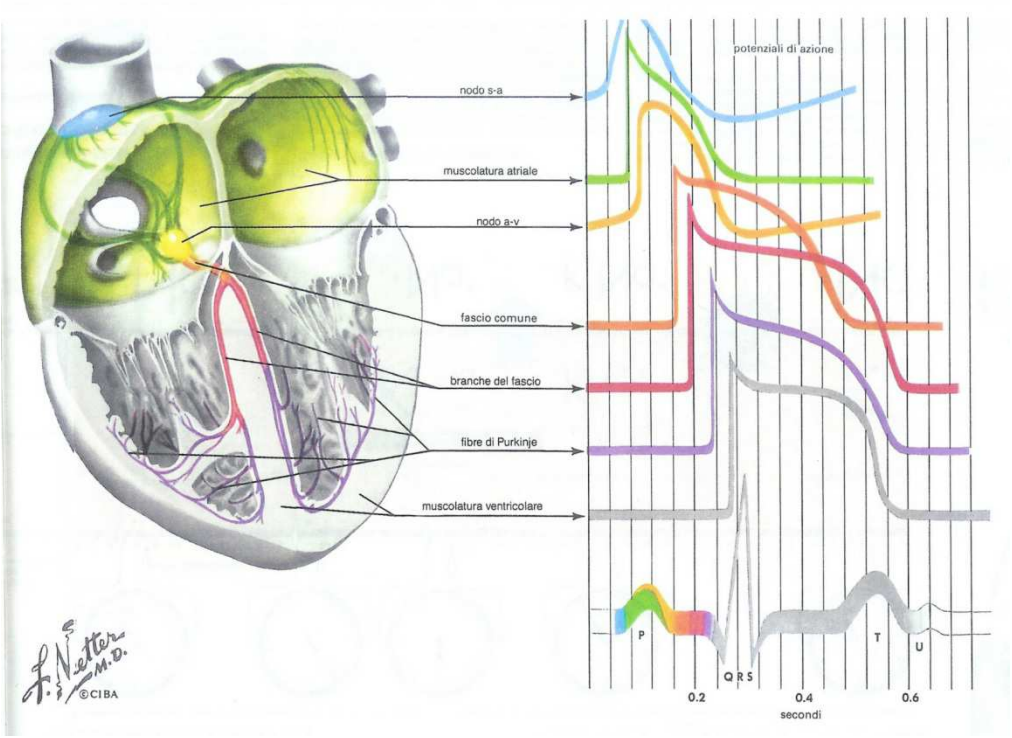
Tachicardie sopraventricolari

Mauro Zennaro


potenziali di azione
nodo s-a
muscolatura atriale
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fascio comune
branche del fascio
fibre di Purkinje
muscolatura ventricolare
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secondi
F. H. Netter M.D.
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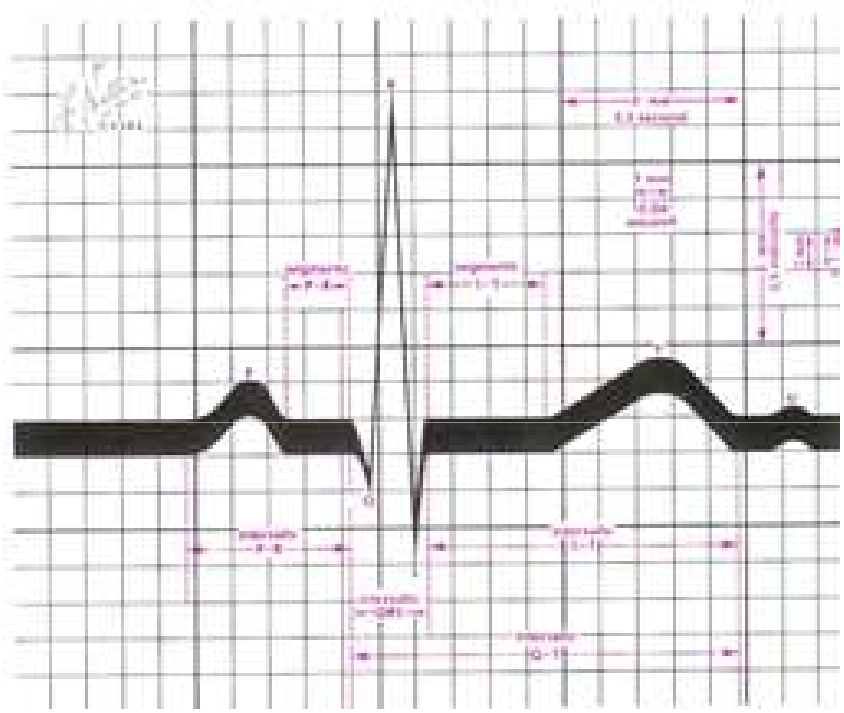


Because patients with SVT account for approximately 50,00 emergency department visits each year ,emergency medicine physicians may be the first to evaluate patients whose tachycardia mechanism is unknown and to have the opportunity to diagnose the mechanism of arrhythmia. It is important to record a 12-lead ECG to differentiate tachycardia mechanisms according to whether the AV node is an obligate component, because treatment that targets the AV node will not reliably terminate tachycardias that are not AV node dependent.

2015 ACC/AHA/HRS SVT Guideline

PRESENTAZIONE

The diagnosis of SVT is often made in the emergency department, but it is common to elicit symptoms suggestive of SVT before initial ECG documentation.

SVT symptom onset often begins in adulthood;
in 1 study in adults, the mean age of symptom onset was 32±18 years of age for AVNRT, versus 23±14 years of age for AVRT

In comparison with AVRT, patients with AVNRT are more likely to be female, with an age of onset >30 years

AVNRT onset has been reported after the age of 50 years in 16% and before the age of 20 years in 18%

2015 ACC/AHA/HRS SVT Guideline

PRESENTAZIONE

SVT has an impact on quality of life, which varies according to the frequency of episodes, the duration of SVT, and whether symptoms occur not only with exercise but also at rest.

In 1 retrospective study in which the records of patients <21 years of age **with WPW** pattern on the ECG were reviewed, 64% of patients had symptoms at presentation, and an additional 20% developed symptoms during follow-up.

Modes of presentation

-included documented SVT in 38%
-palpitations in 22%,
-chest pain in 5%
-syncope in 4%
-AF in 0.4%
-and sudden cardiac death (SCD) in 0.2%

2015 ACC/AHA/HRS SVT Guideline

PRESENTAZIONE

A confounding factor in diagnosing SVT is the need to differentiate symptoms of SVT from symptoms **of panic and anxiety** disorders or any condition of heightened awareness of sinus tachycardia(such as postural orthostatic tachycardia syndrome).

In 1 study, the criteria for **panic disorder** were fulfilled in 67% of patients with SVT that remained unrecognized after their initial evaluation.

Physicians attributed symptoms of SVT to panic, anxiety, or stress in 54% of patients, with women more likely to be mislabeled with panic disorder than men

Polyuria is particularly common with AVNRT and is related to higher right atrial pressures and elevated levels of atrial natriuretic protein in patients with AVNRT compared with patients who have AVRT or atrial flutter .

True syncope is infrequent with SVT, but complaints of light-headedness are common.

In patients with WPW syndrome, syncope should be taken seriously but is not necessarily associated with increased risk of SCD

2015 ACC/AHA/HRS SVT Guideline

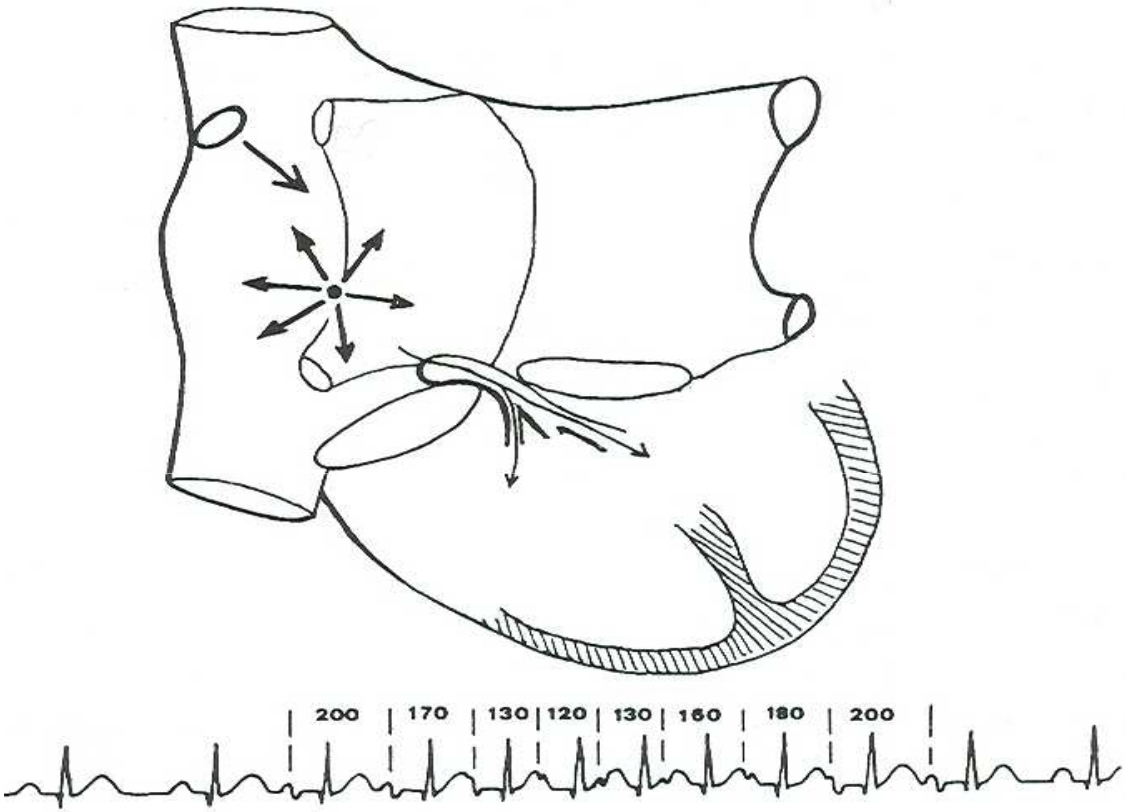
PRESENTAZIONE

Elderly patients with AVNRT are more prone to syncope or near-syncope than are younger patients, but the tachycardia rate is generally slower in the elderly

The drop in blood pressure (BP) during SVT is greatest in the first 10 to 30 seconds and somewhat normalizes within 30 to 60 seconds, despite minimal changes in rate .

Shorter ventriculoatrial intervals are associated with a greater mean decrease in BP

