

Wide QRS Tachycardia

- ECG Differential Diagnosis -

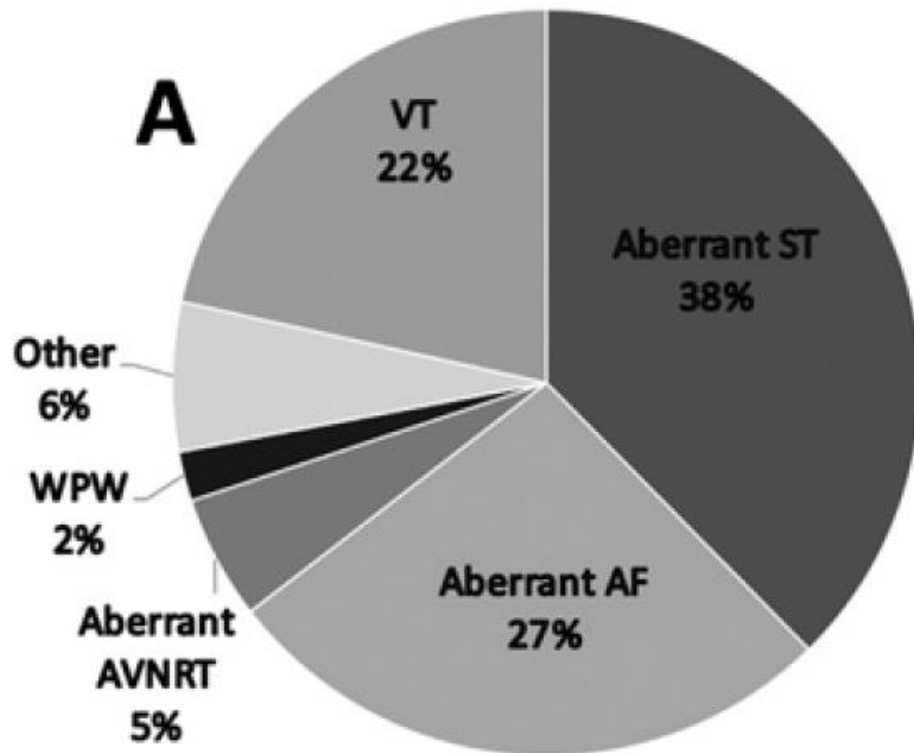
연세의대 세브란스병원 심장내과

엄재선

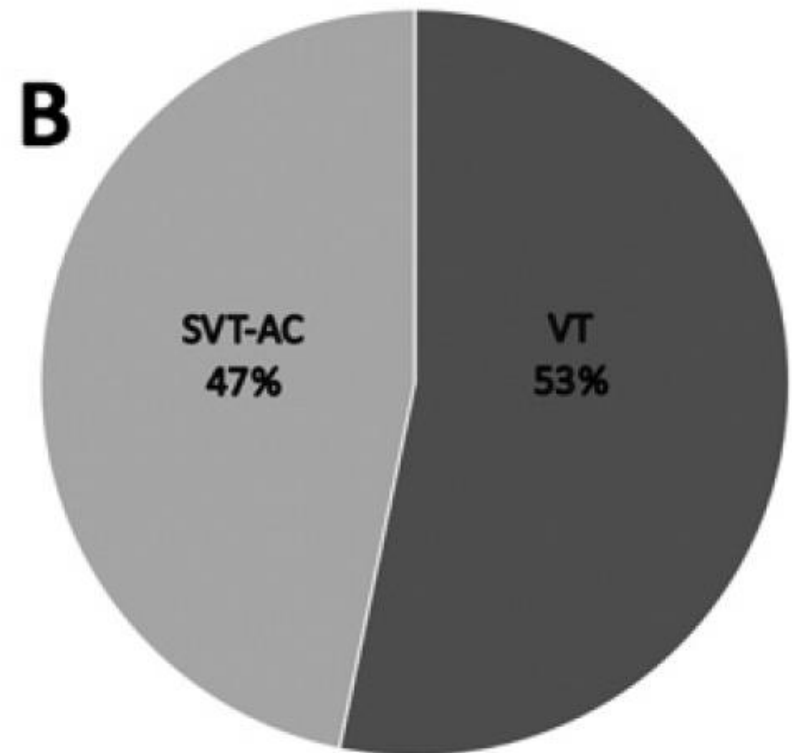
Wide QRS Complex Tachycardia (WCT)

- Definition:
 - Rate > 100 bpm & QRS duration > 100 or 120 sec
- Differential diagnosis:
 - Ventricular tachycardia (VT)
 - Supraventricular tachycardia (SVT) with aberrant (functional) conduction
 - SVT with preexisting fixed bundle branch block
 - SVT with pre-excitation
 - SVT with drug-induced or electrolyte-imbalance-induced IVCD
 - Ventricular paced rhythm

Causes of WCT at ER & ICU



Emergency Department



Intensive Care Unit

Principles of ECG Criteria

1. VT:

- 1) AV dissociation or VA block (with 100% specificity)
- 2) Ventricular activation during SVT is different in different precordial leads → QRS concordance in VT
- 3) Slow initial ventricular activation → prolonged intrinsicoid deflection time

2. SVT with aberrant conduction:

- 1) QRS morphology compatible with combination of typical BBB or fascicular block patterns
- 2) Initial rapid septal activation and later ventricular activation proceeds → negative QRS in aVR

