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VENTRICULAR TAQUI FIRST: RECOGNIZE THE PROBLEM

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Diferencial Diagnosis of V.Taq. In EKG The First Step.

Disclosures:

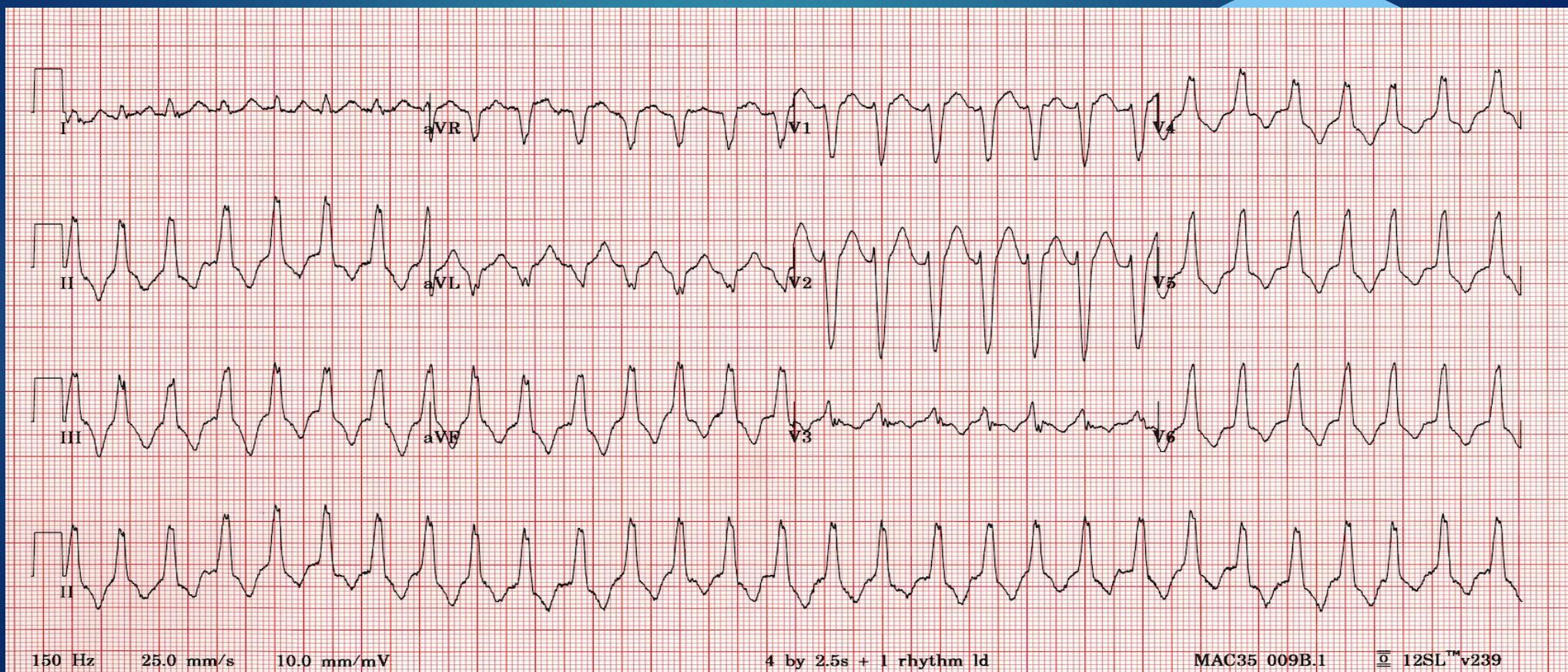


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Advisor and Speaker: Abbott, Boehringer, MSD, Pfizer, Menarini, Bayer, AstraZeneca, Merck, Servier.

No Disclosures for this presentation.

The common challenge:



There are three main diagnostic possibilities:

- ▶ VT
- ▶ SVT with aberrant conduction due to bundle branch block
- ▶ SVT with aberrant conduction due to the Wolff-Parkinson-White syndrome
- ▶ The most important distinction is whether the rhythm is ventricular (VT) or supraventricular aberrancy, as this will significantly influence how you manage the patient. SVTs usually respond well to AV-nodal blocking drugs, whereas patients with VT may suffer precipitous haemodynamic deterioration if erroneously administered an AV-nodal blocking agent.
- ▶ Unfortunately, the electrocardiographic differentiation of VT from SVT with aberrancy is not always possible.