2015 ACC/AHA/HRS SVT Guideline


200
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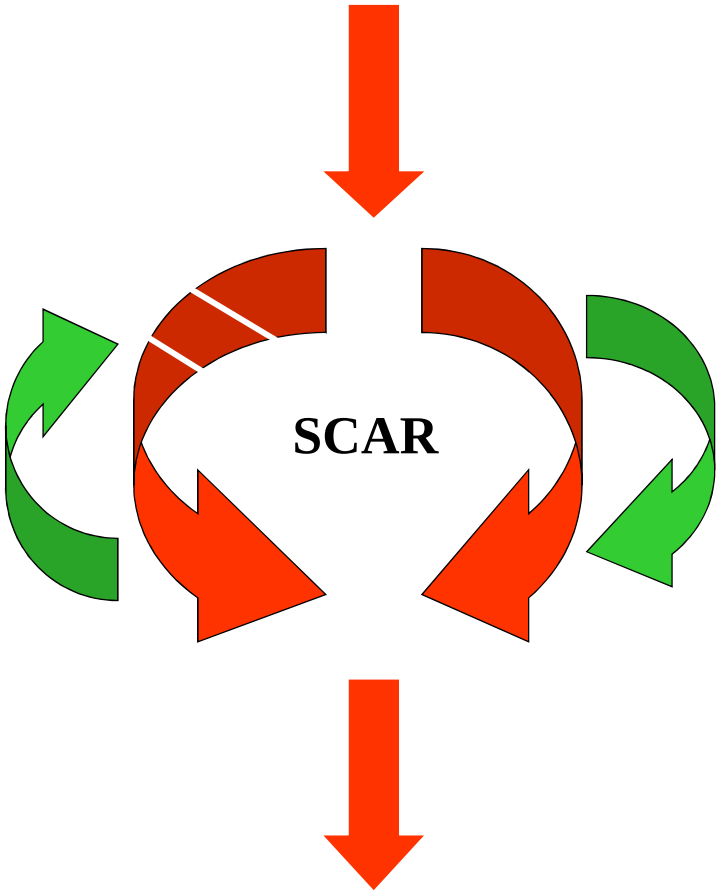
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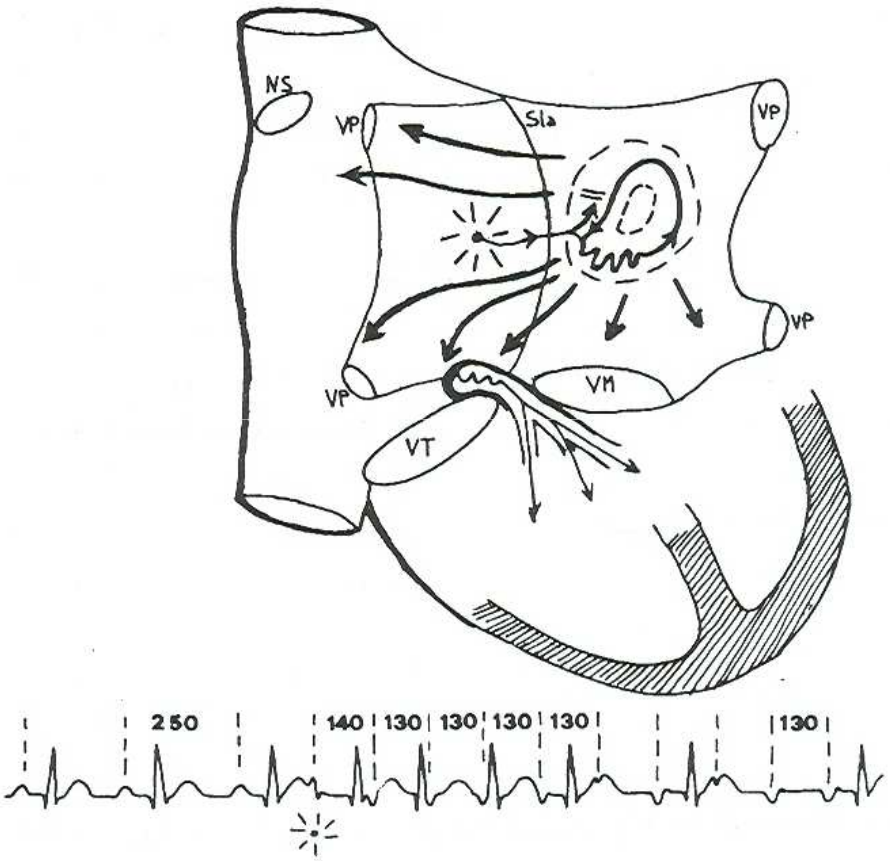
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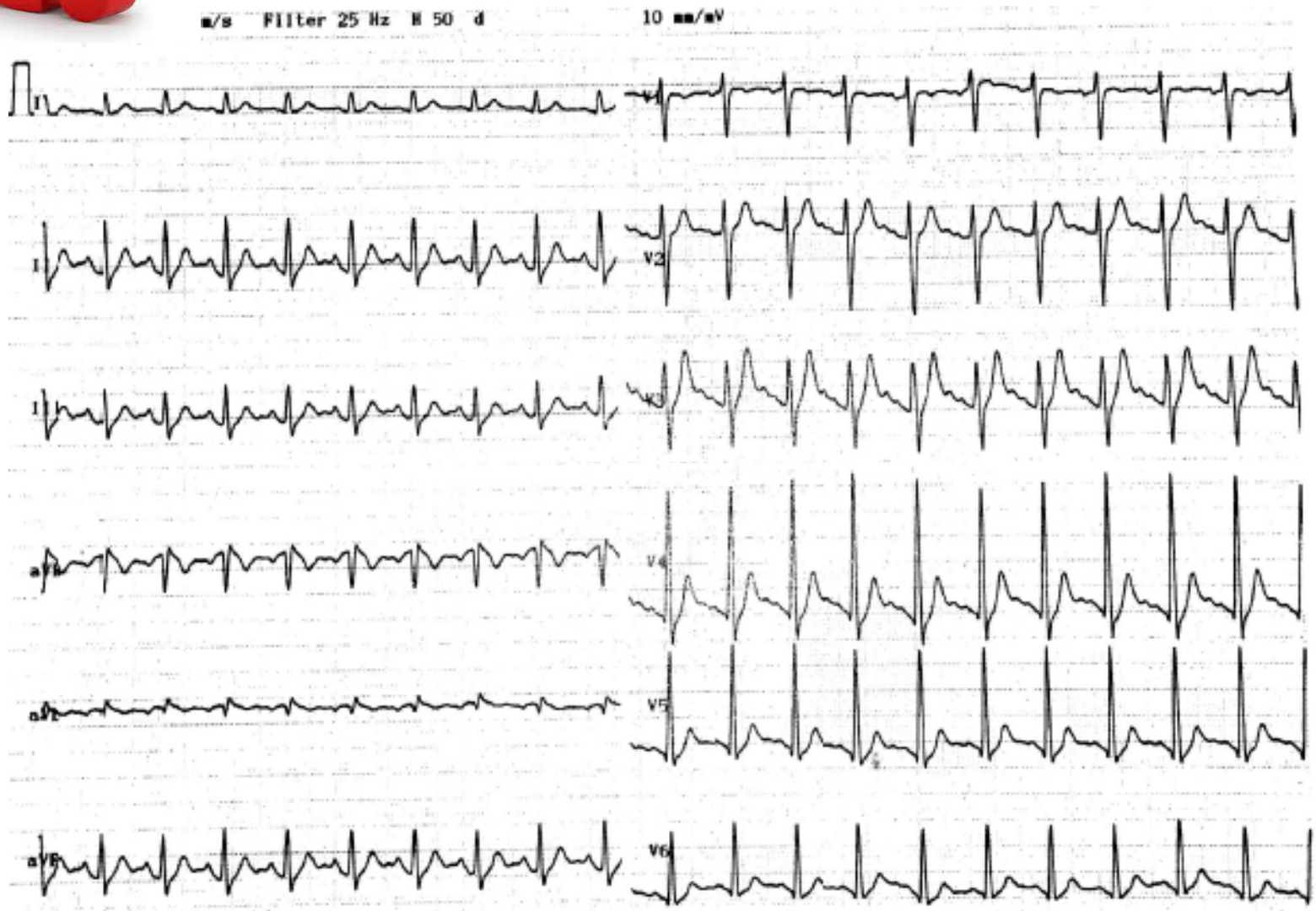
m/s Filter 25 Hz M 50 d
10 mm/mV
I
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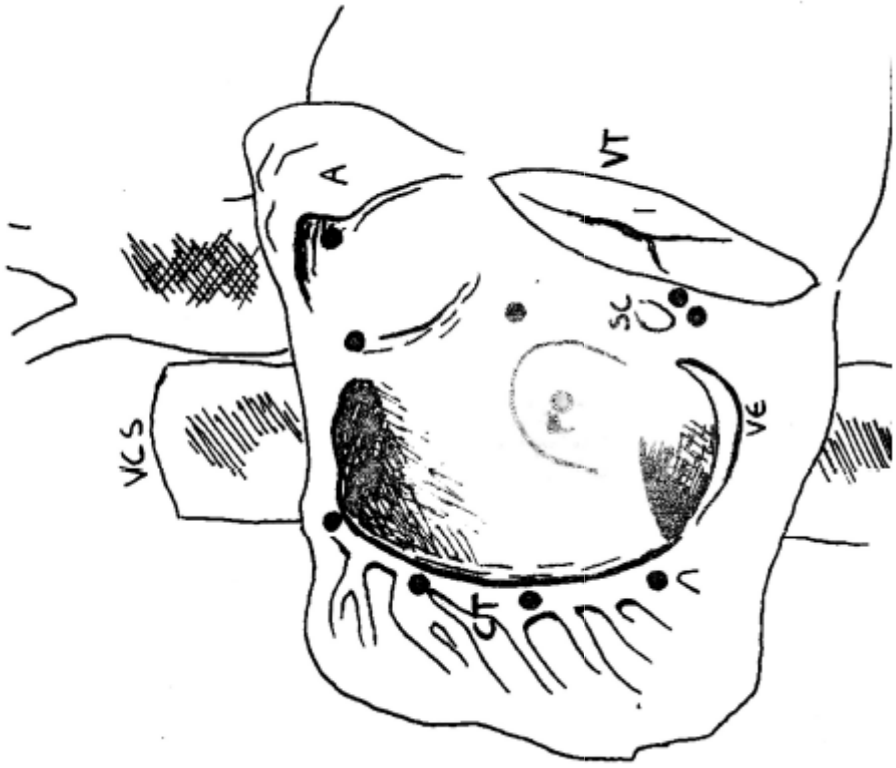
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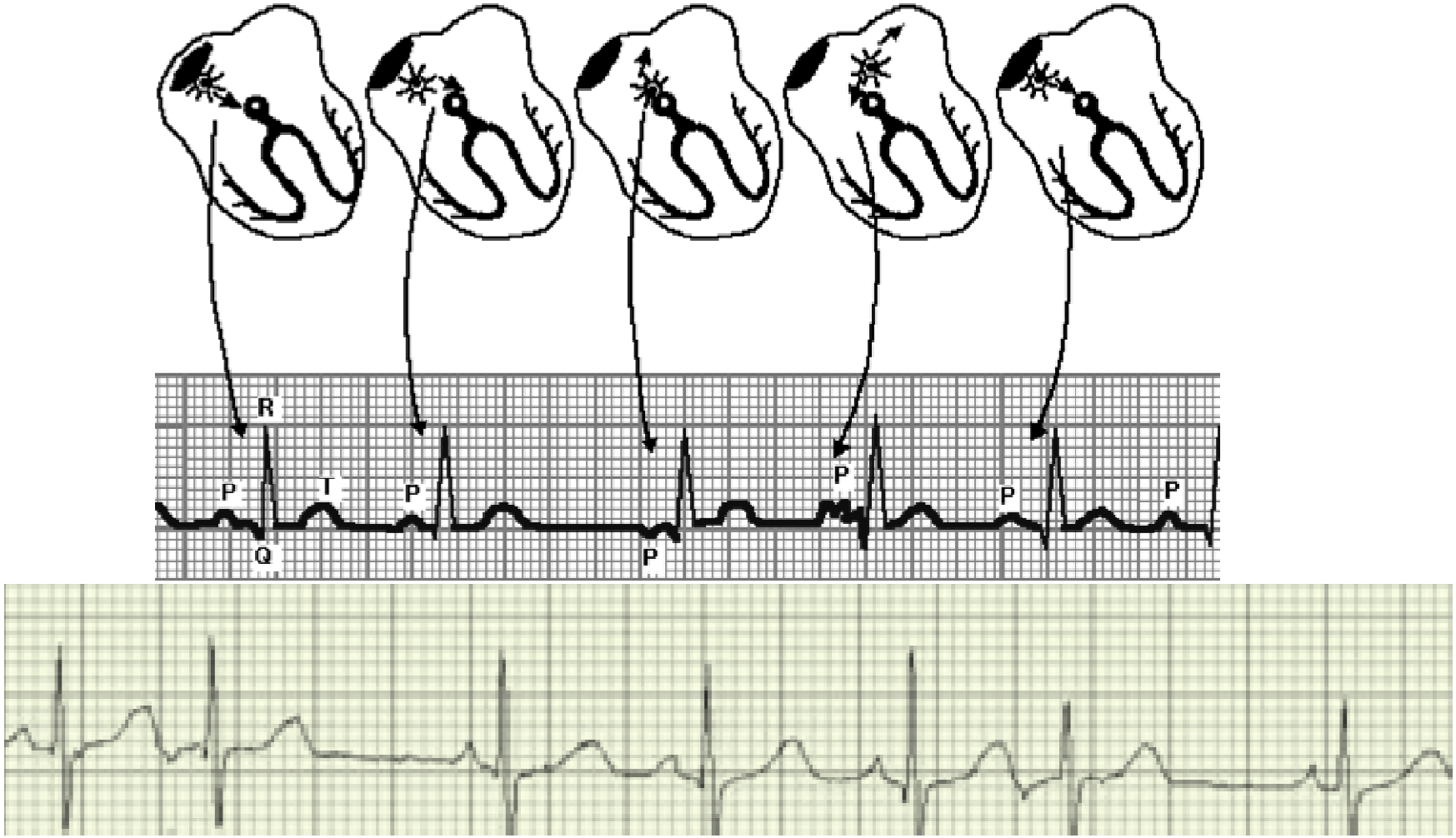
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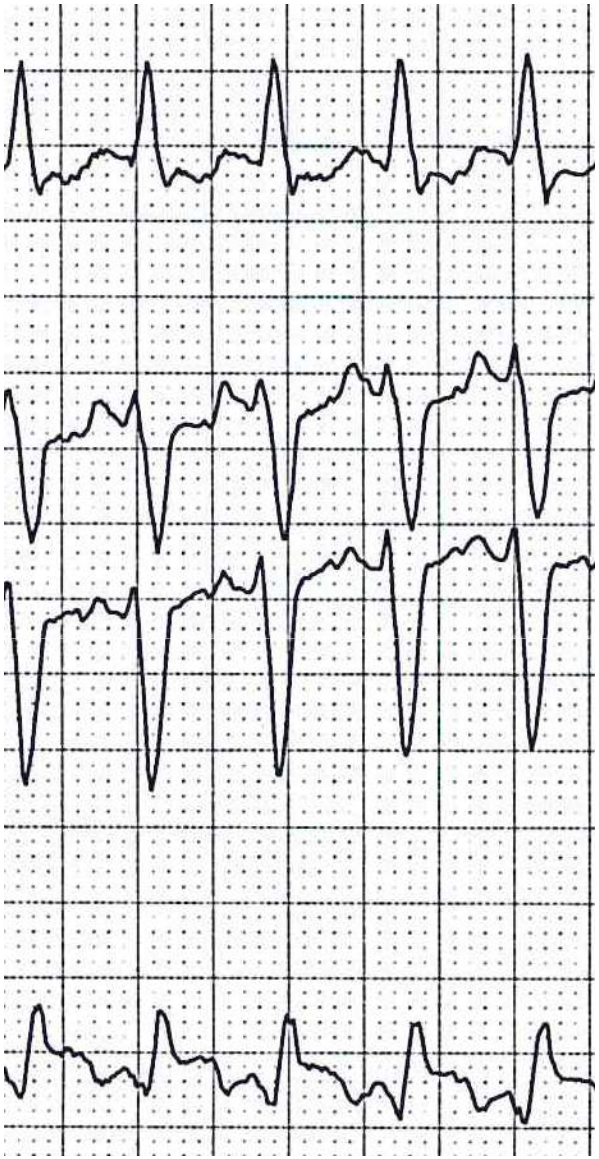
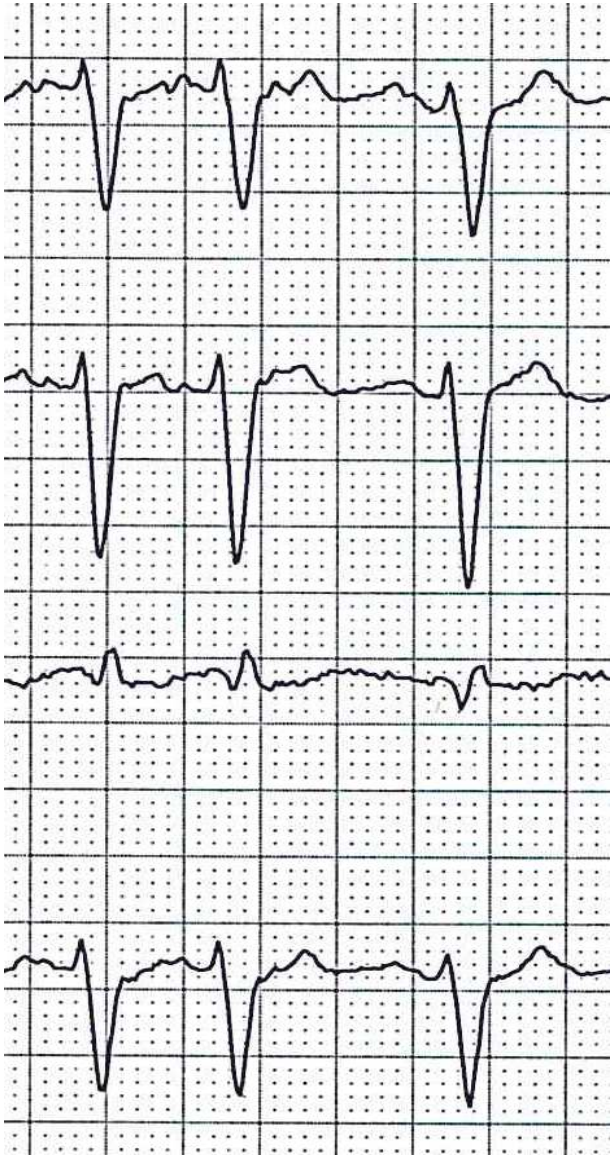
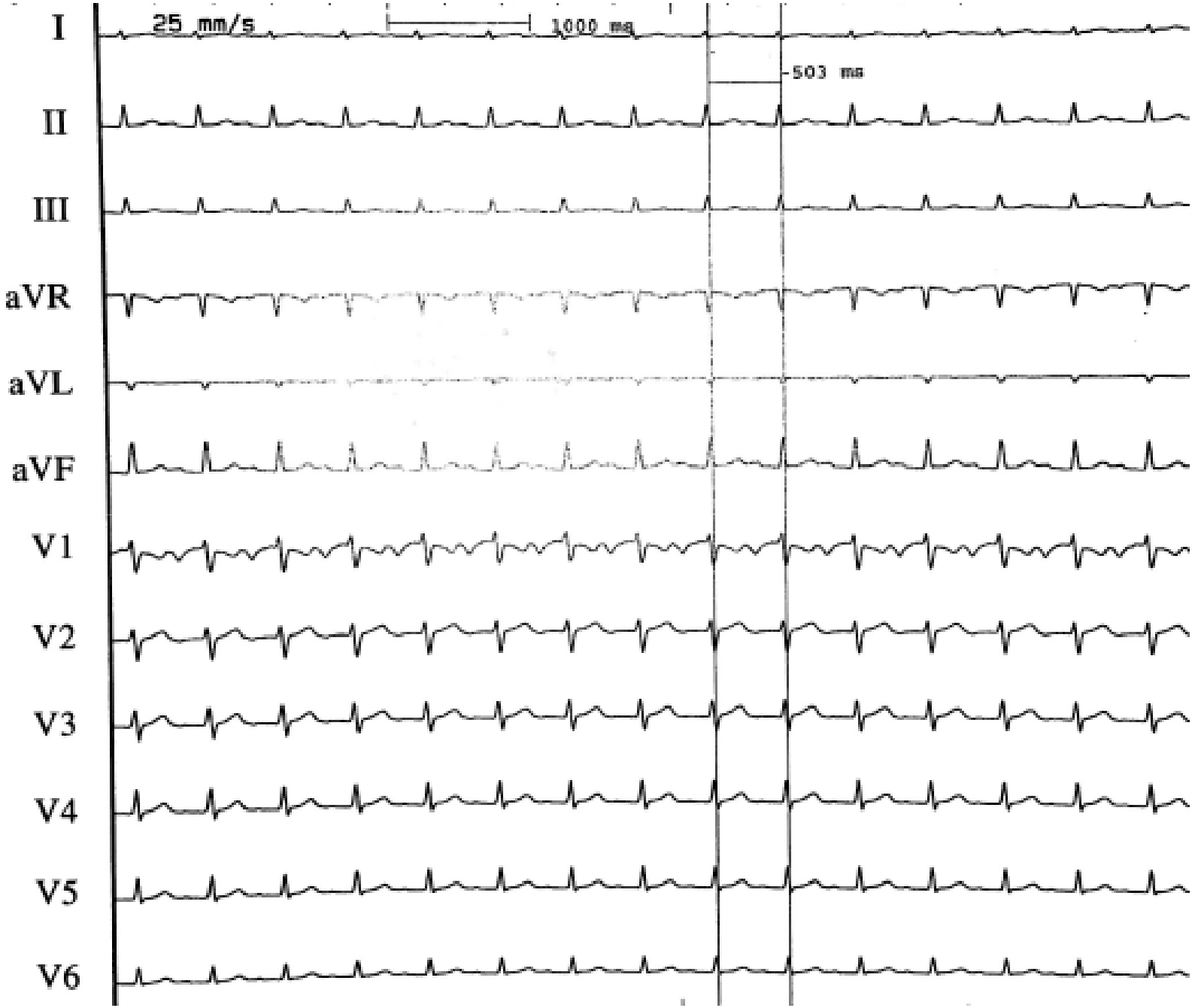