Traditional ECG Criteria

QRS duration

> 160 ms with LBBB pattern → VT

> 140 ms with RBBB pattern → VT

QRS during WCT is narrower than in SR → VT

QRS axis

Northwest axis → VT

RBBB pattern with left axis deviation → VT

LBBB pattern with right axis deviation → VT

Precordial QRS concordance

Positive or negative concordance → VT

QRS morphology

Typical BBB or fascicular block patterns → SVT

AV dissociation → VT

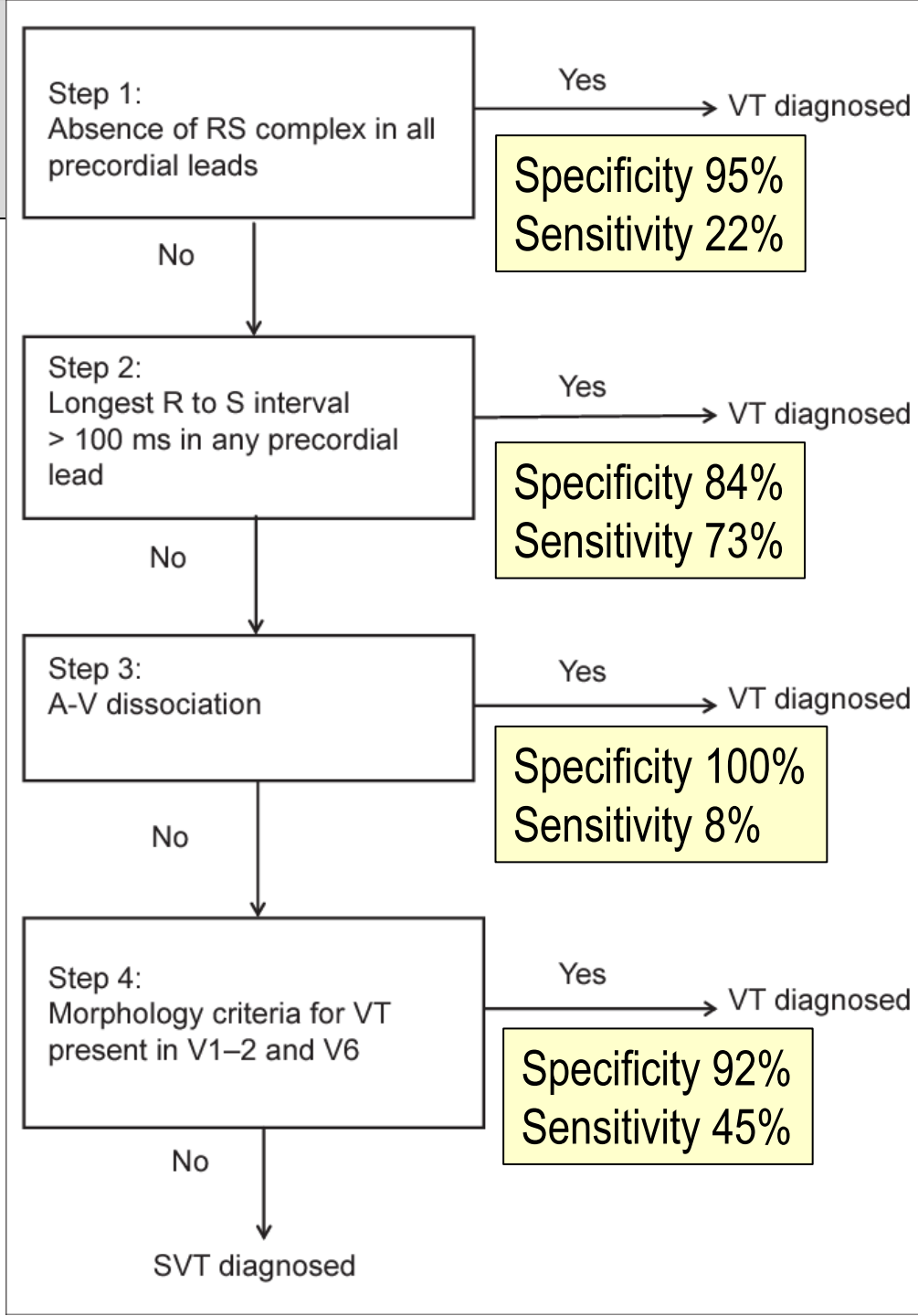
