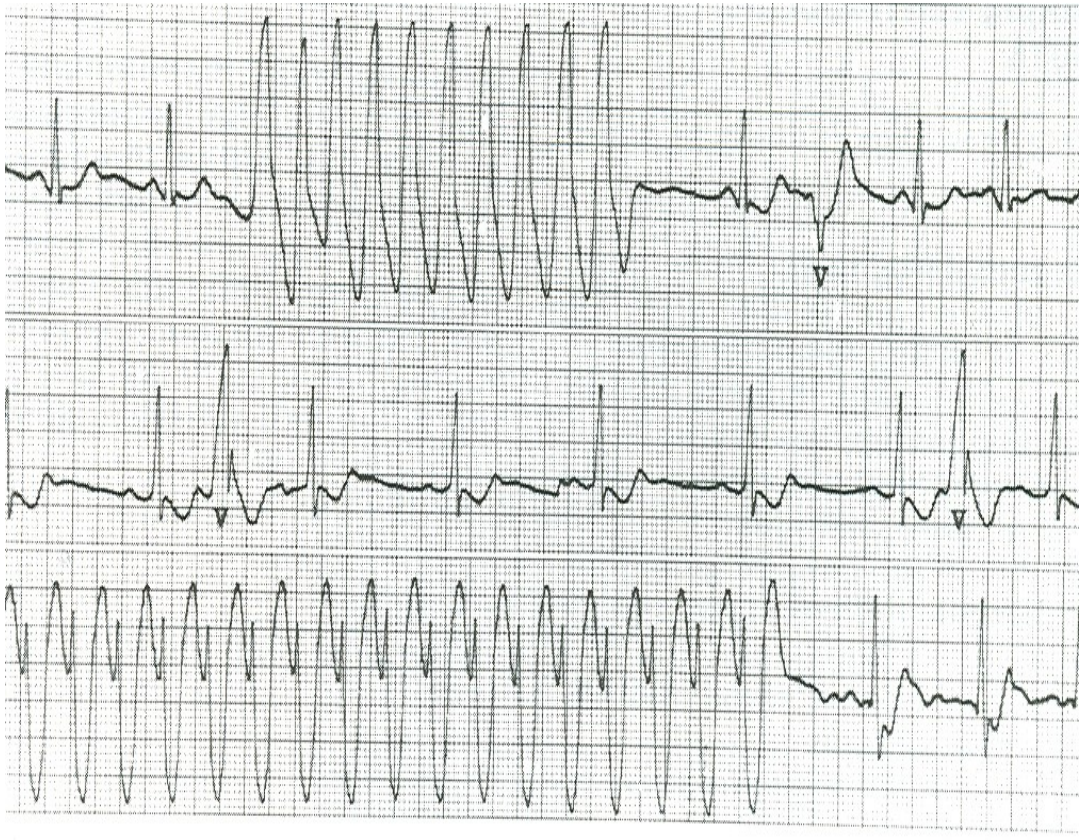
NON SOSTENUTA

Consiste in 6 battiti o più di BEV consecutivi della durata non superiore ai 29 secondi