MSC




I
25 mm/s
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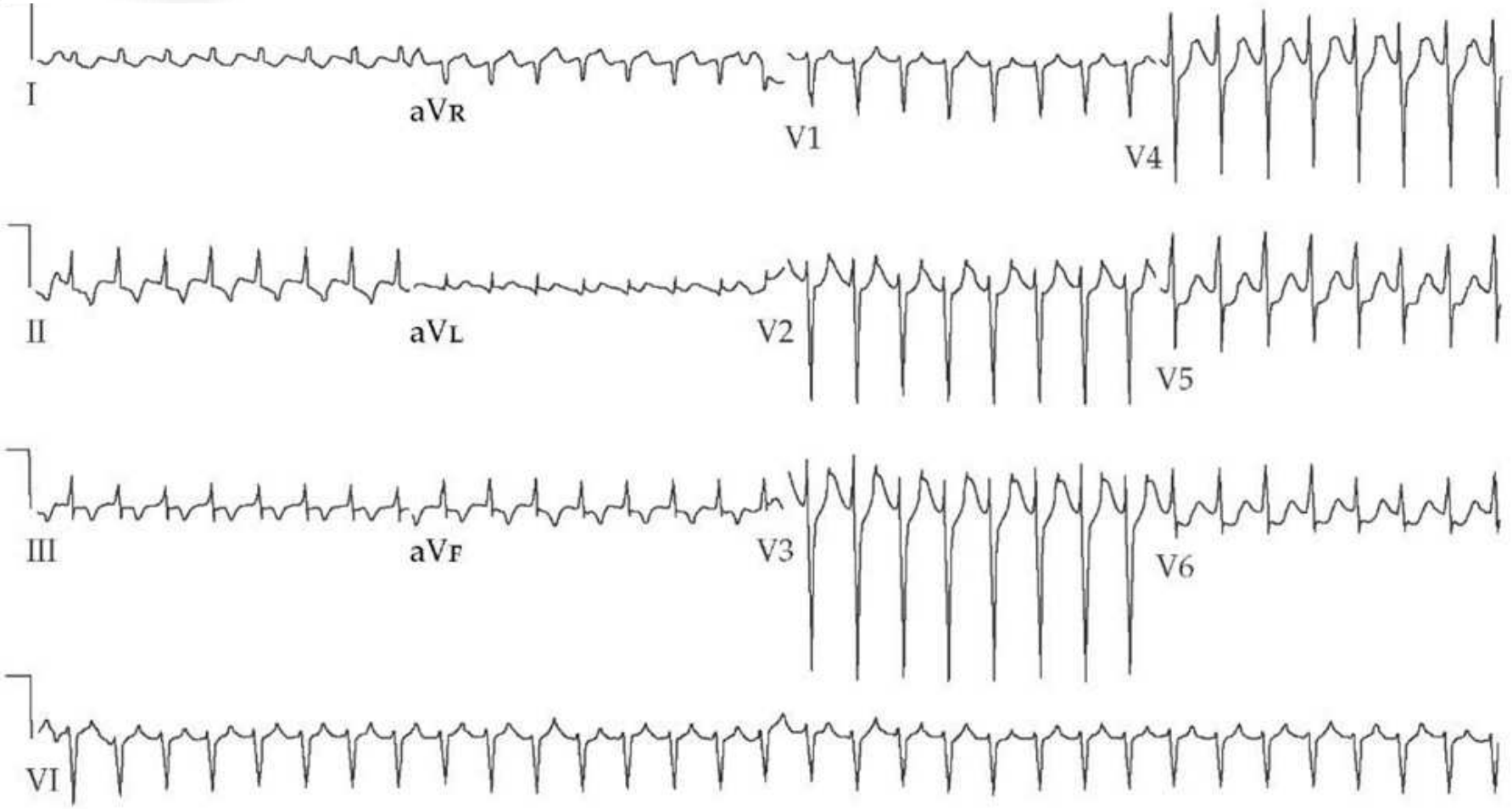
I
aVR
V1
V4
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aVL
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V5
III
aVF
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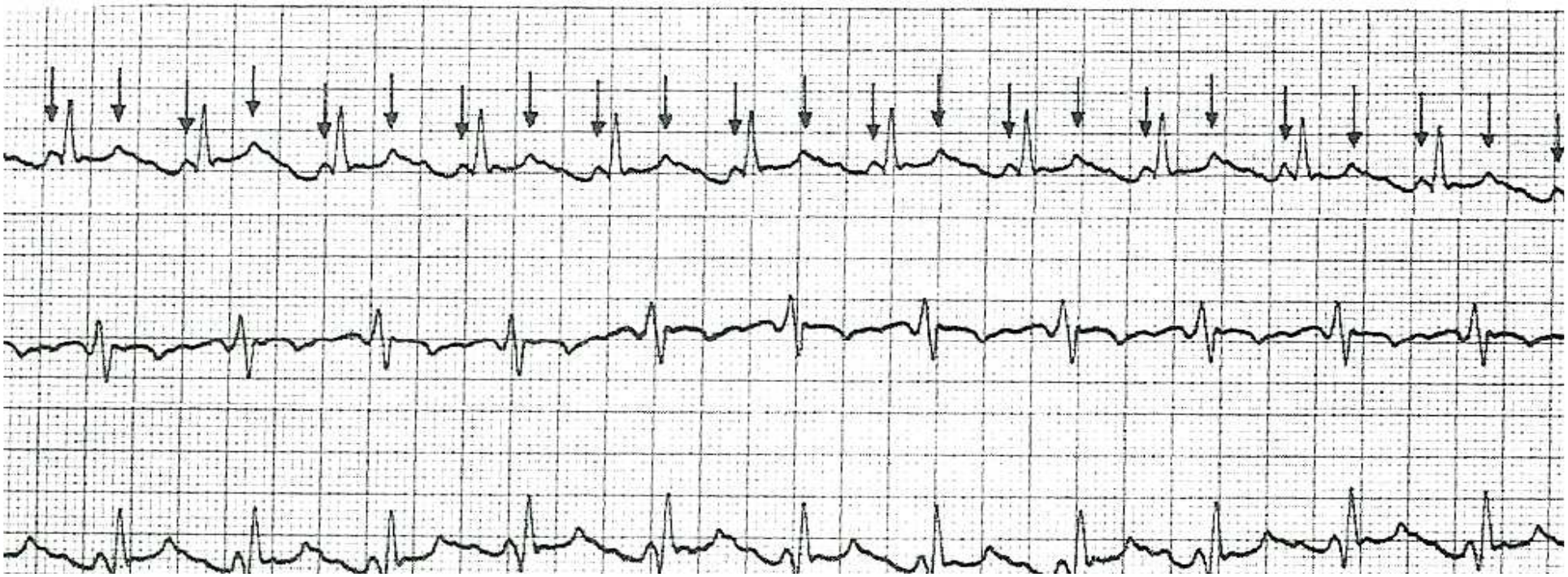
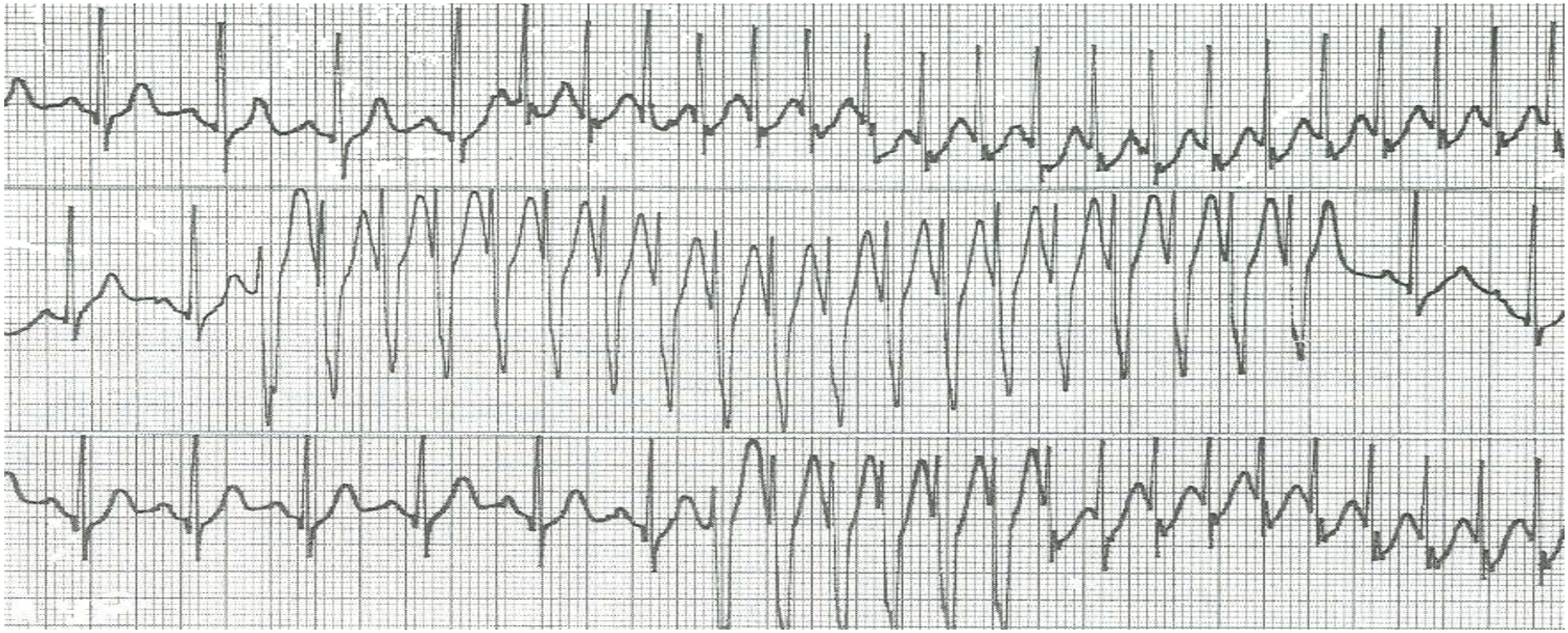
V6
VI





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

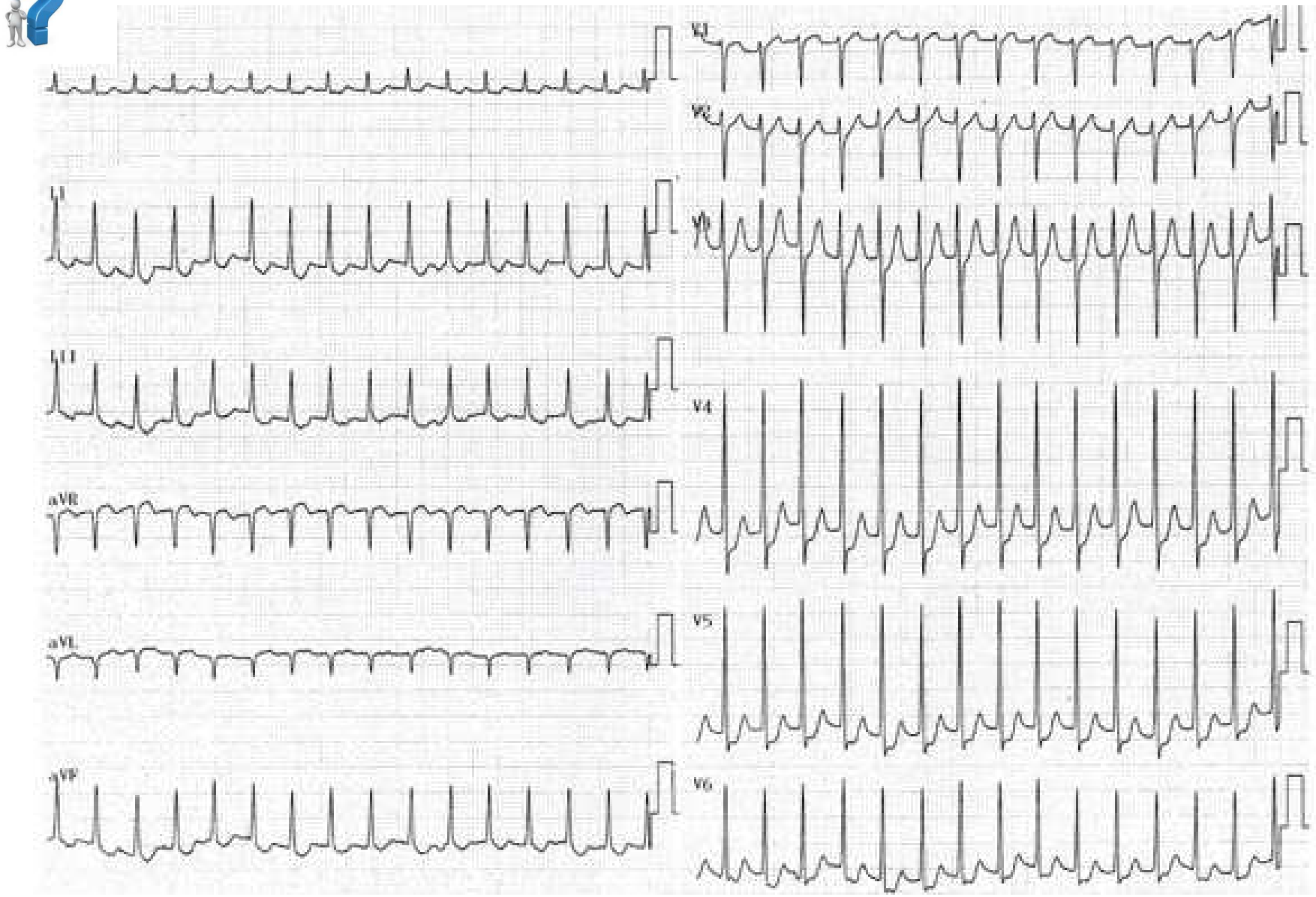
I	B-NR	1. Catheter ablation is recommended in patients with symptomatic focal AT as an alternative to pharmacological therapy (104, 107-112, 114-116, 124-126).
IIa	C-LD	1. Oral beta blockers, diltiazem, or verapamil are reasonable for ongoing management in patients with symptomatic focal AT (107, 119, 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.