Dissociated P waves

$A < V$

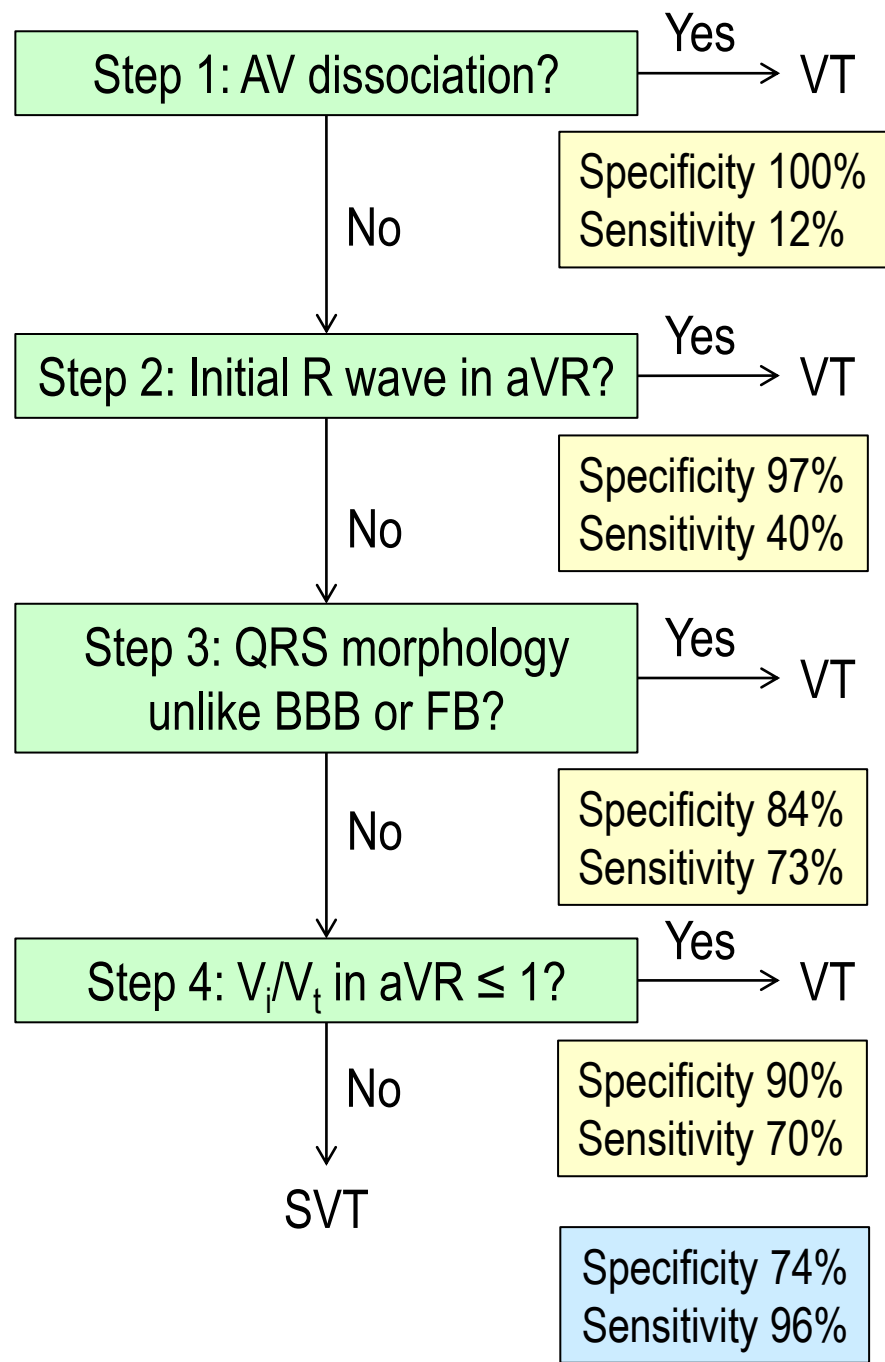
Fusion beats, capture beats

Brugada Algorithm

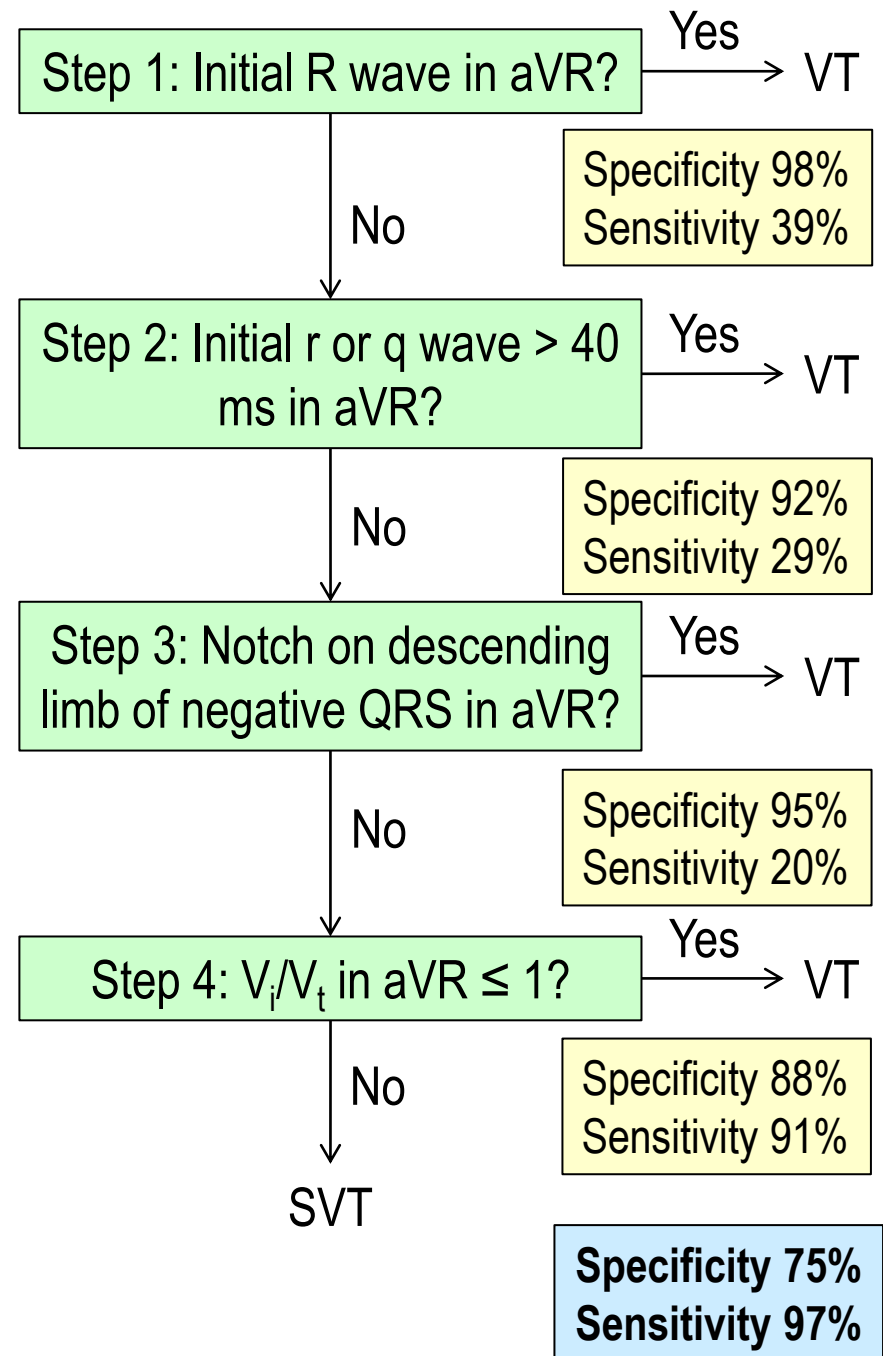
Specificity 73%
Sensitivity 89%