FC 140-180 bpm

Monomorfi o polimorfi

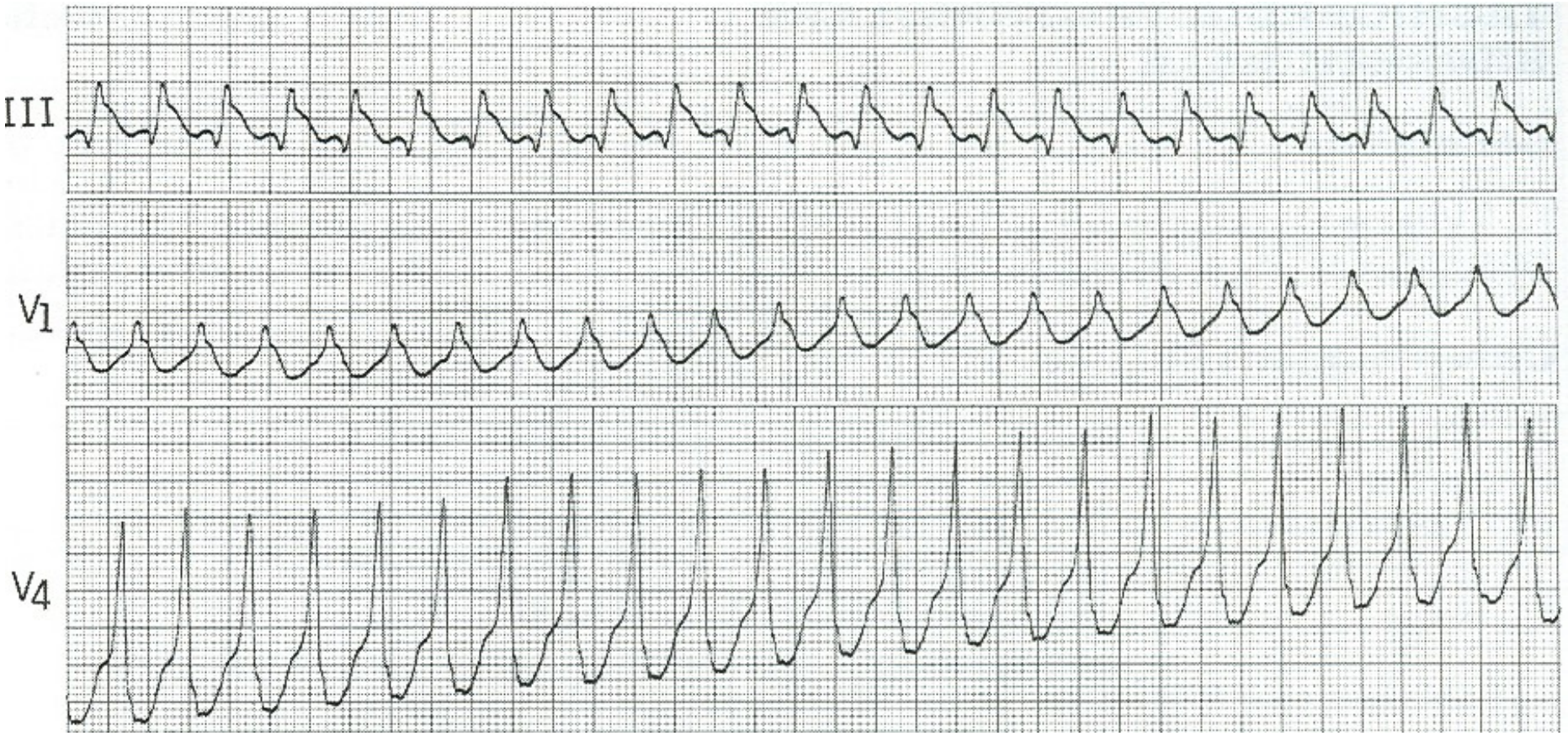
Intervalli non costanti



Prevalentemente presente in cardiopatia

TACHICARDIA VENTRICOLARE

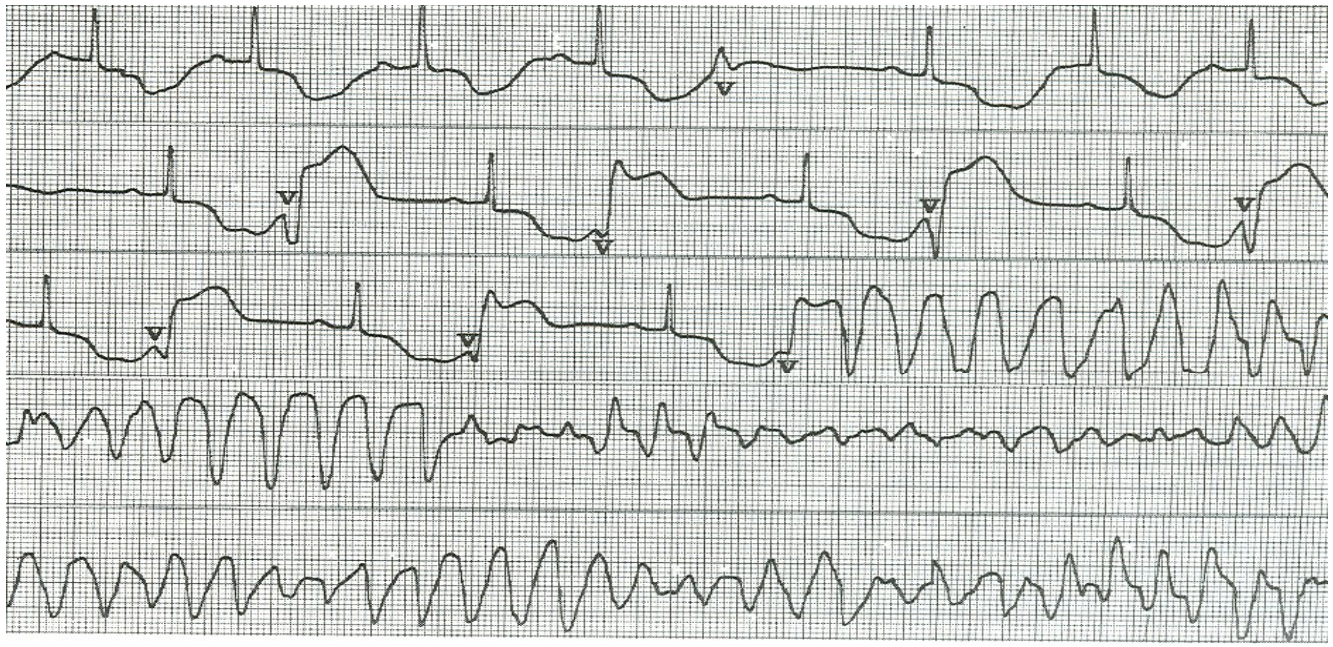
SOSTENUTA



Durata superiore a 30 sec. FC 140-180 bpm .

Unica o più morfologie. Cicli irregolari.