I
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aVL
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V1
V2
V3
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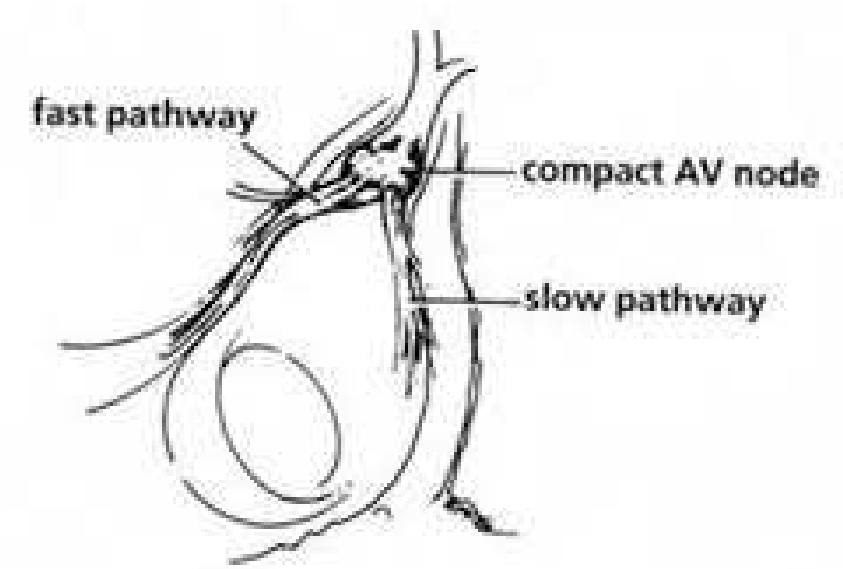
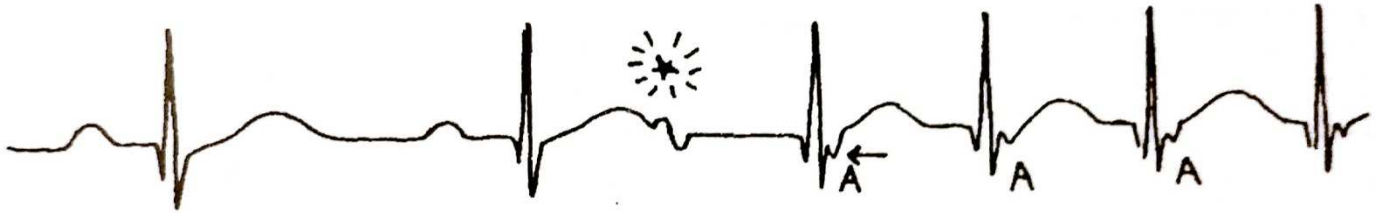

fast pathway
compact AV node
slow pathway


A
A
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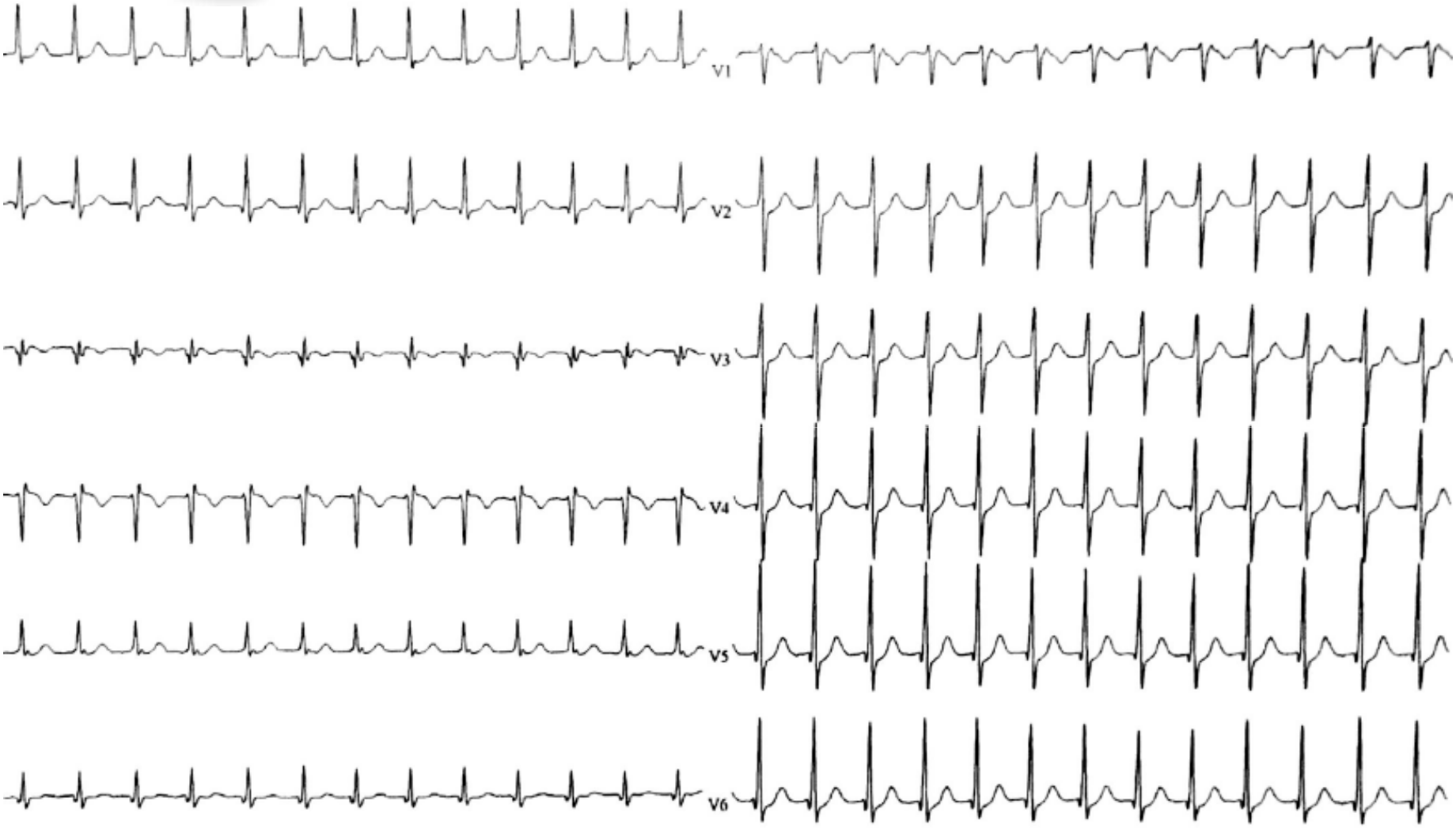
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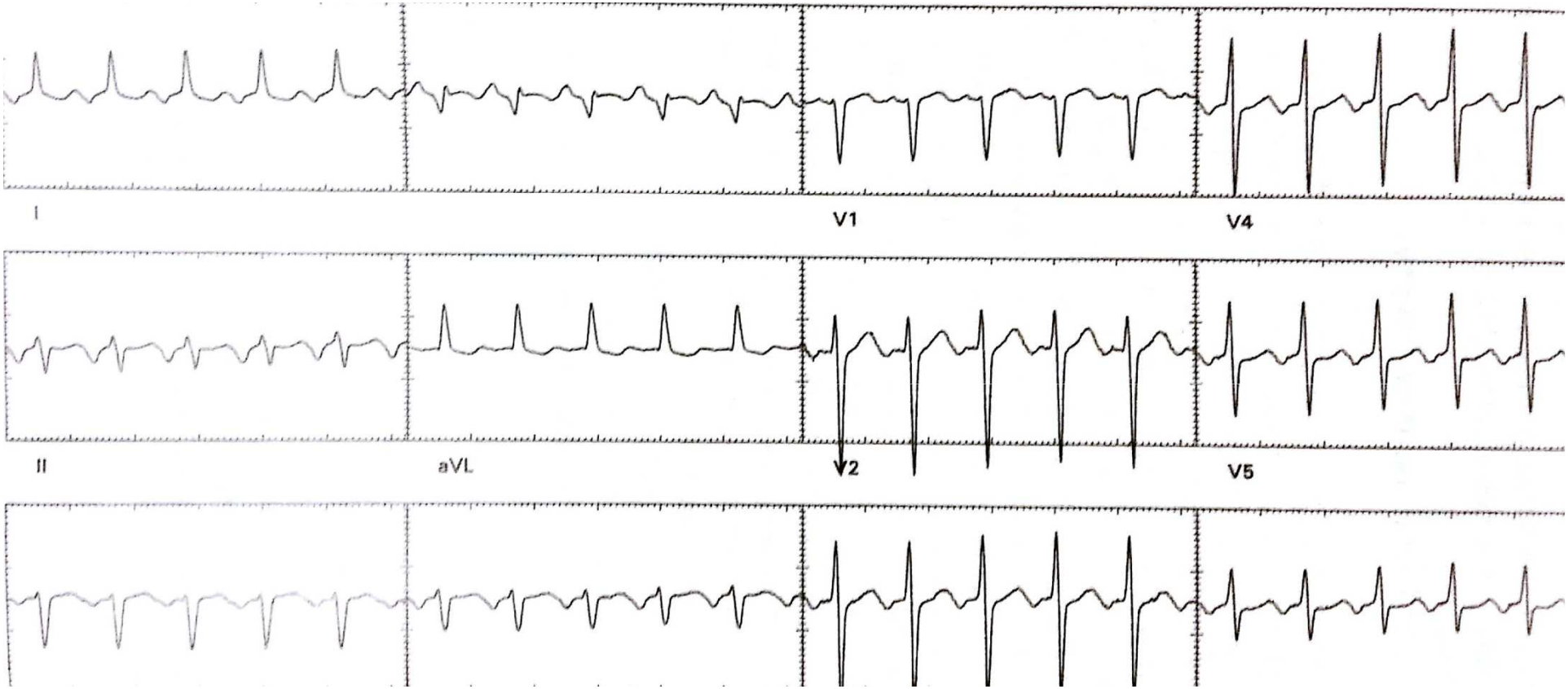
I
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II
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TRN

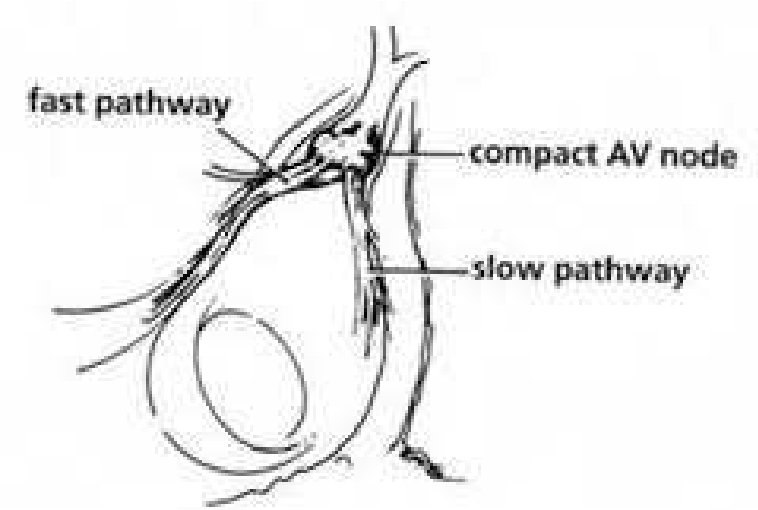
Di tipo comune

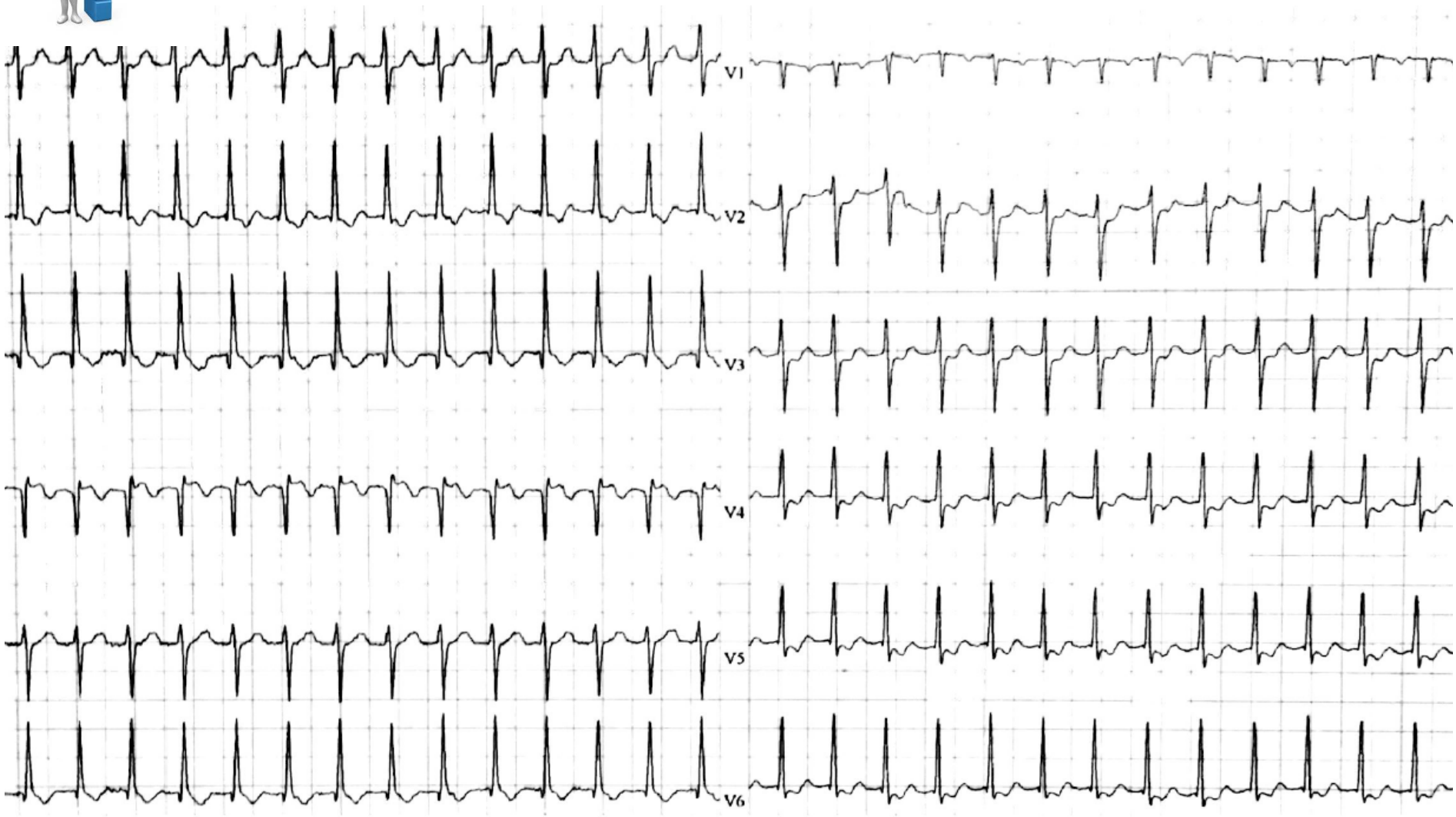
Slow-fast

Non comune

Slow-slow o fast slow

(rara)