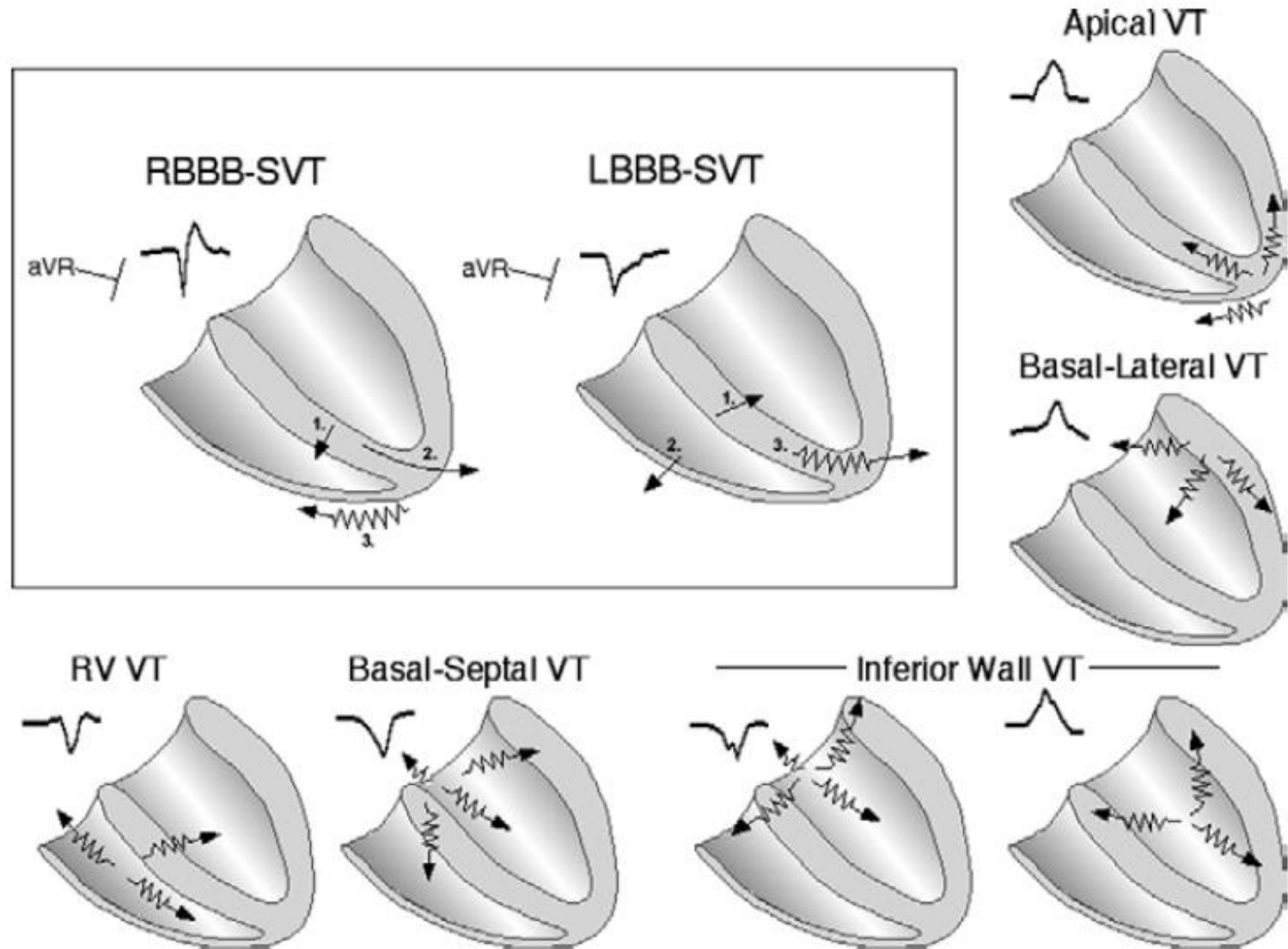
Vereckeai Algorithm



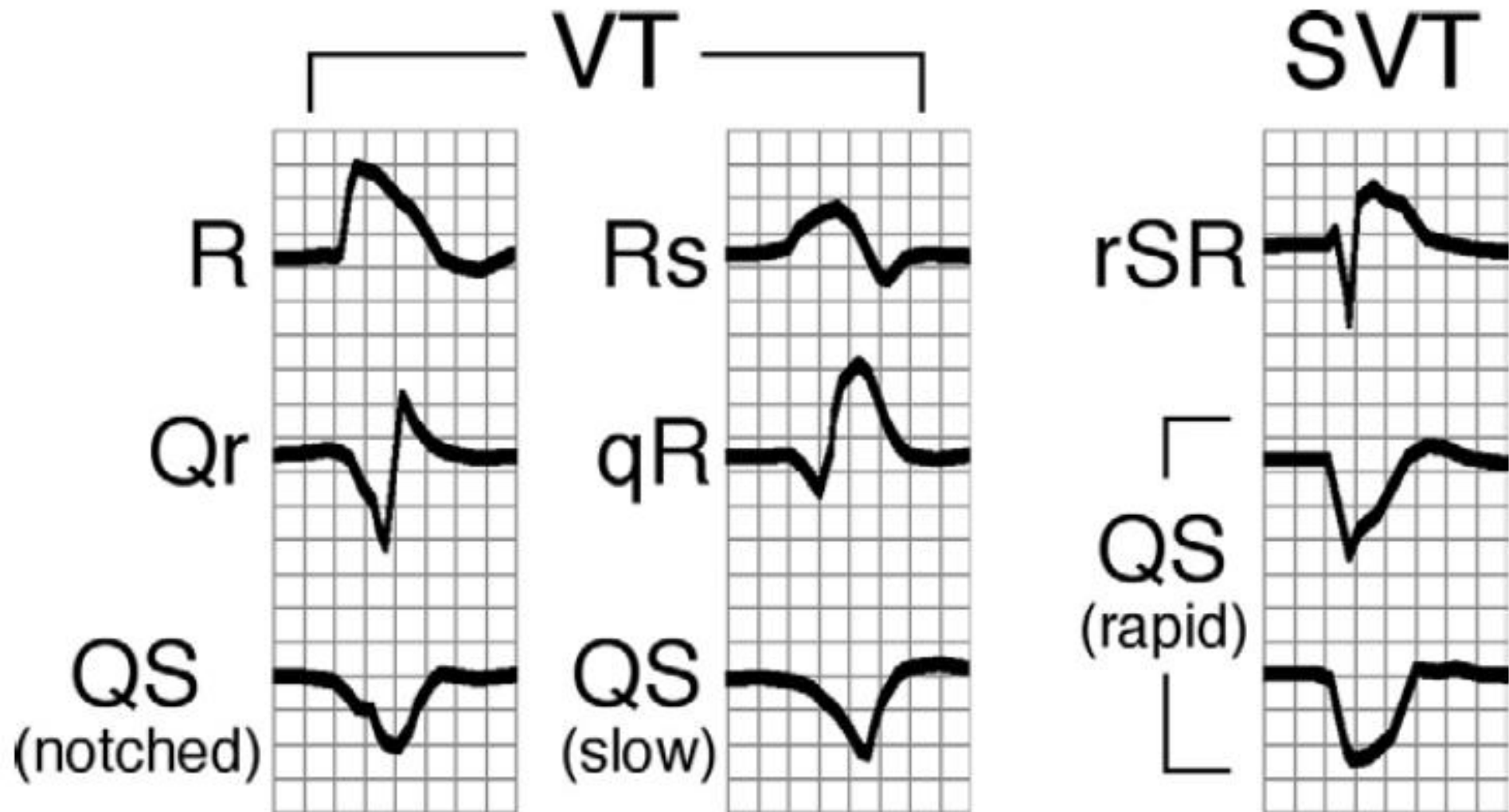
aVR Algorithm



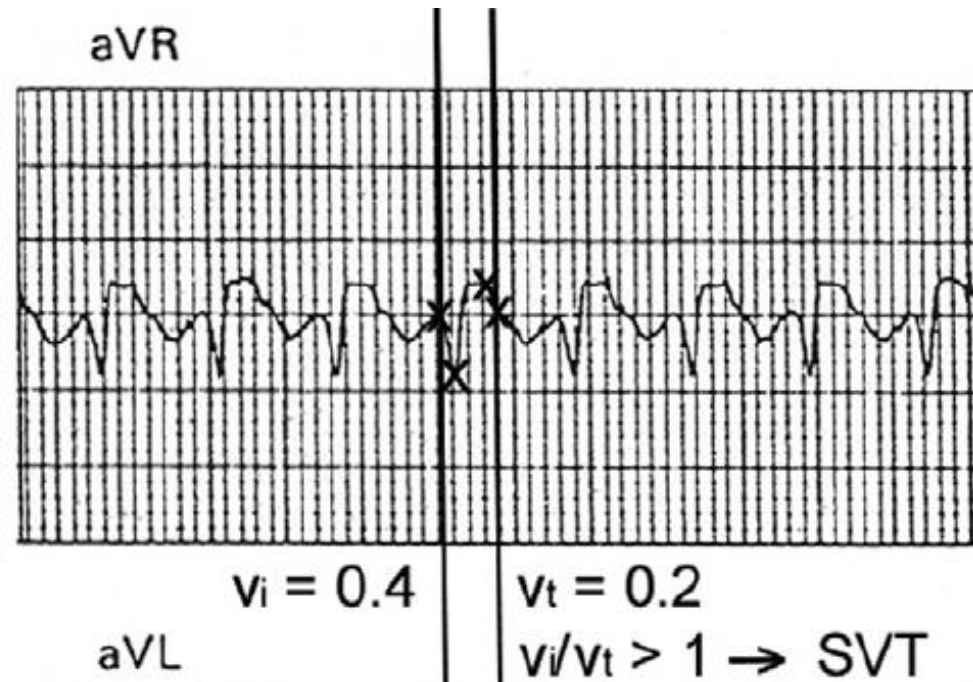
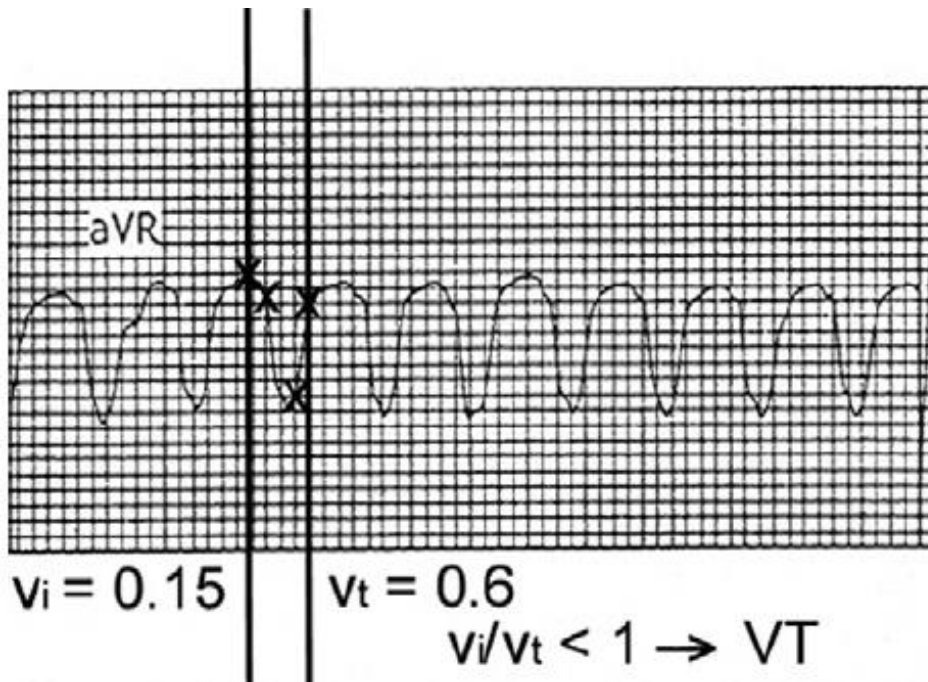
ECG Patterns in aVR in WCT