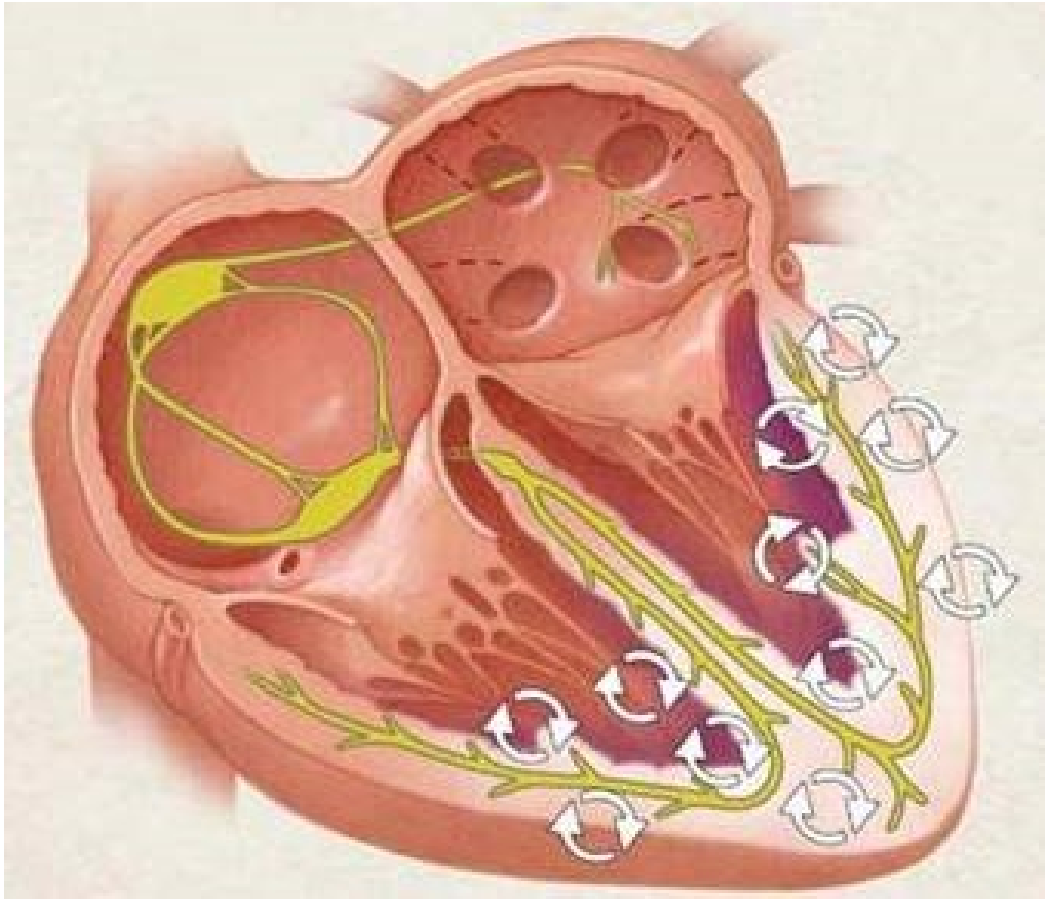
TORSIONE DI PUNTA



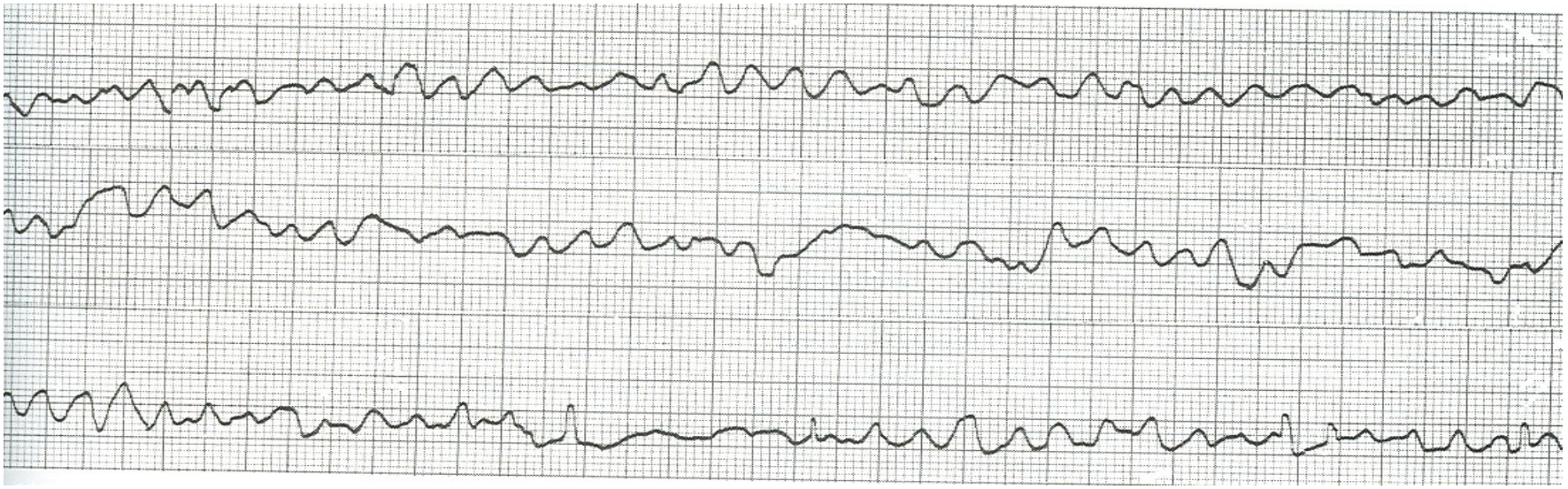
TV polimorfa innescata da un BEV con fenomeno di R su T in presenza di un QT lungo. FC 140-180 bpm.

Spesso si trasforma in FV o si autolimita.

FIBRILLAZIONE VENTRICOLARE



FIBRILLAZIONE VENTRICOLARE



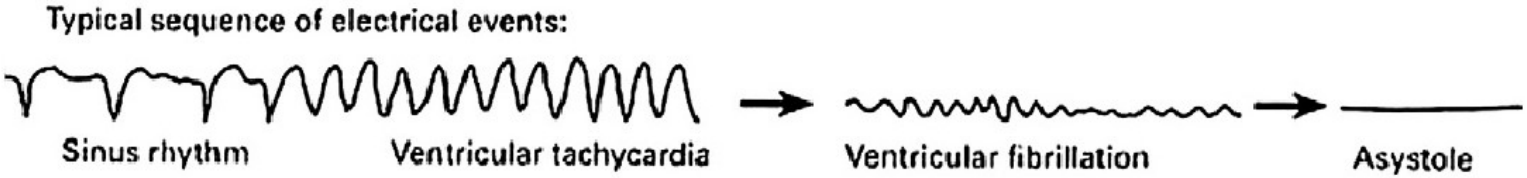
E’ un susseguirsi caotico di complessi polimorfi molto rapidi.