V1
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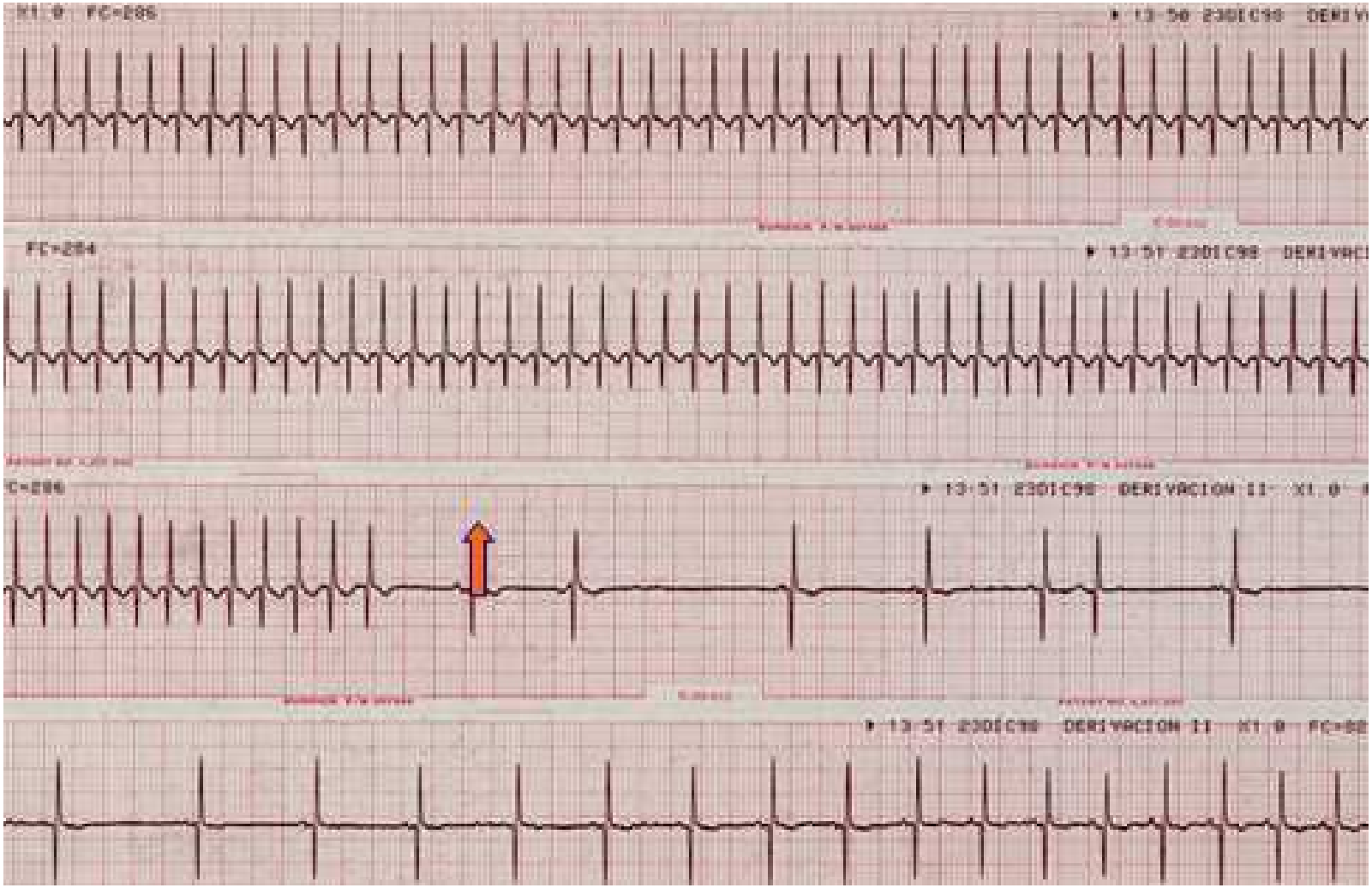
X1: 0 FC=286
FC=284
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DERIVACION II X1: 0
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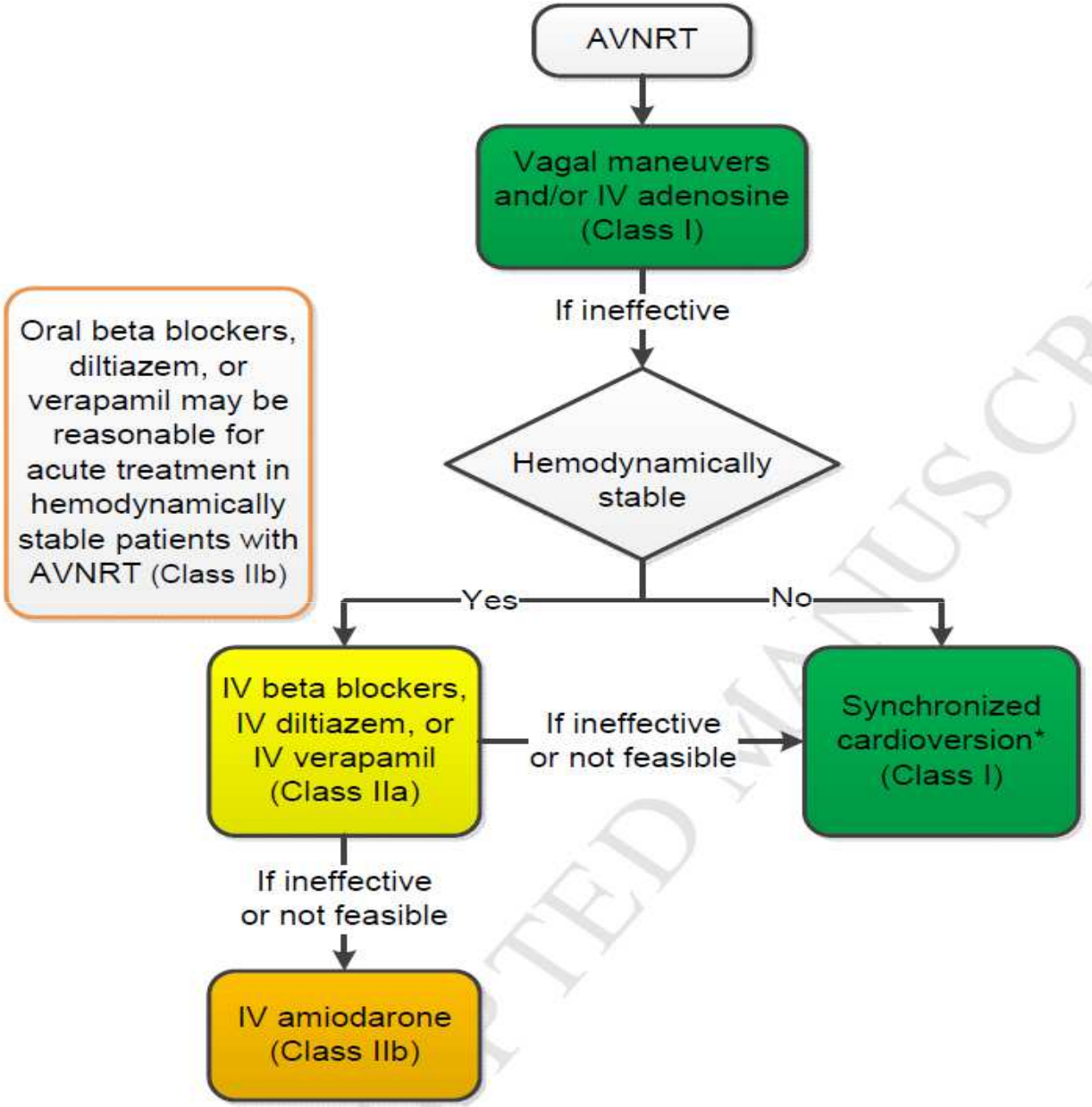
Acute Treatment: Recommendations

AVNRT is the most common SVT

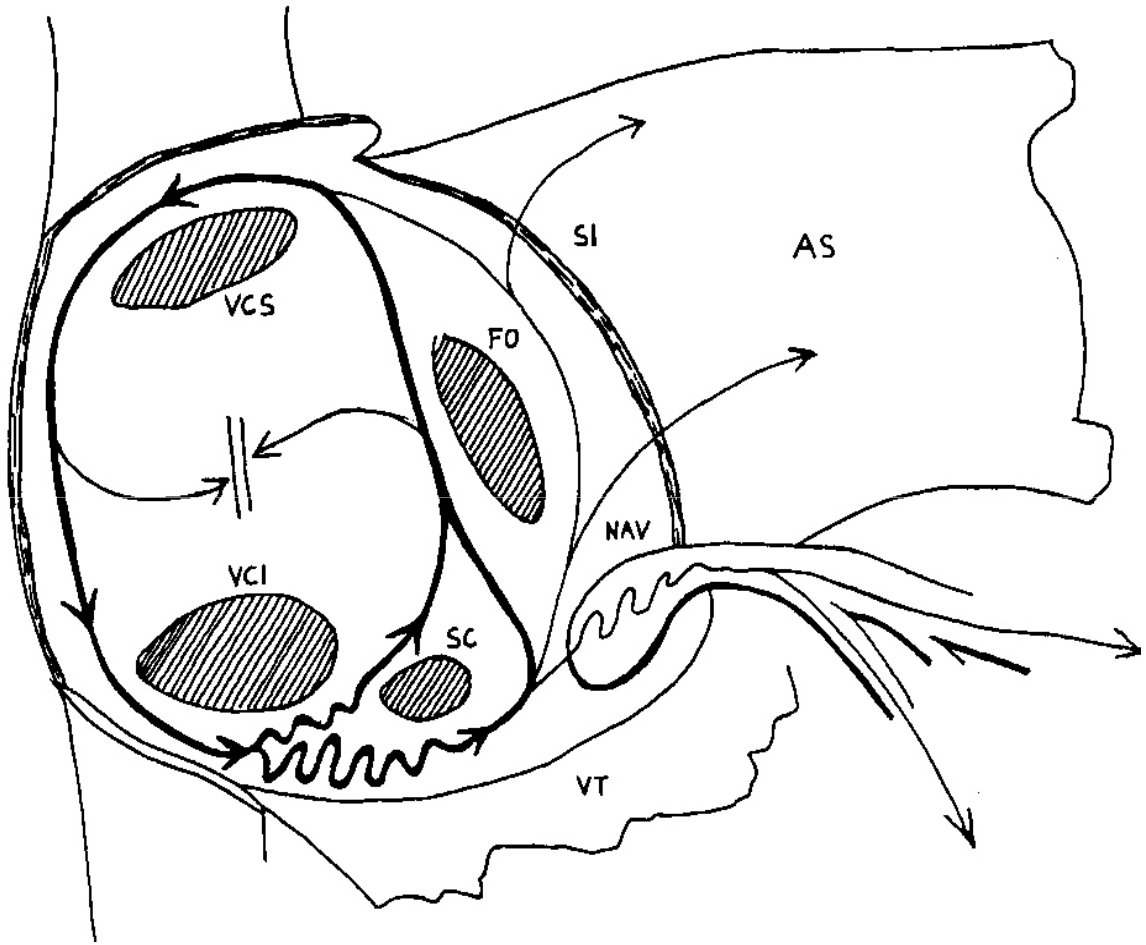
It is usually seen in young adults without structural heart disease or ischemic heart disease, and >60% of cases are observed in women.

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
AS
VCS
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NAV
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VT

Cavotricuspid Isthmus-Dependent Atrial Flutter

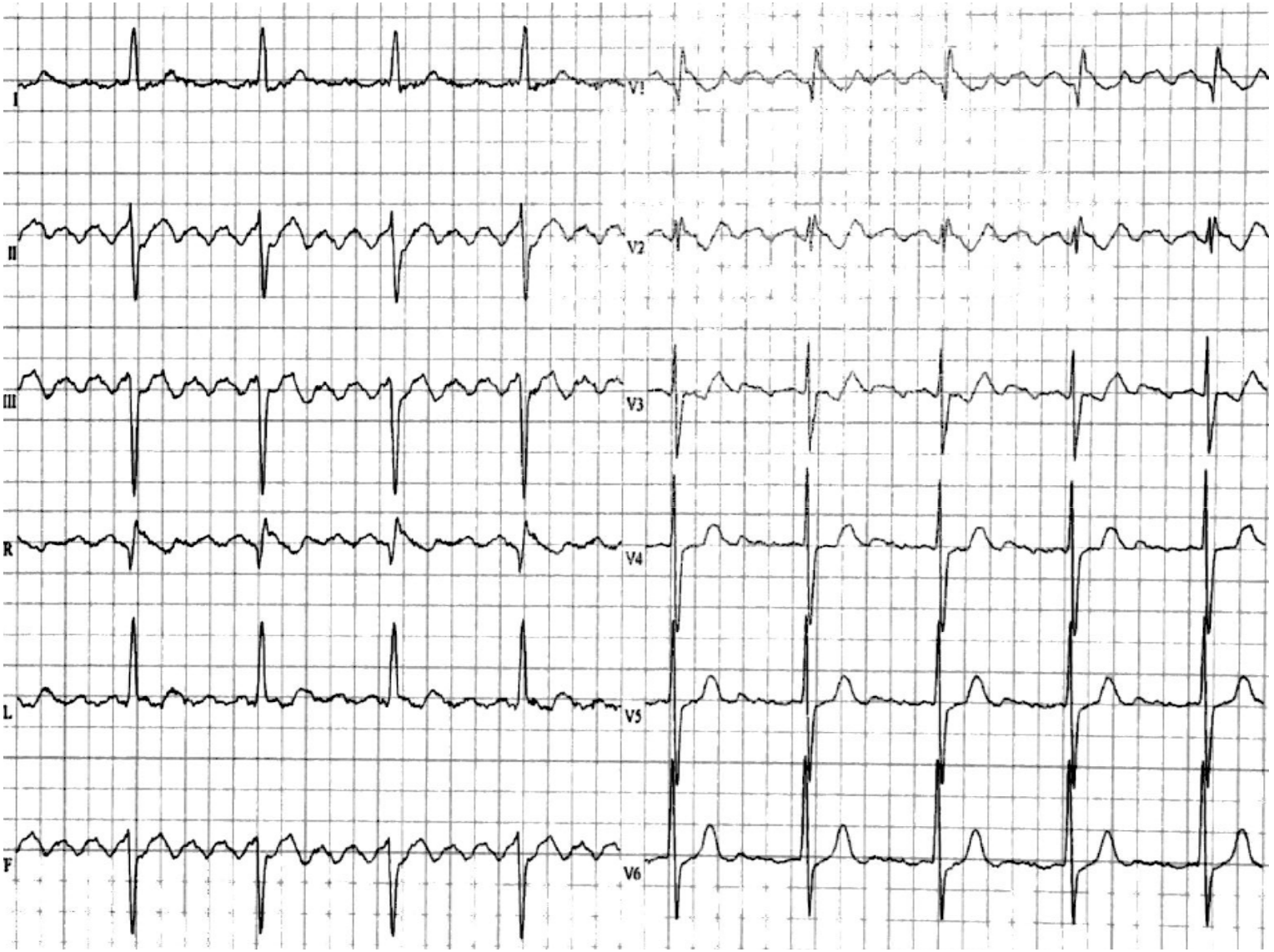
Atrial rates for flutter typically range from 250 bpm to 330 bpm, the rates *may be slower in patients with severe atrial disease or in patients taking antiarrhythmic agents or after unsuccessful catheter ablation.*