ECG Patterns in aVR in WCT



How to Measure V_i/V_t



My Thinking Process

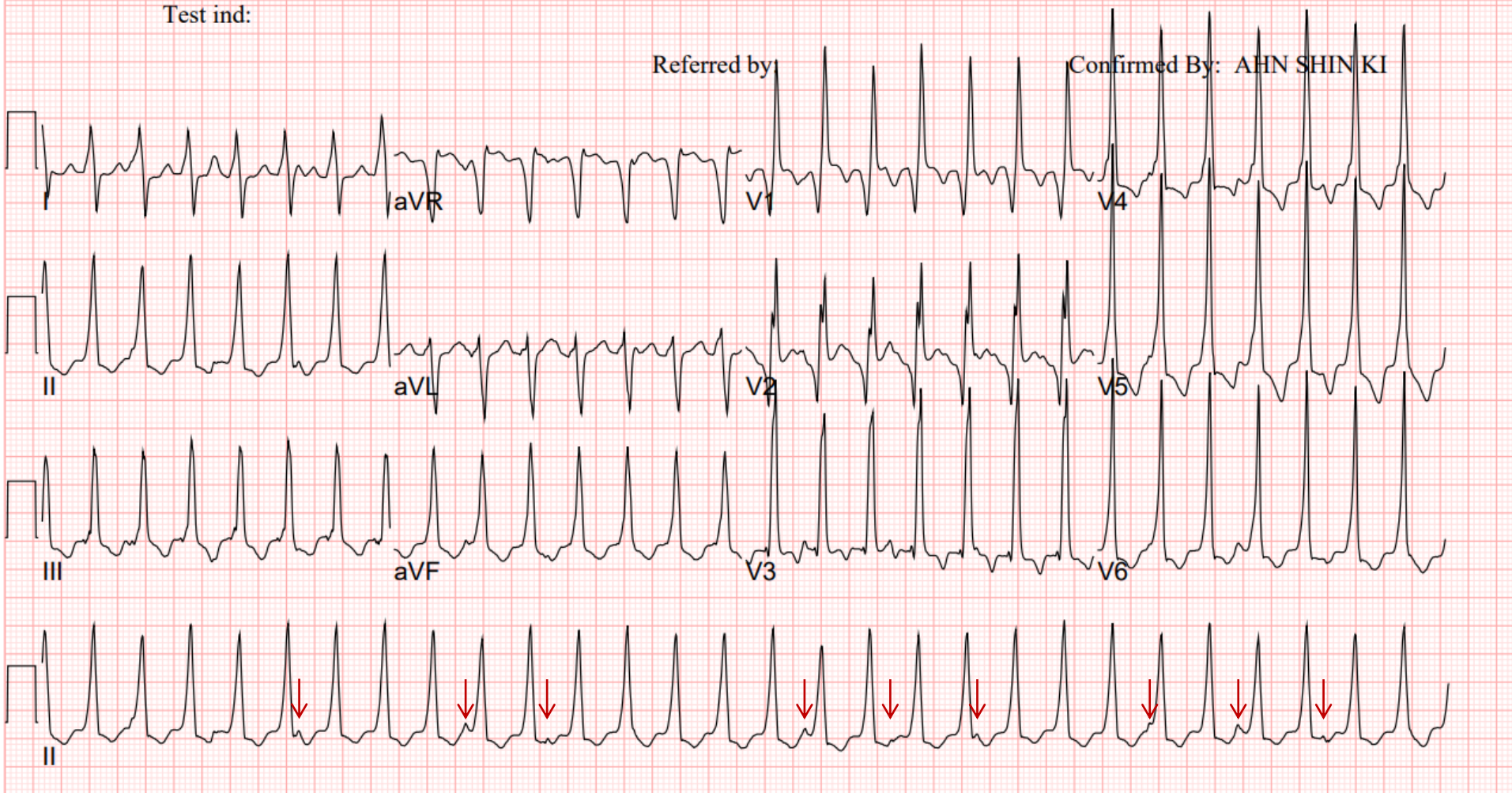
1. Evidences of AV dissociation
 - 1) P wave → AV dissociation
 - 2) Fusion beat or capture beat
2. Precordial concordance
3. Northwest axis
4. QRS morphology
5. aVR criteria

AV Dissociation

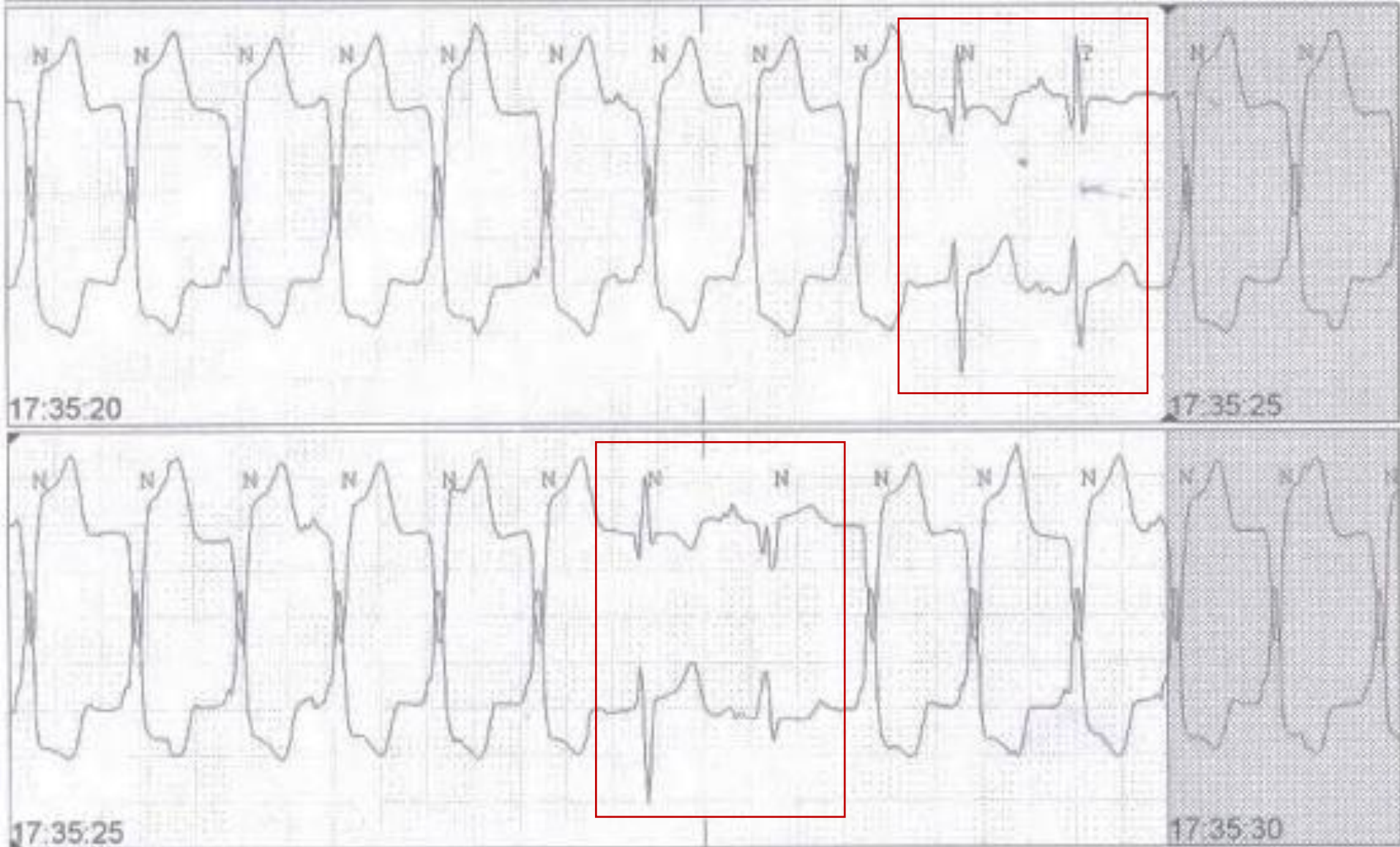
Test ind:

Referred by

Confirmed By: AHN SHIN KI



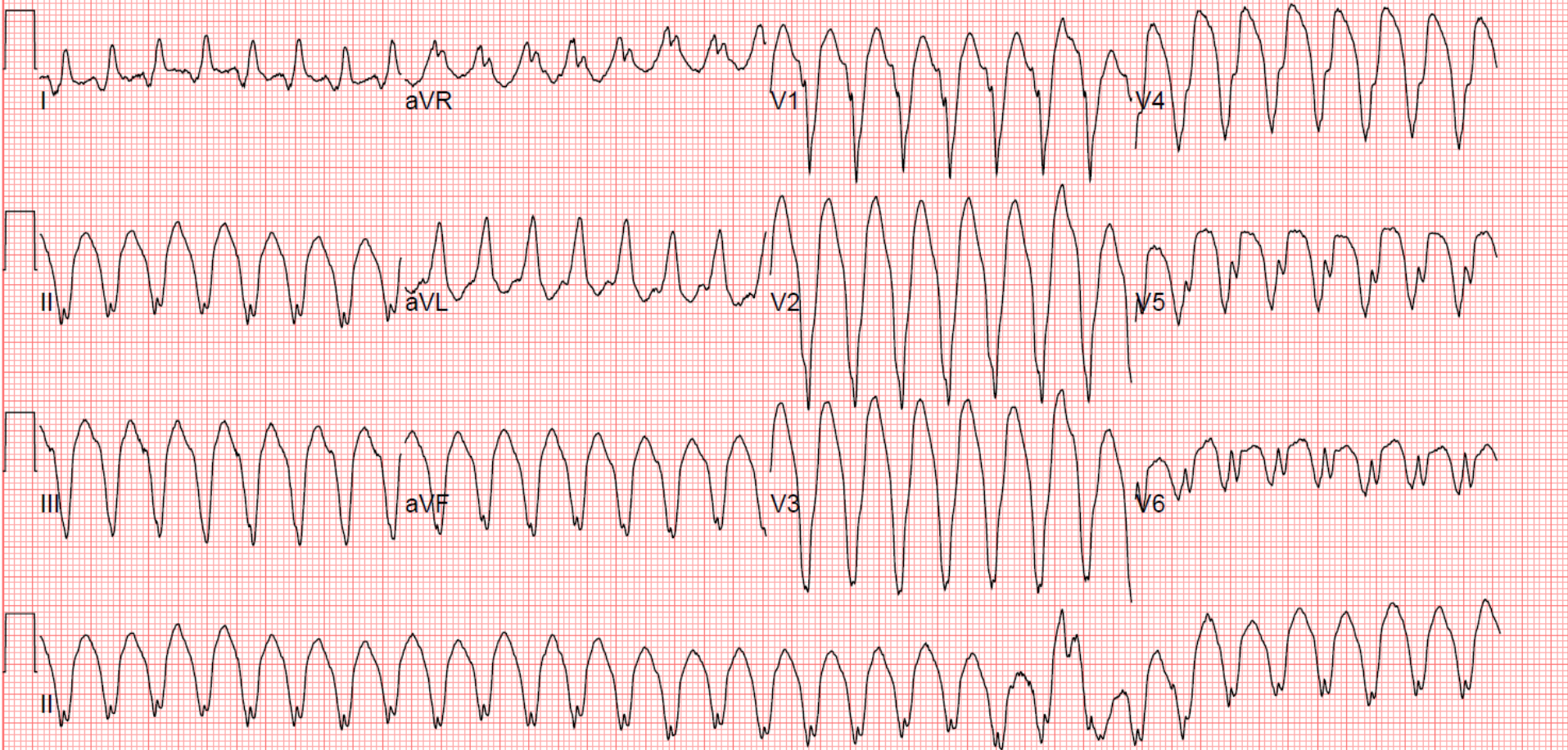
Capture Beats & Fusion Beats



Negative Preordial Concordance

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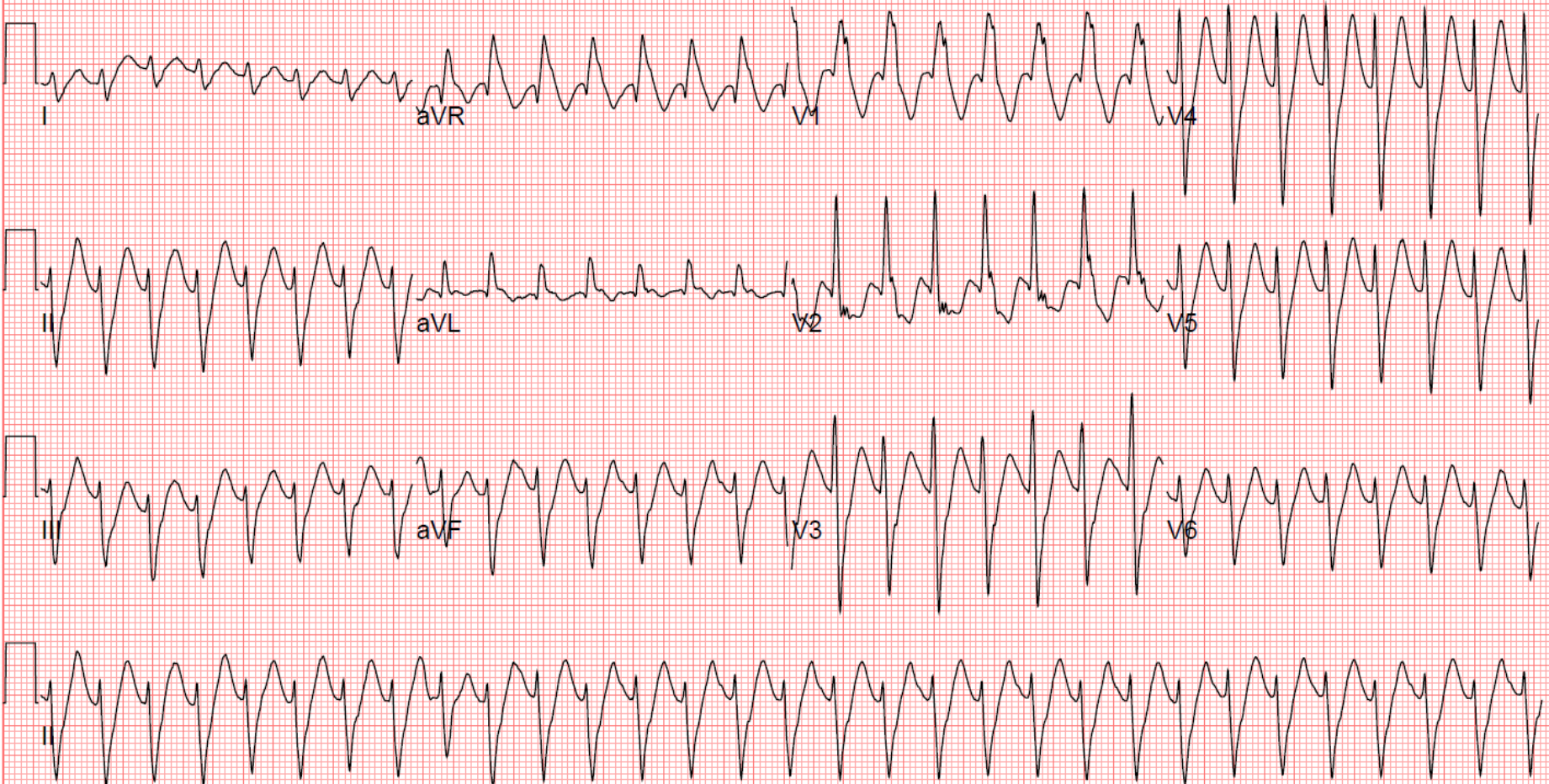
Confirmed By: HA JONGWON



Northwest Axis Deviation & QRS Morphology