Di varie ampiezze, che traggono origine da qualsiasi punto del miocardio ventricolare.

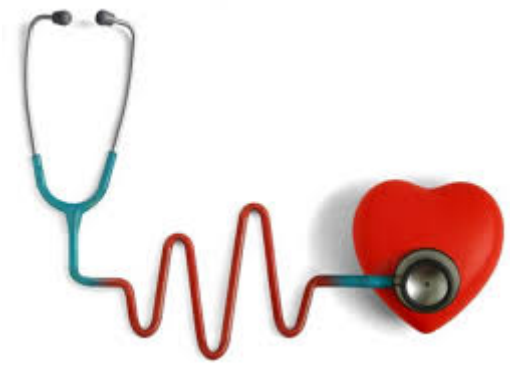
Scomparsa della distinzione tra QRS ST e T.

Spesso è preceduta o seguita da TV o Flutter ventricolare.

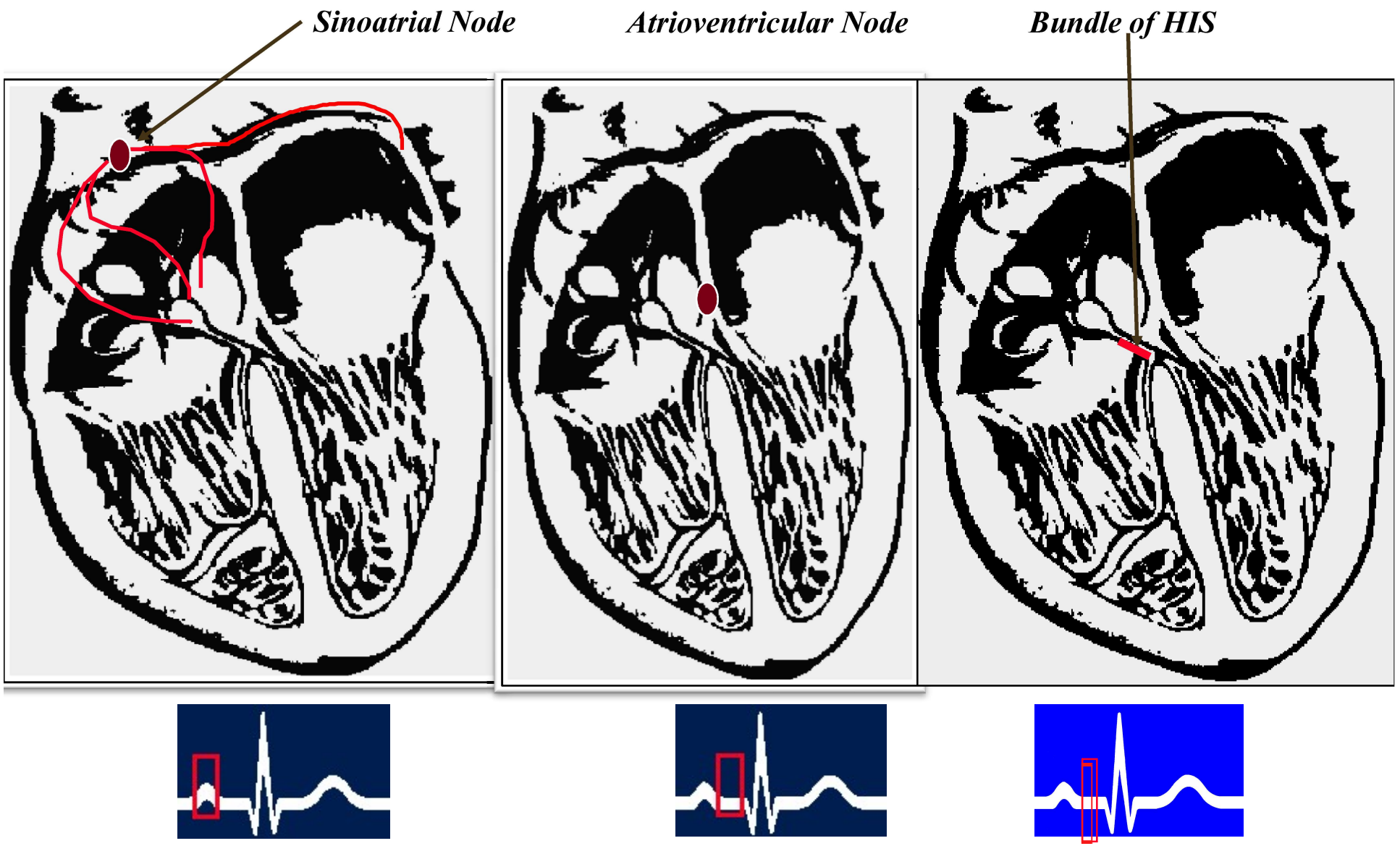
SEQUENZA EVENTI



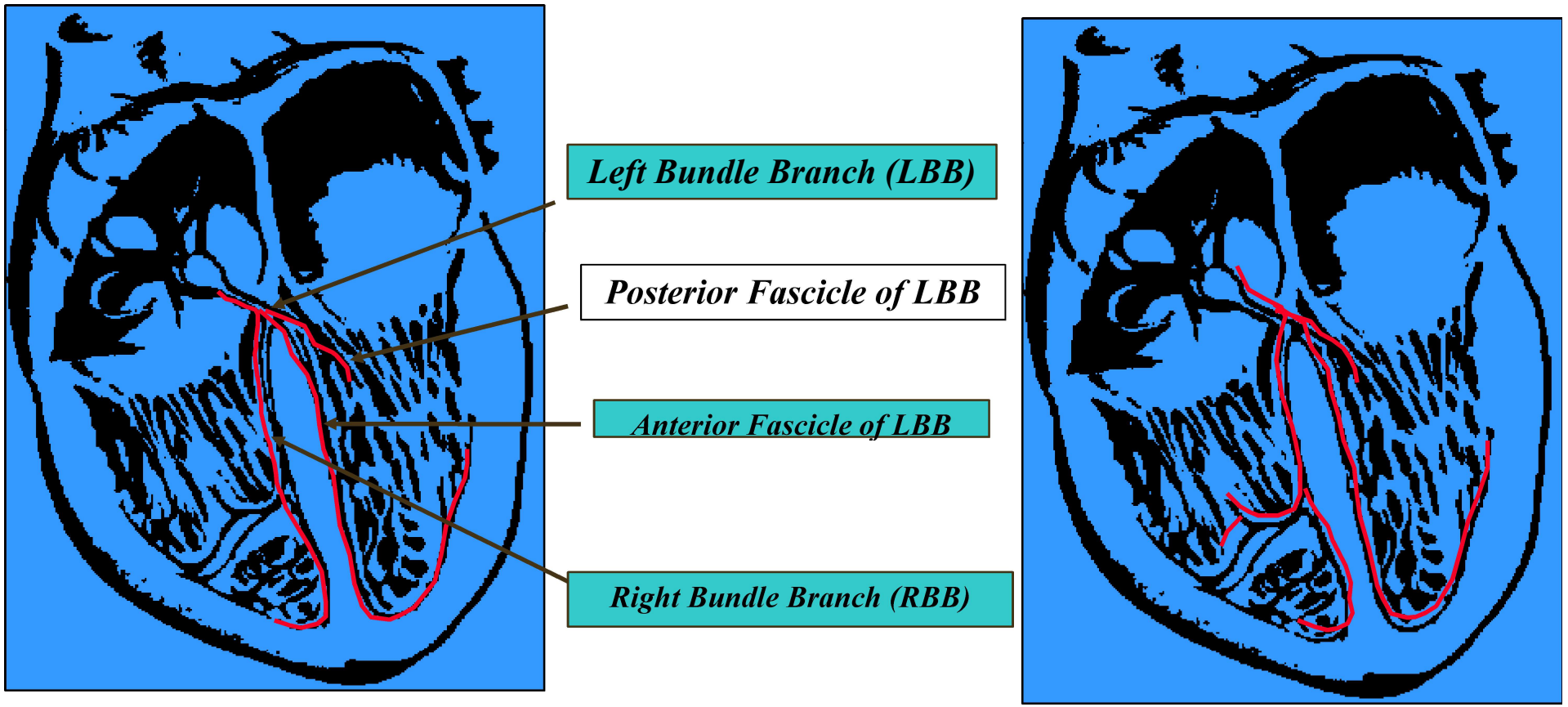
LE BRADICARDIE



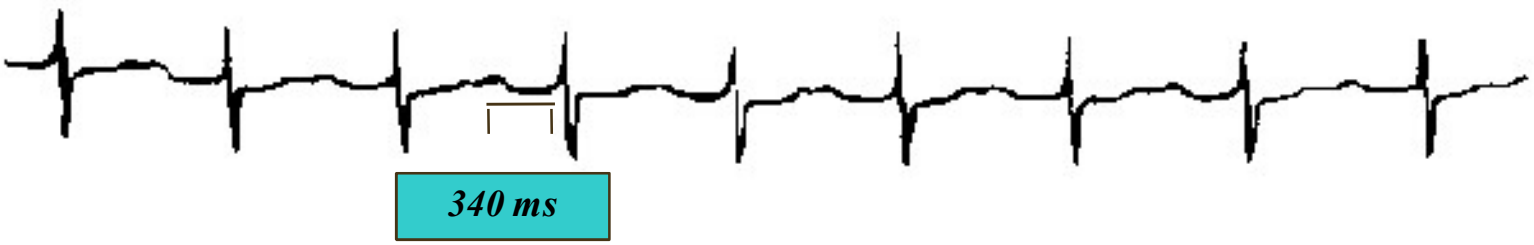
DISTURBI DI CONDUZIONE



DISTURBI DI CONDUZIONE

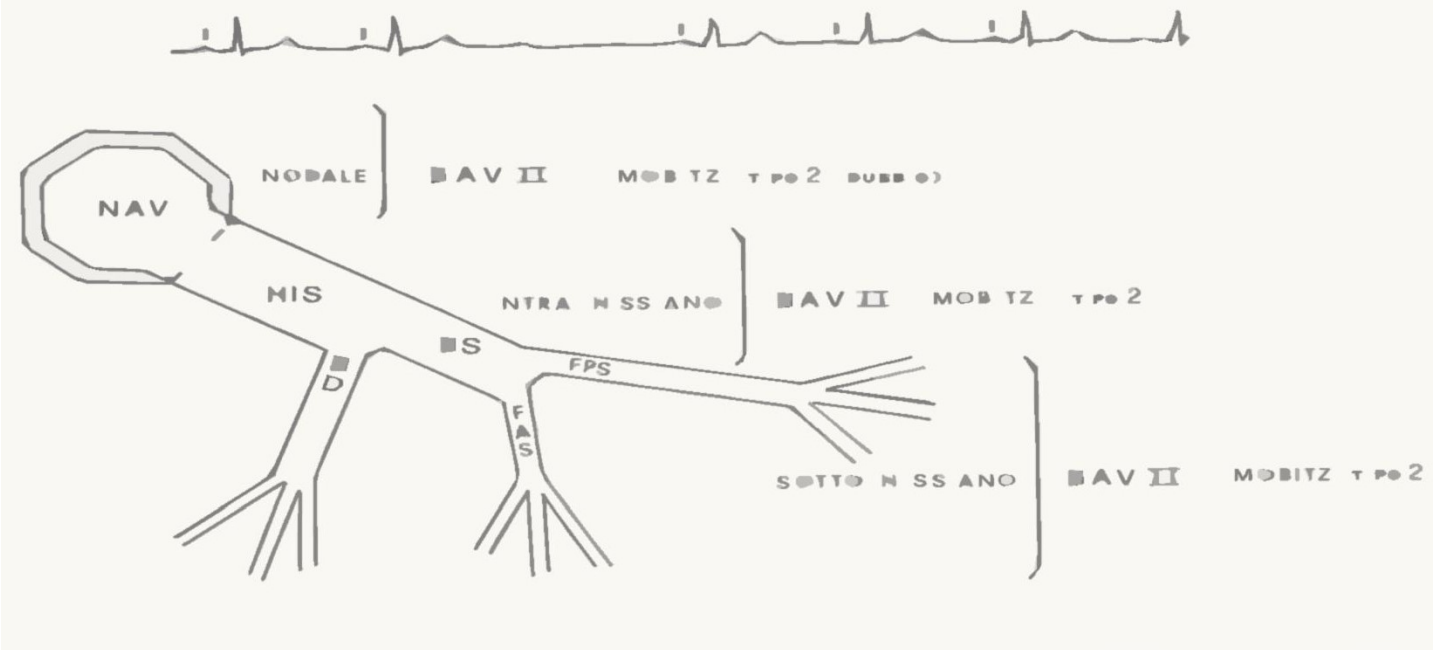