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,


I
II
III
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L
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V1
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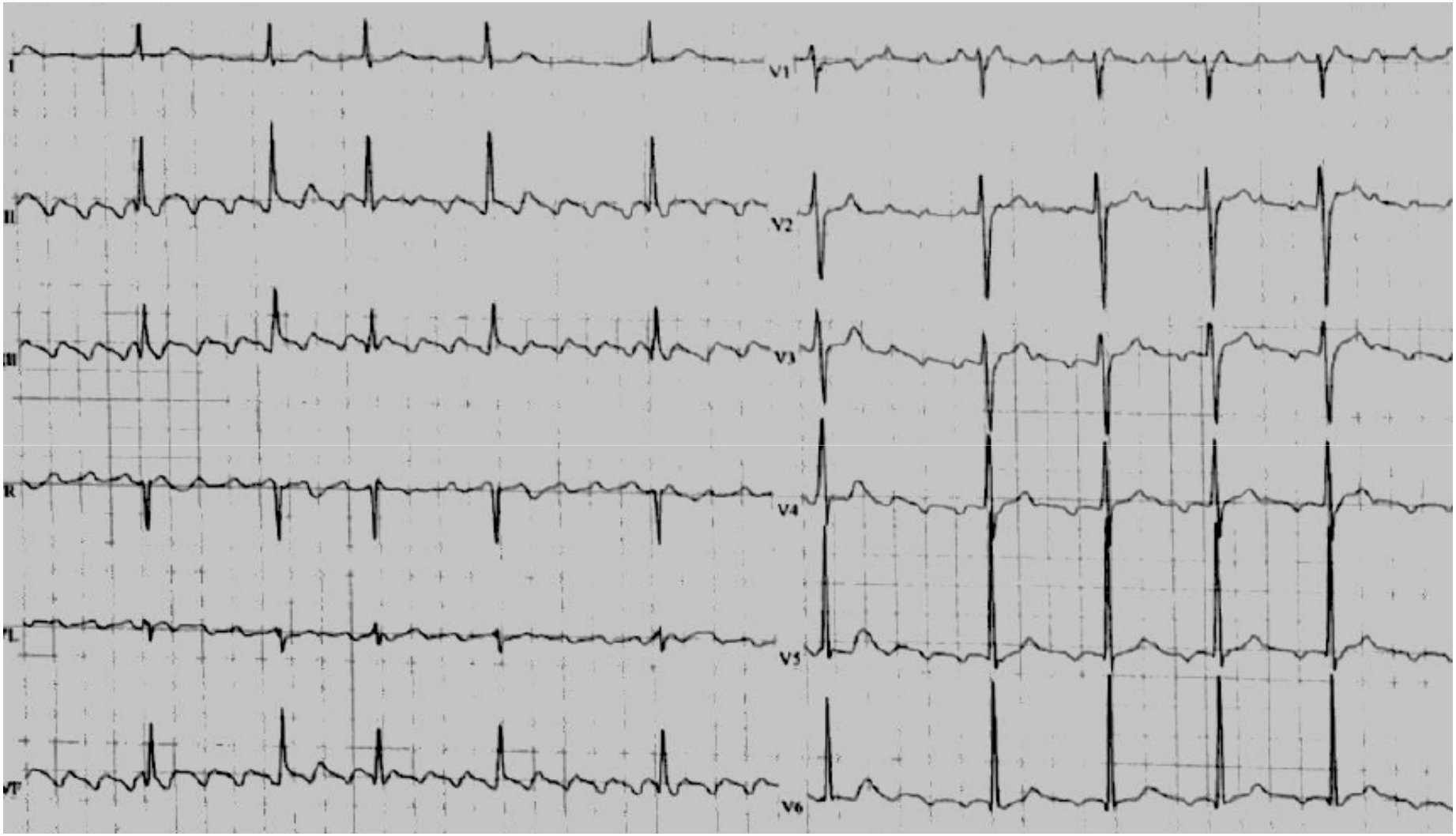
I
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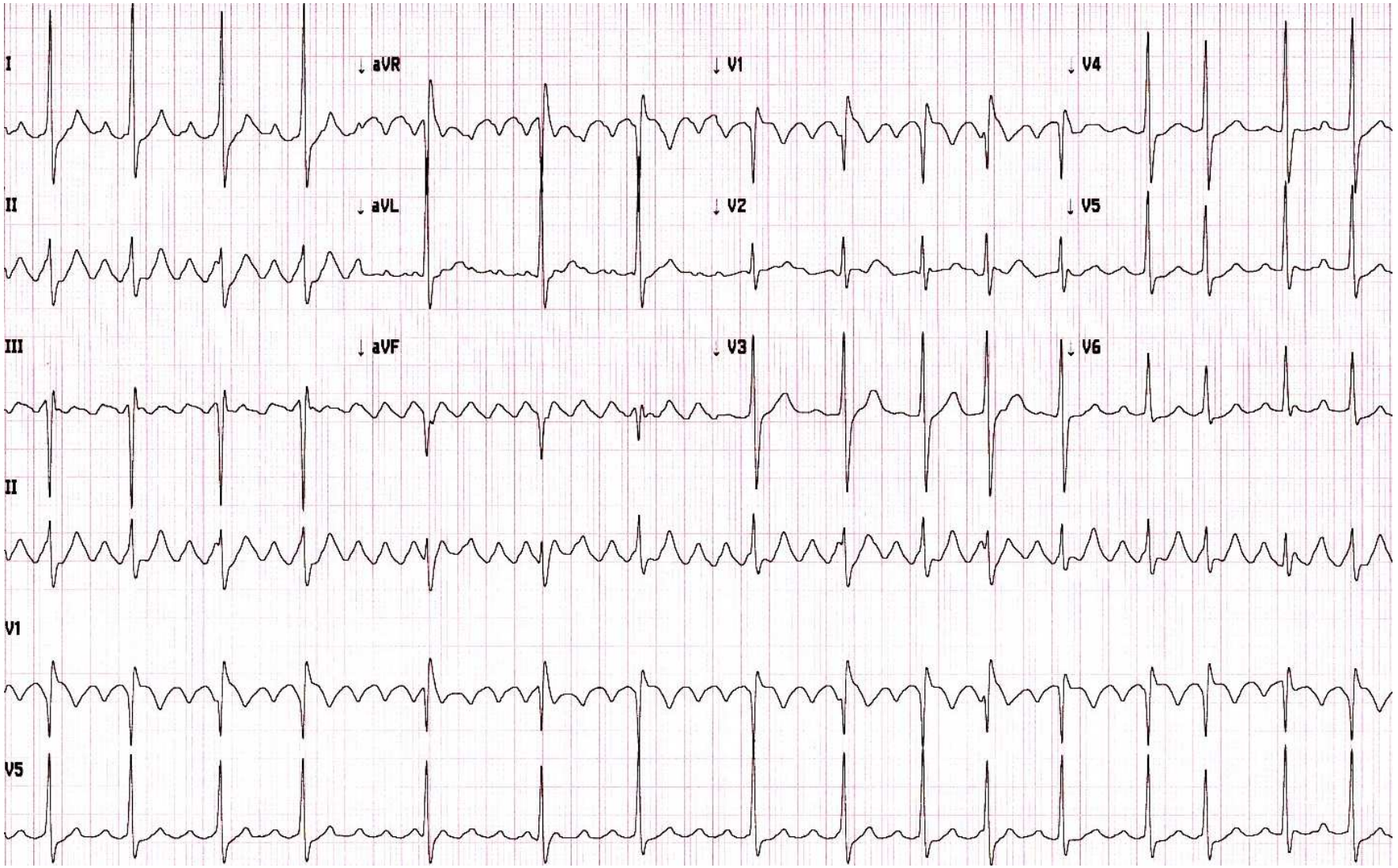
V4
V5
V6


I
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V1
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II
aVL
V2
V5
III
aVF
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V6
II
V1
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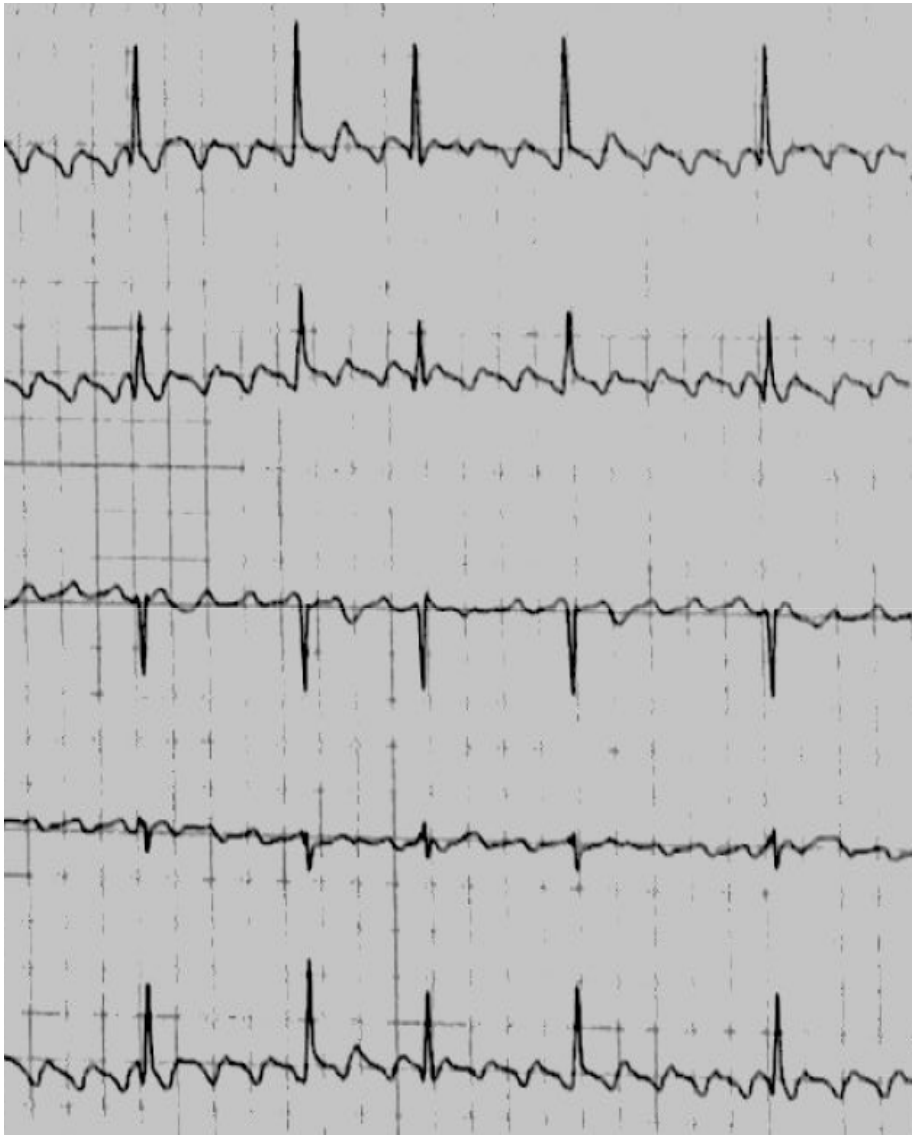