Referred by: PAK H N

Confirmed By: SUNG HA PARK



aVR Criteria in VT

Test ind:

Referred by:

Confirmed By: KIM TAE-HOON

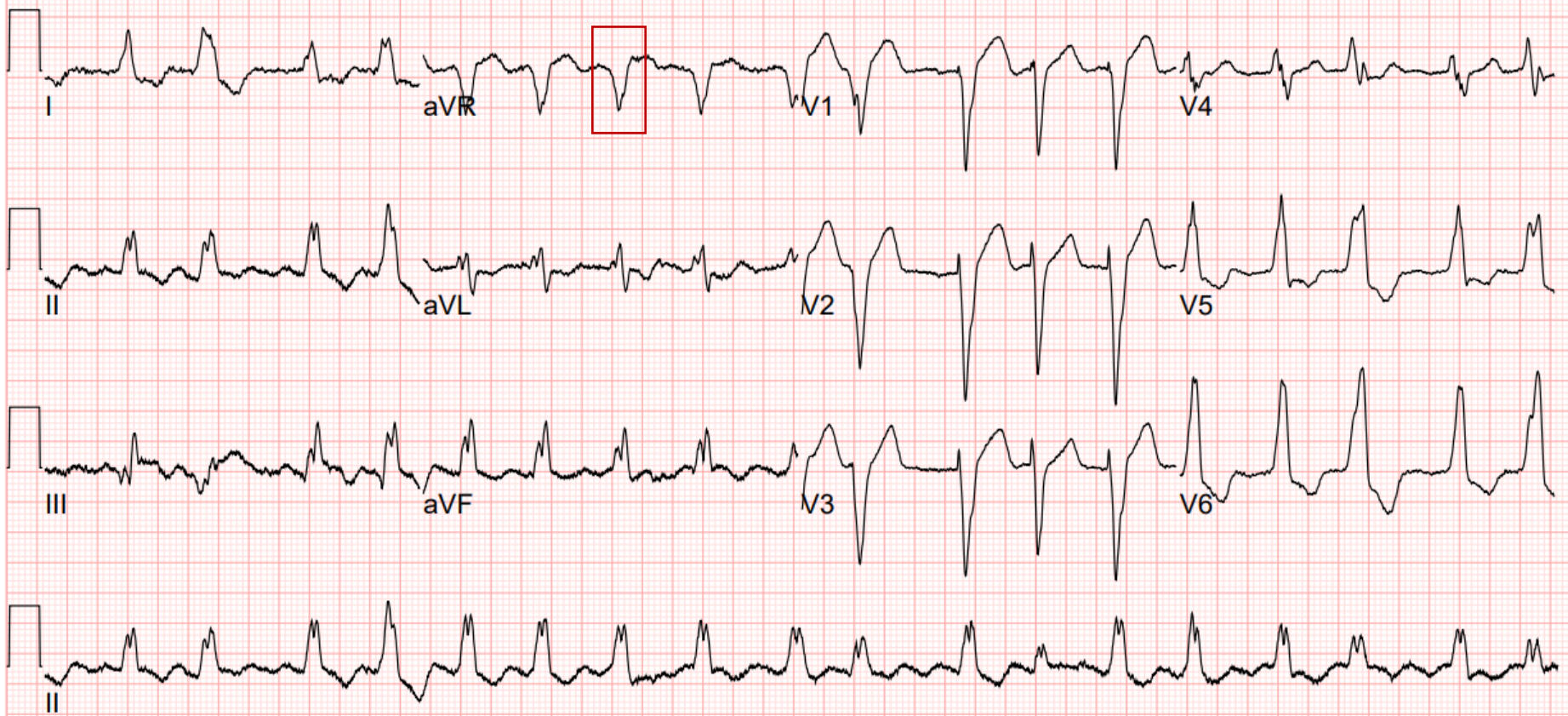


aVR Criteria in Atrial Flutter

Test ind:

Referred by:

Confirmed By: KIM TAE-HOON



Thank you

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