First-Degree AV Block

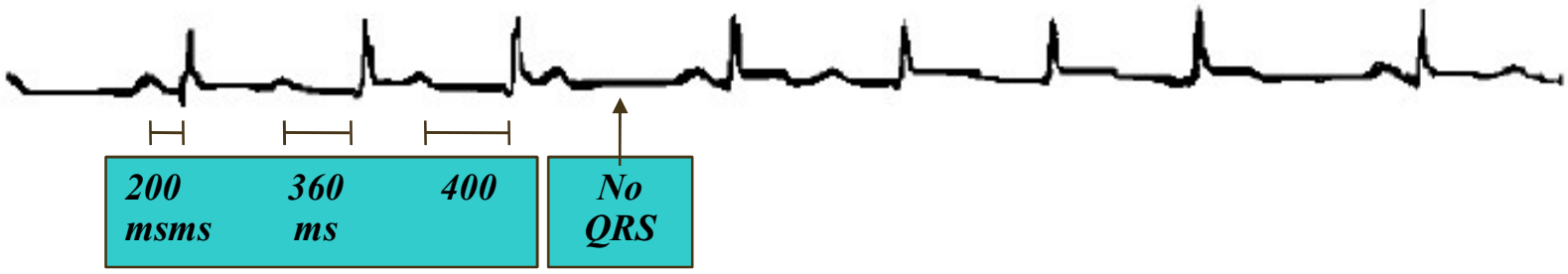


- **AV conduction is delayed, and the PR interval is prolonged (>200 ms or .2 seconds)**
  - **Rate = 79 bpm**
  - **PR interval = 340 ms (.34 seconds)**