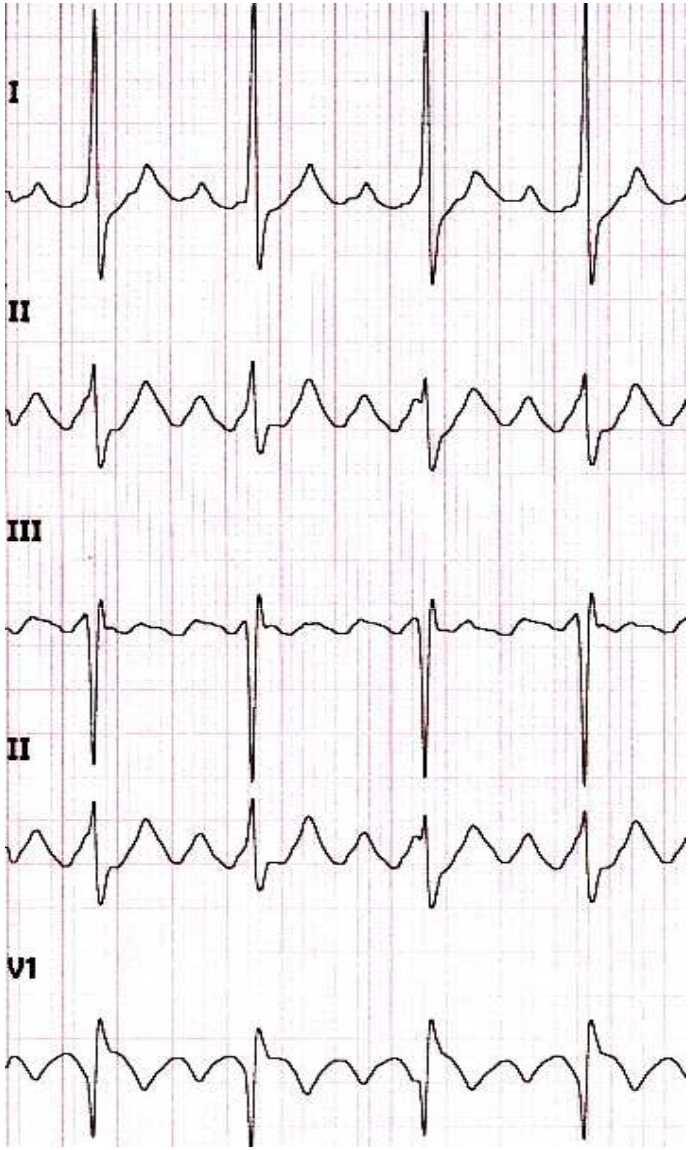
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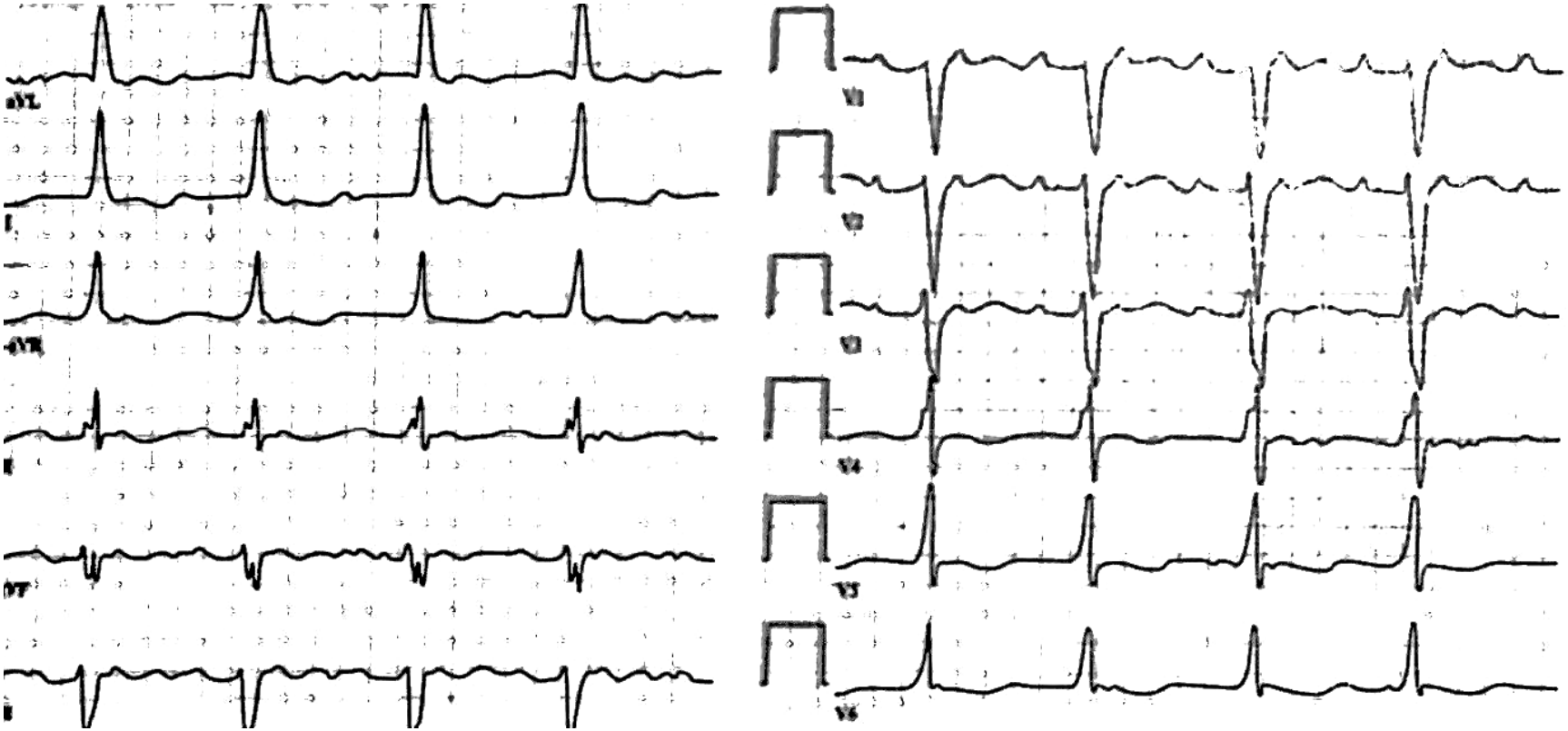
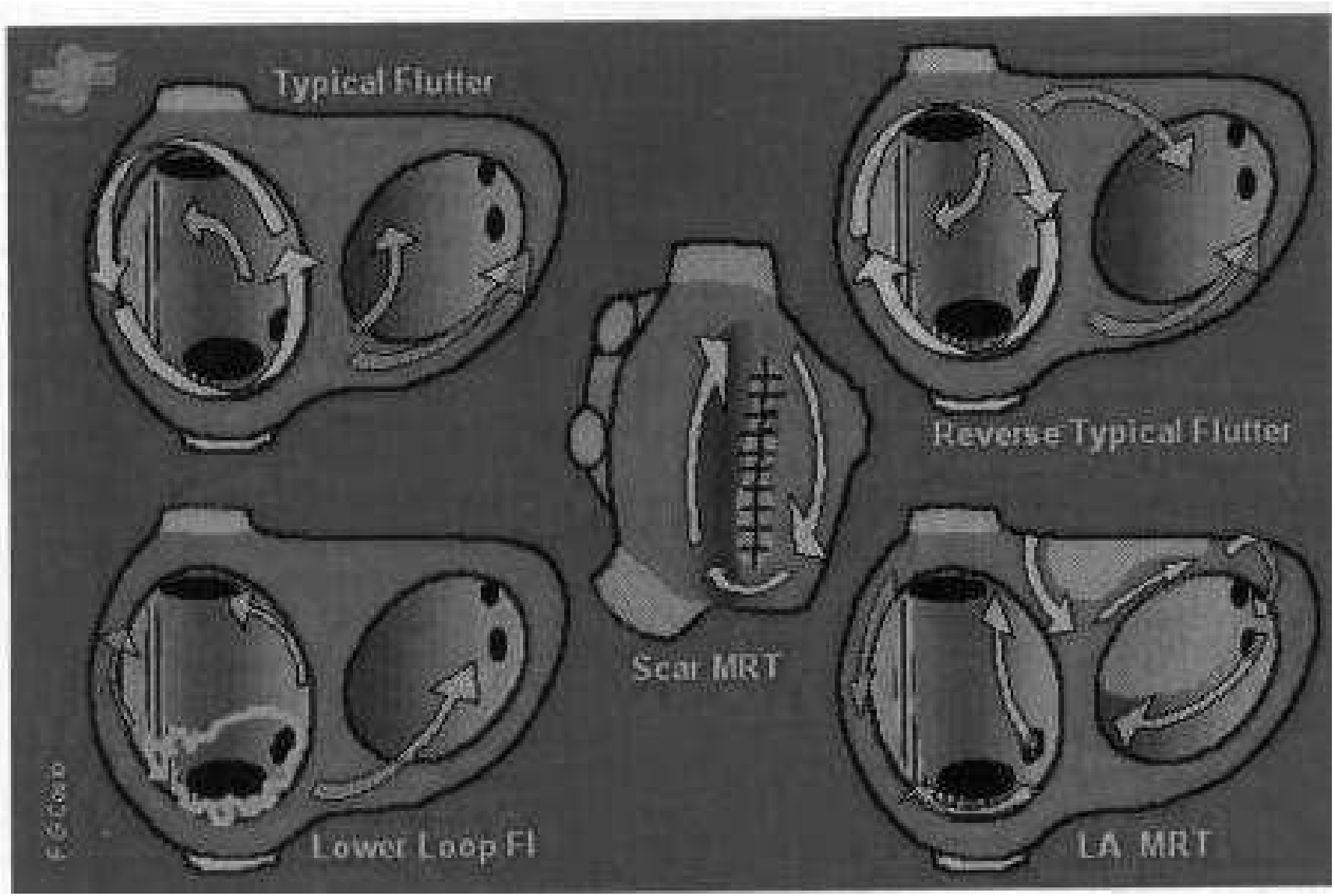
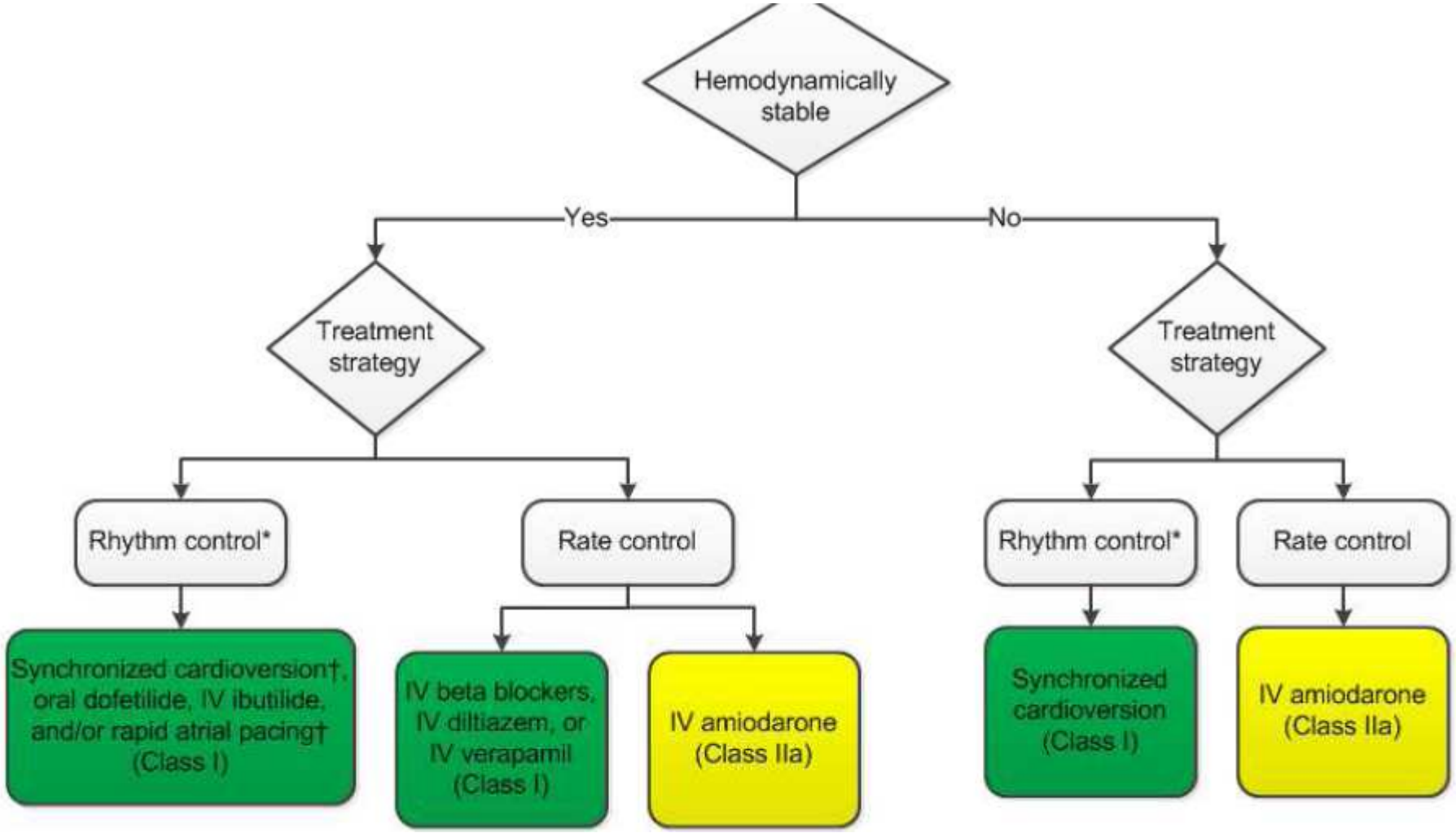
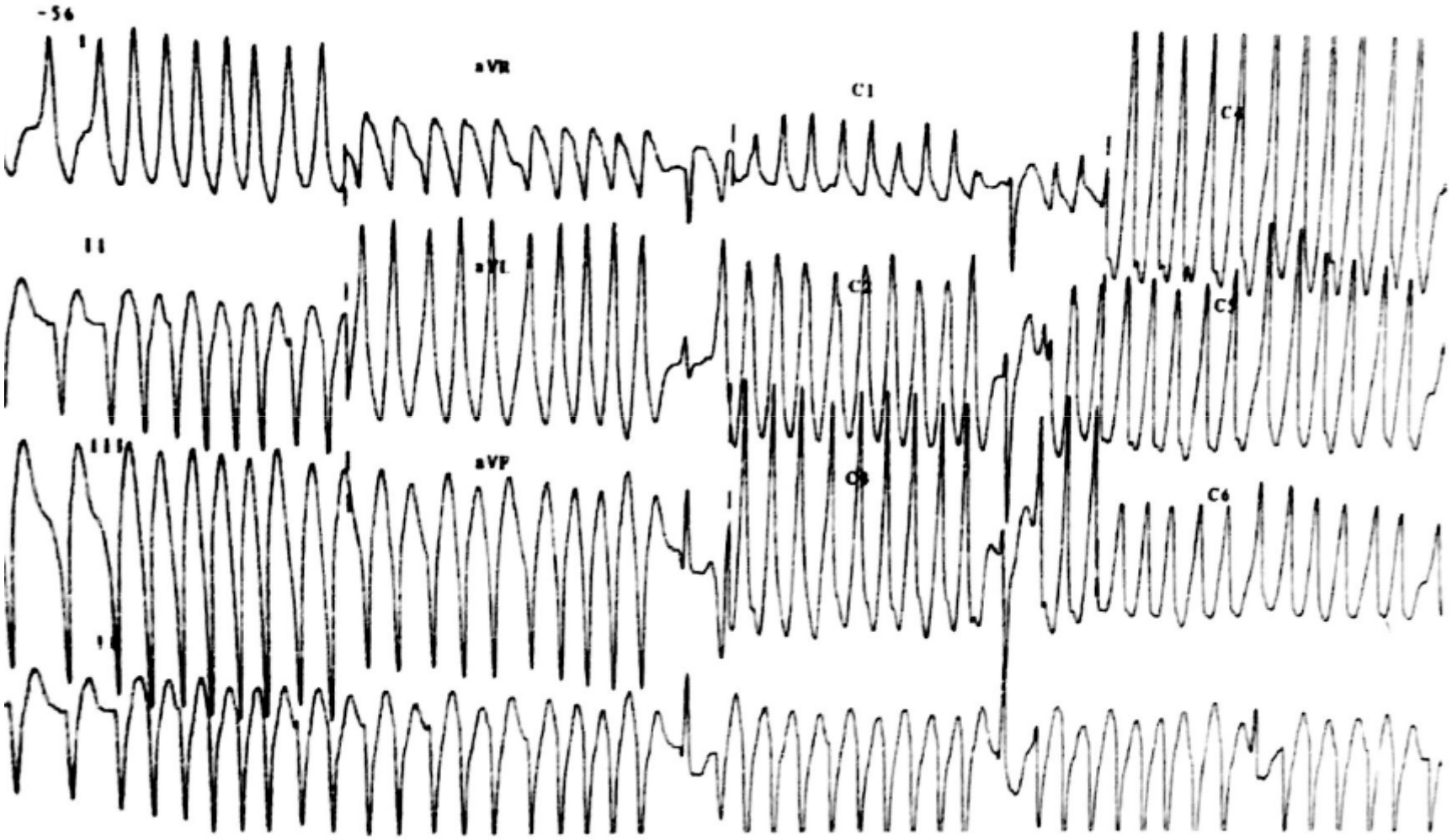



Typical Flutter
Reverse Typical Flutter
Scar MRT
Lower Loop Fl
LA MRT


Hemodynamically stable
Yes
No
Treatment strategy
Treatment strategy
Rhythm control*
Rate control
Rhythm control*
Rate control
Synchronized cardioversion†, oral dofetilide, IV ibutilide, and/or rapid atrial pacing† (Class I)
IV beta blockers, IV diltiazem, or IV verapamil (Class I)
IV amiodarone (Class IIa)
Synchronized cardioversion (Class I)
IV amiodarone (Class IIa)


-56
I
aVR
C1
II
aVL
C2
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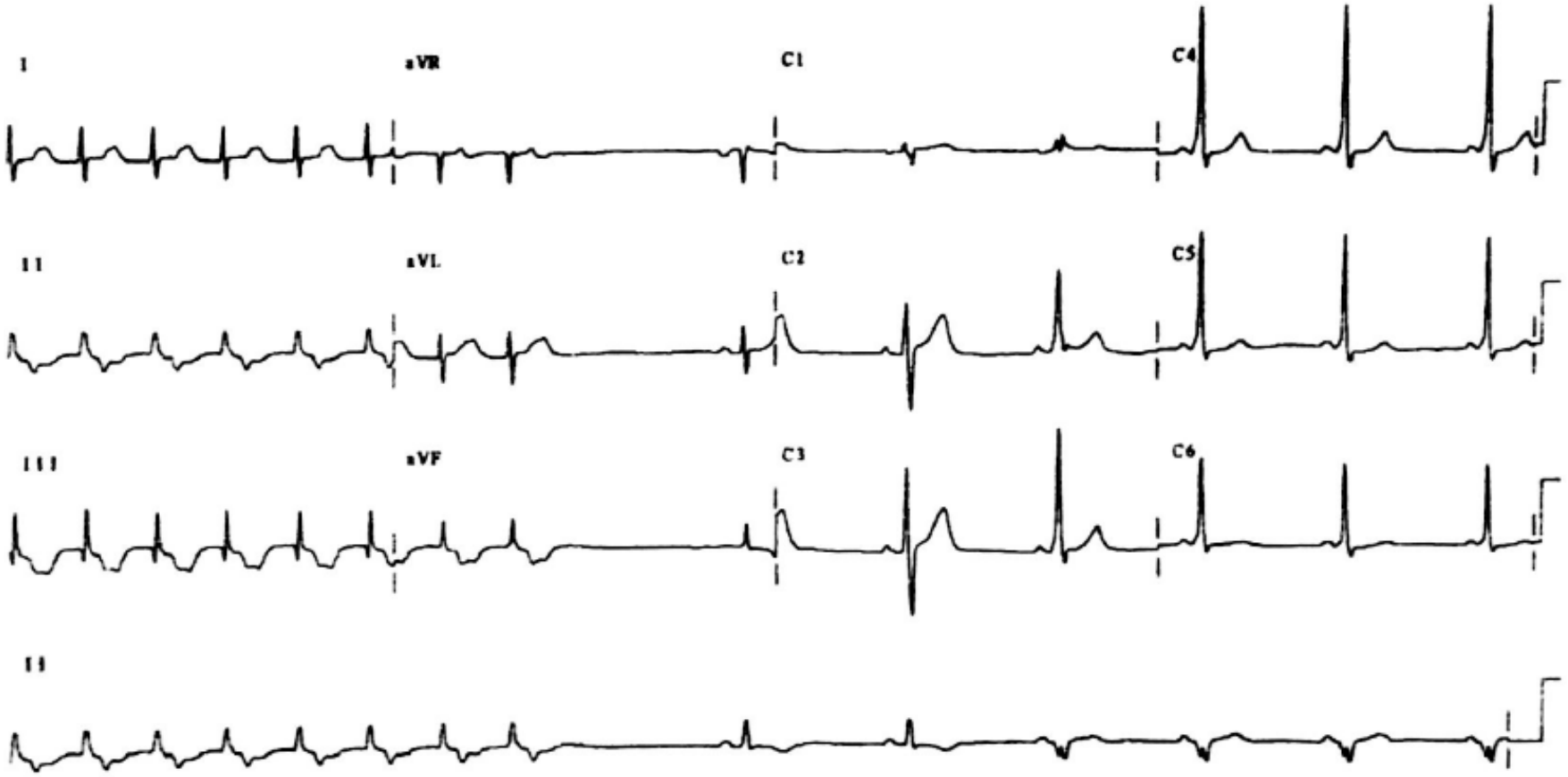
III
aVF
C3
C6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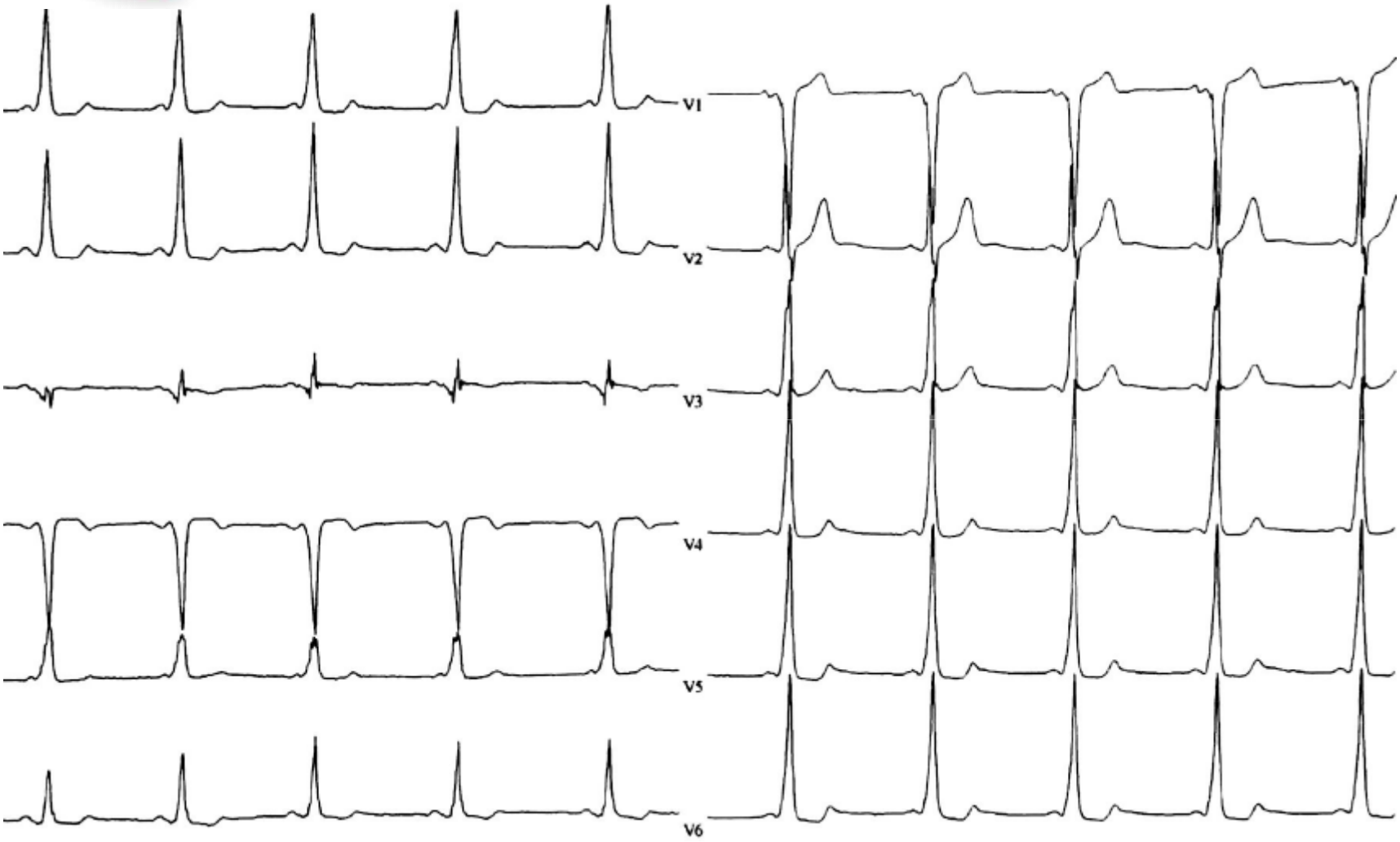
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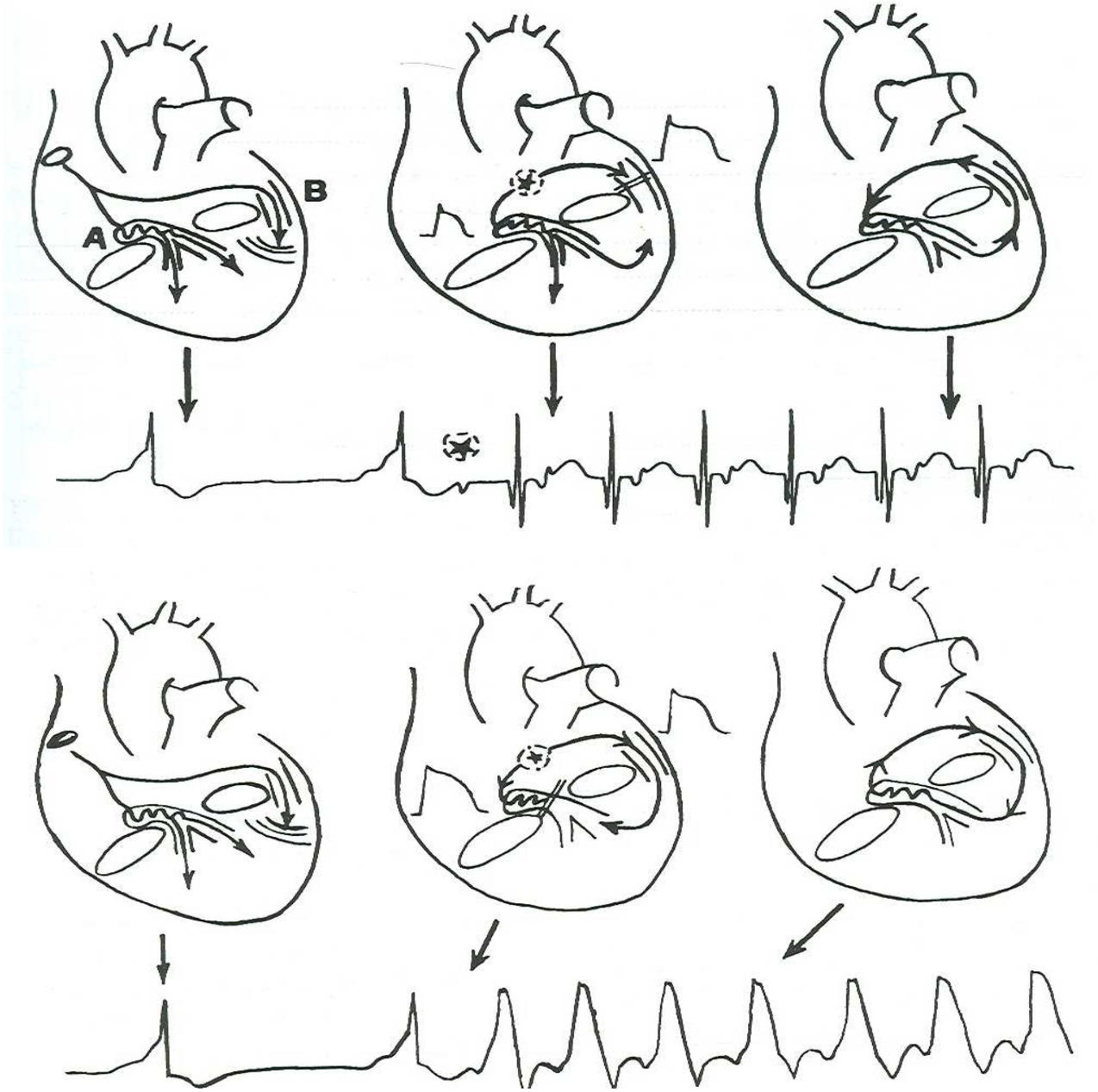
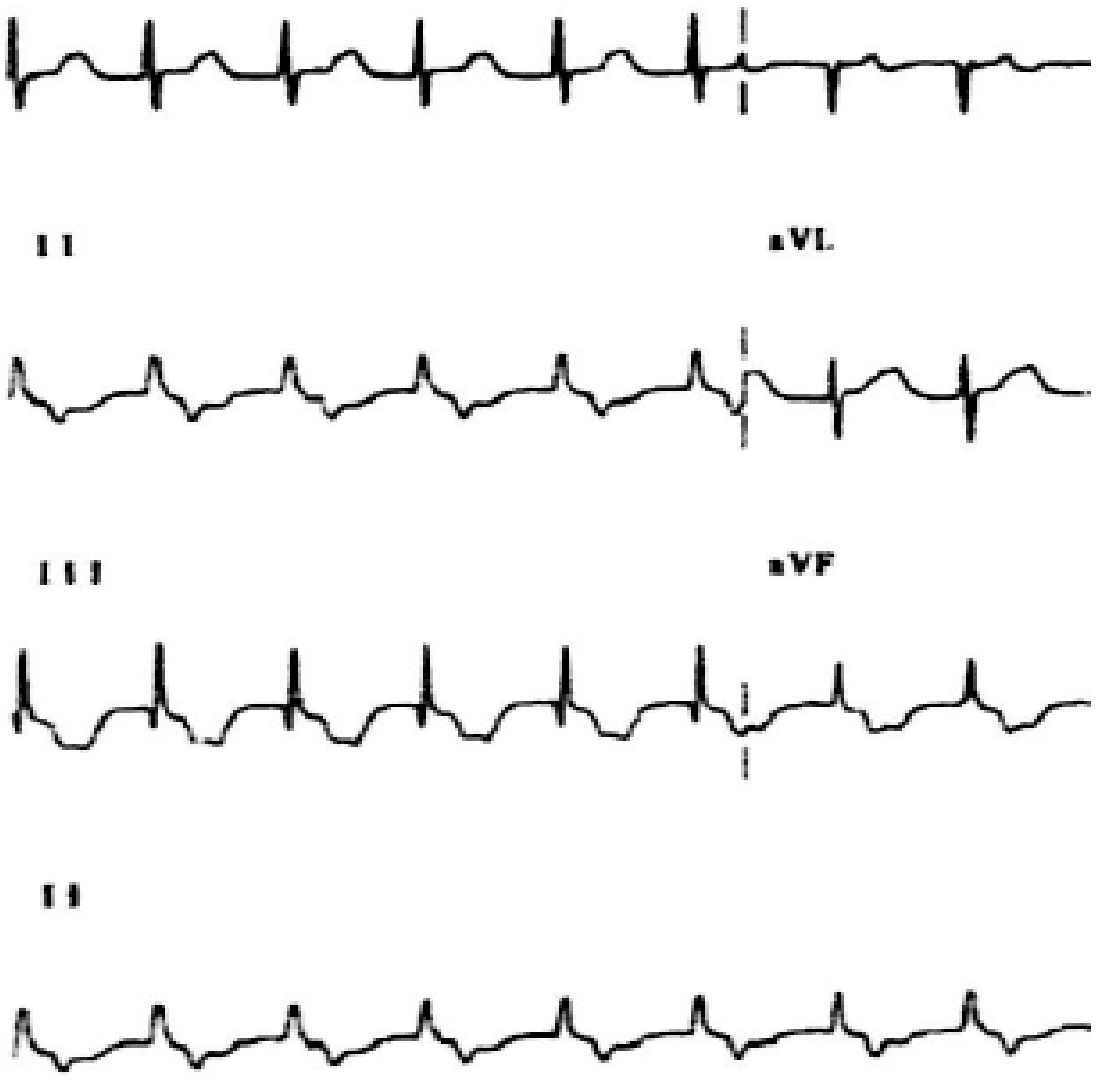

A
B


I
aVL
II
aVF
III

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

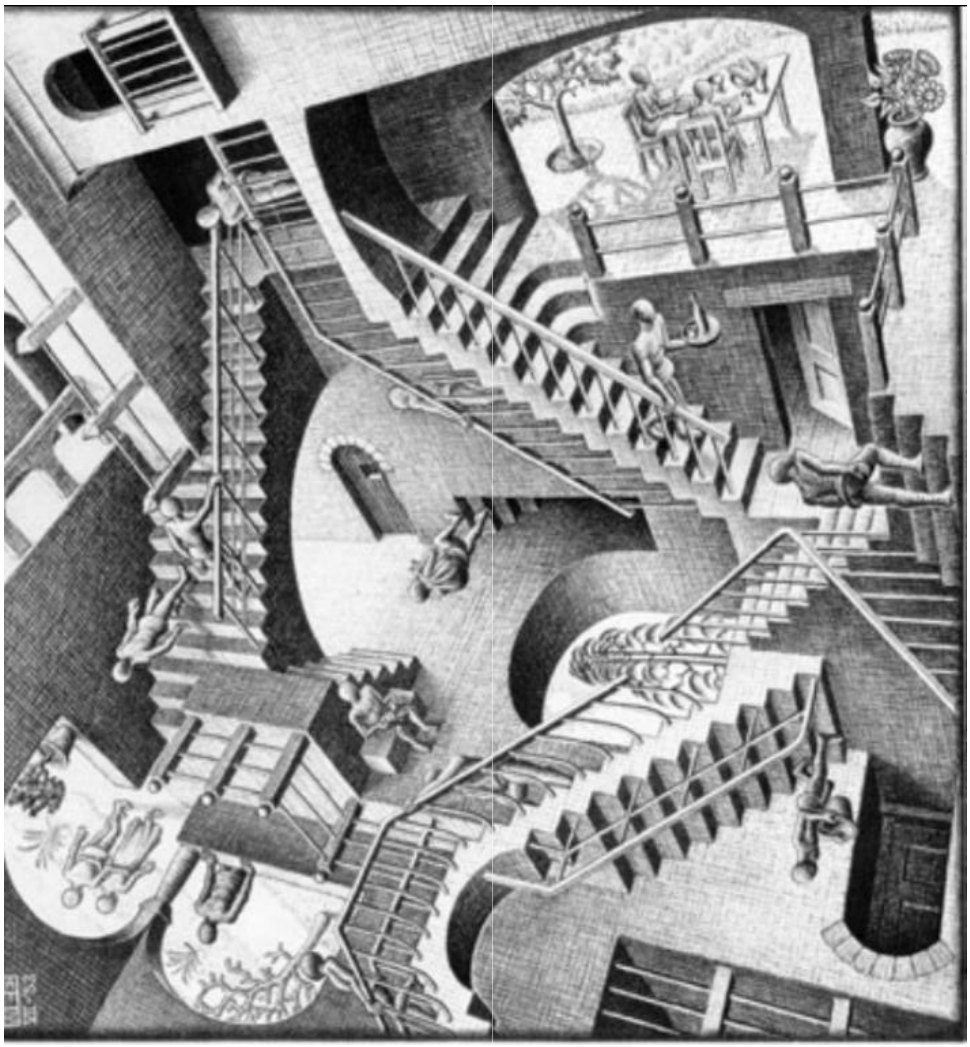
Rapid anterograde accessory pathway conduction during AF can result in SCD in patients with a manifest accessory pathway, with a 10-year risk ranging from 0.15% to 0.24%
Unfortunately, SCD may be the first presentation of patients with undiagnosed WPW. Increased risk of SCD is associated with a history 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).



Grazie