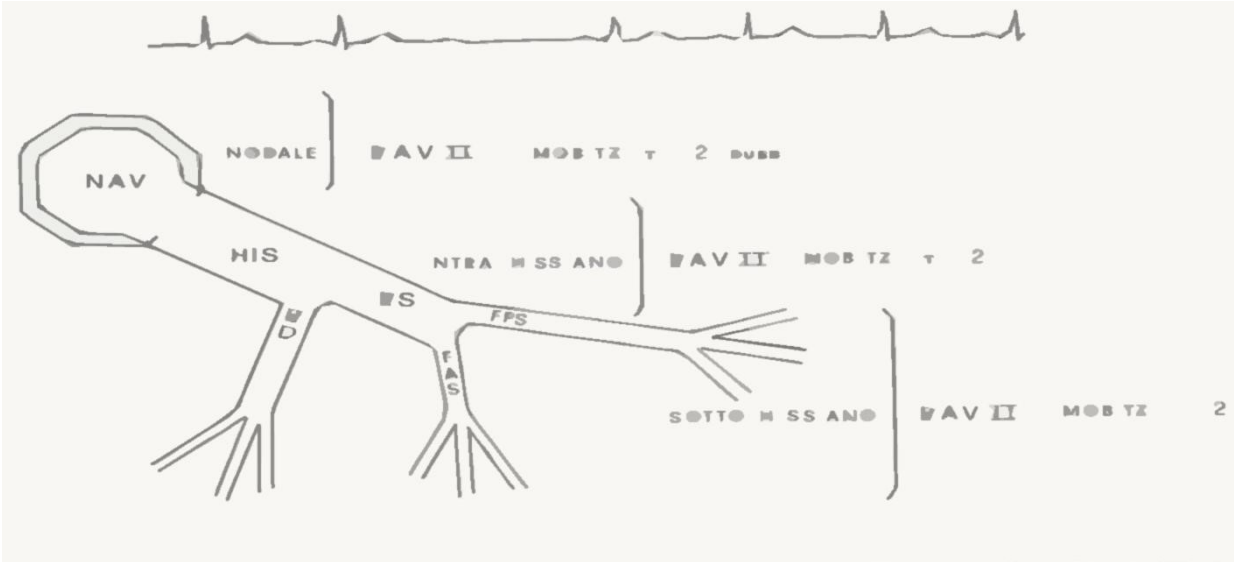
BLOCCO AV DI 2 GRADO MOBITZ TIPO I



- **Progressive prolongation of the PR interval until a ventricular beat is dropped**

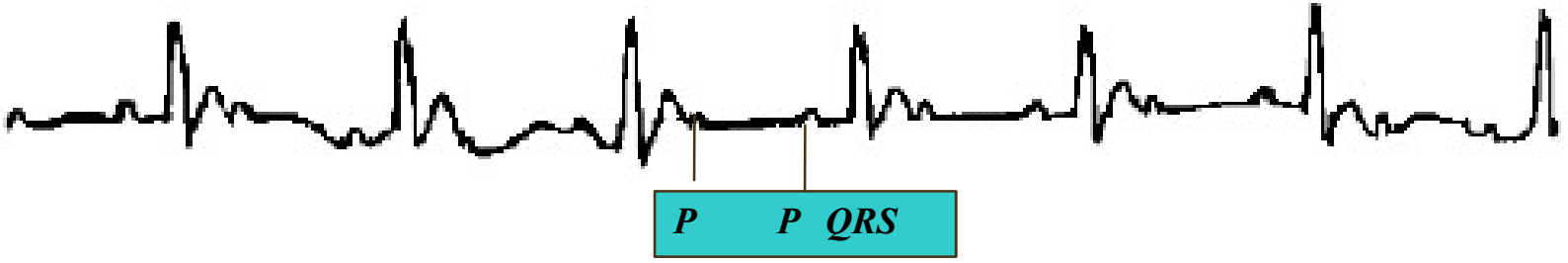


BLOCCO AV DI 2 GRADO MOBITZ TIPO II

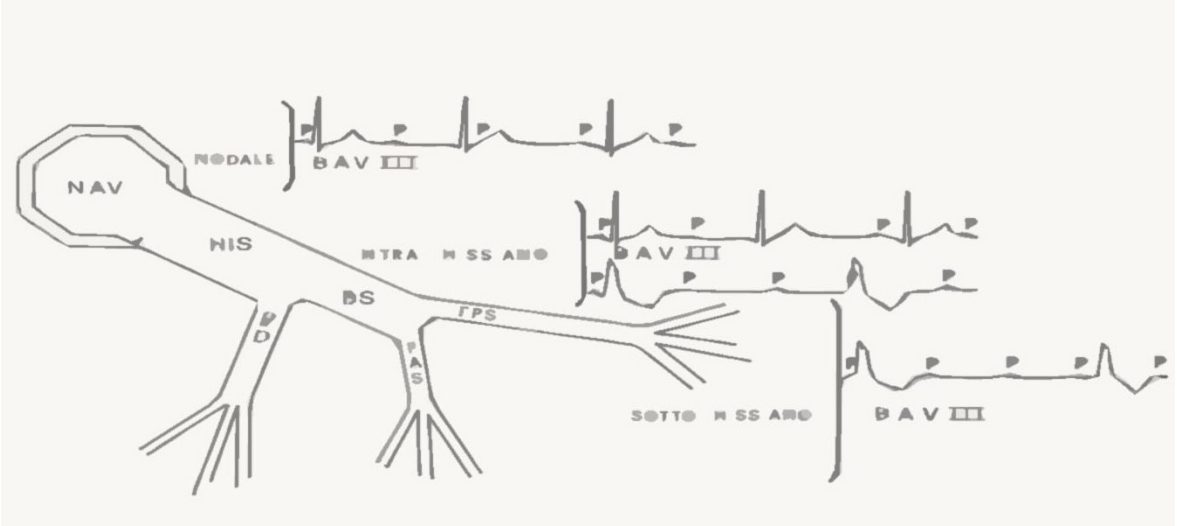


- **Regularly dropped ventricular beats**

2:1 block (2 P waves to 1 QRS complex)



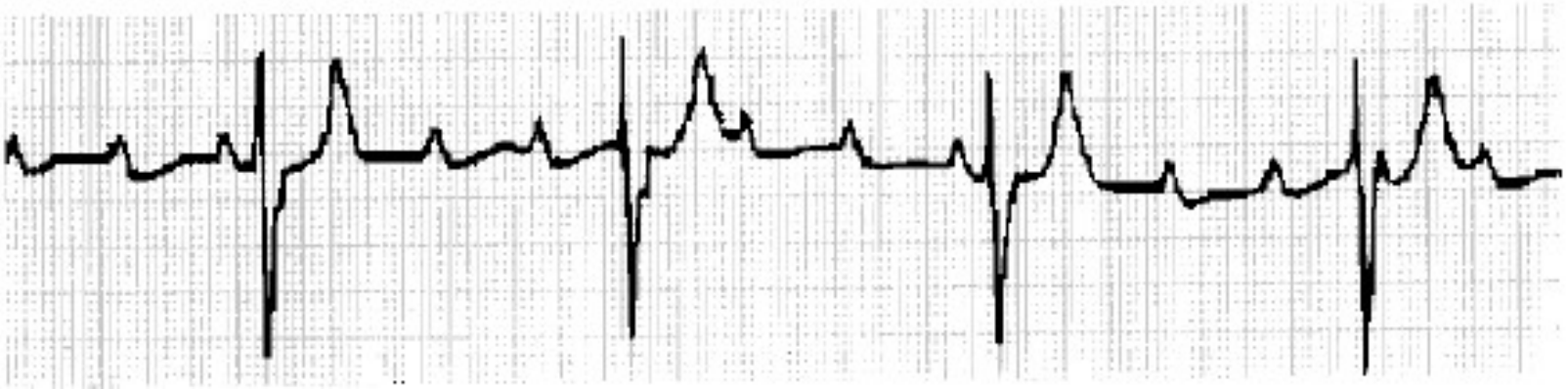
BLOCCO AV DI 3



- No impulse conduction from the atria to the ventricles

Ventricular rate = 37 bpm

Atrial rate = 130 bpm PR interval = variable

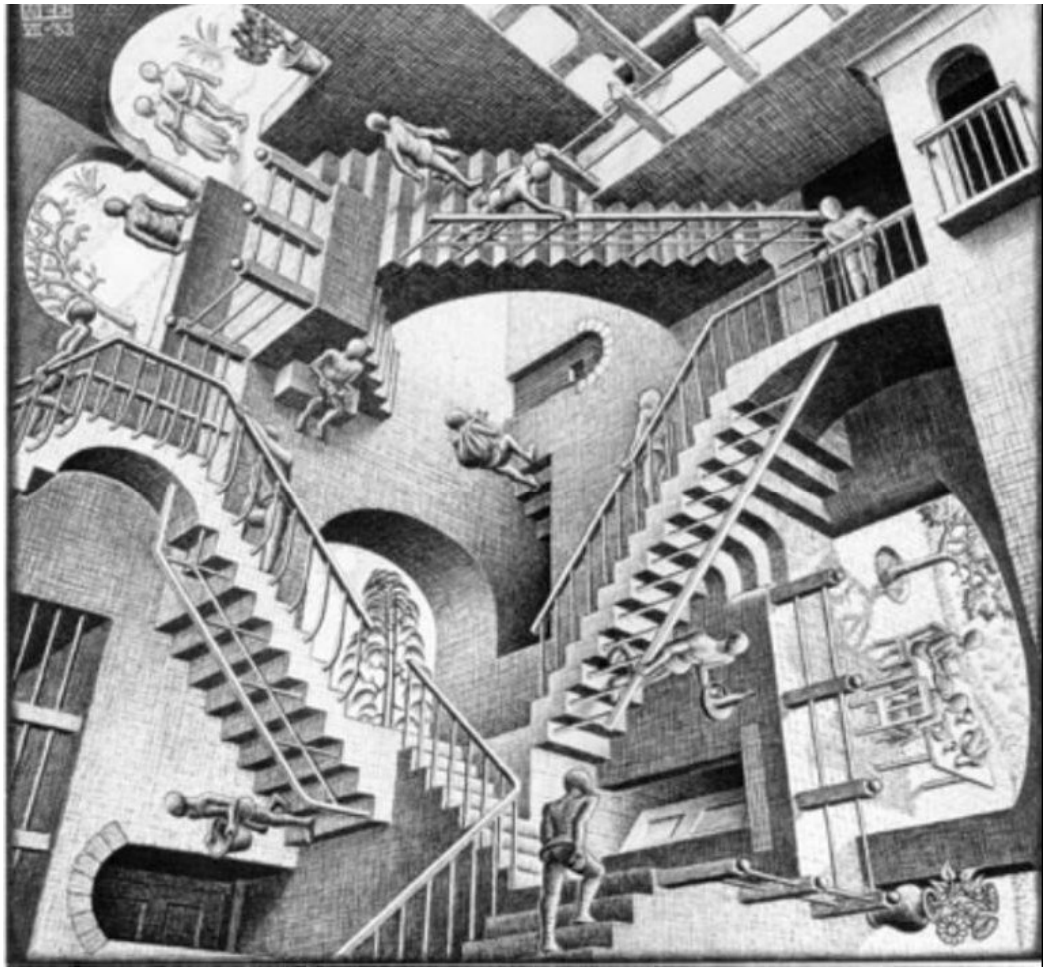


Le cause che portano alla insorgenza di blocchi atrio-ventricolari possono essere ad eziologia sconosciuta o secondaria a malattie cardiache tra cui:

- Cardiopatia ischemica
- Valvulopatie
- Malattie infettive o parassitarie
- Cardiopatia ipertensiva
- Interventi di Cardiochirurugia
- Squilibri elettrolitici
- Cardiomiopatie
- Neurovegetativa

La sintomatologia e i segni legati alla presenza di blocco AV in corso di ritmo sinusale o di FA cronica sono caratterizzati da:

- Vertigini e Lipotimie
- Sincope
- Convulsioni e/o Nausea e Vomito (farmaci)
- Quadro di scompenso cardiocircolatorio
- Dispnea per sforzi lievi e a riposo
- Alterazione marcata del battito cardiaco
- toni cardiaci a colpo di cannone.
- Edemi arti inferiori e crepitazioni polmonari



Grazie