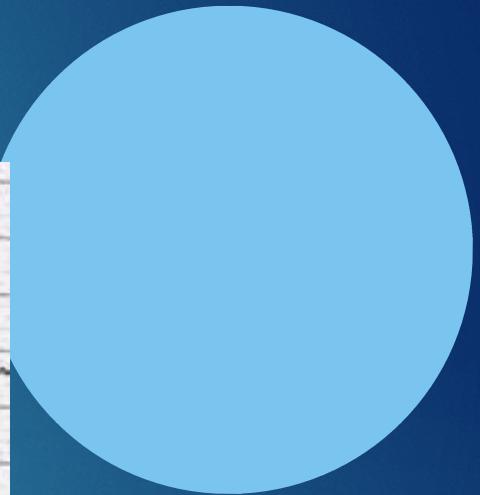
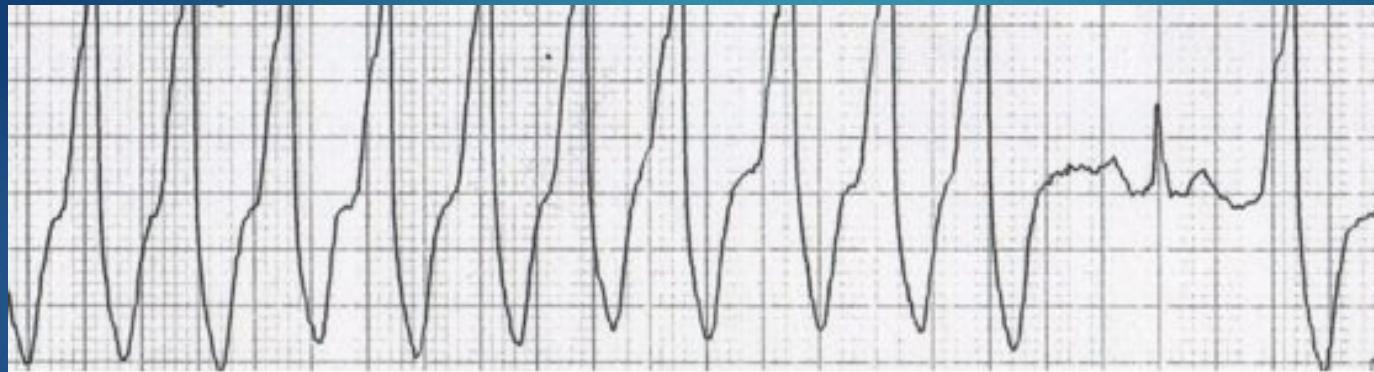
ECG features increasing the likelihood of VT

- ▶ Absence of typical RBBB or LBBB morphology
- ▶ Extreme axis deviation (“northwest axis”) — QRS is positive in aVR and negative in I + aVF.
- ▶ Very broad complexes (>160ms)
- ▶ AV dissociation (P and QRS complexes at different rates)
- ▶ Capture beats — occur when the sinoatrial node transiently ‘captures’ the ventricles, in the scene of AV dissociation, to produce a QRS complex of normal duration.
- ▶ Fusion beats — occur when a sinus and ventricular beat coincides to produce a hybrid complex.
- ▶ Positive or negative concordance throughout the chest leads, i.e. leads V1-6 show entirely positive (R) or entirely negative (QS) complexes, with no RS complexes seen.
- ▶ Brugada's sign – The distance from the onset of the QRS complex to the nadir of the S-wave is > 100ms
- ▶ Josephson's sign – Notching near the nadir of the S-wave
- ▶ RSR' complexes with a taller left rabbit ear. This is the most specific finding in favour of VT. This is in contrast to RBBB, where the right rabbit ear is taller.

Clinical factors associated with VT

- ▶ Age > 35 (positive predictive value of 85%)
- ▶ Structural heart disease
- ▶ Ischaemic heart disease
- ▶ Previous MI
- ▶ Congestive heart failure
- ▶ Cardiomyopathy
- ▶ Family history of sudden cardiac death (suggesting conditions such as HOCM, congenital long QT syndrome, Brugada syndrome or arrhythmogenic right ventricular dysplasia that are associated with episodes of VT)

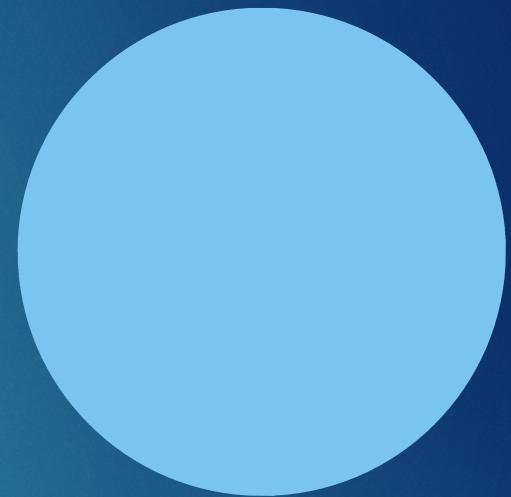
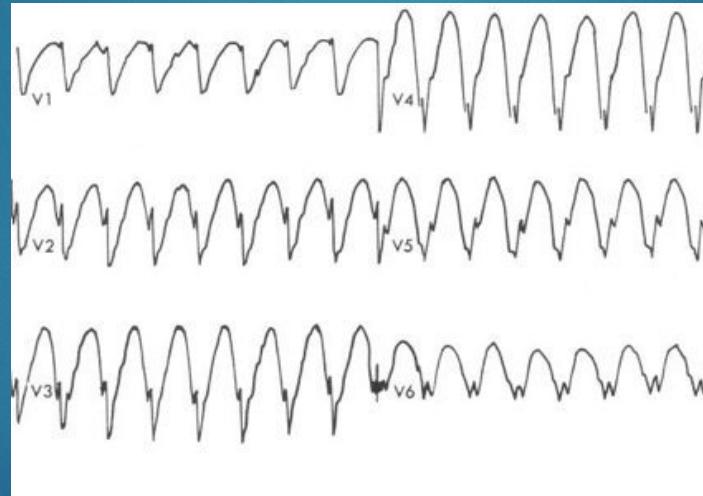
Capture beats



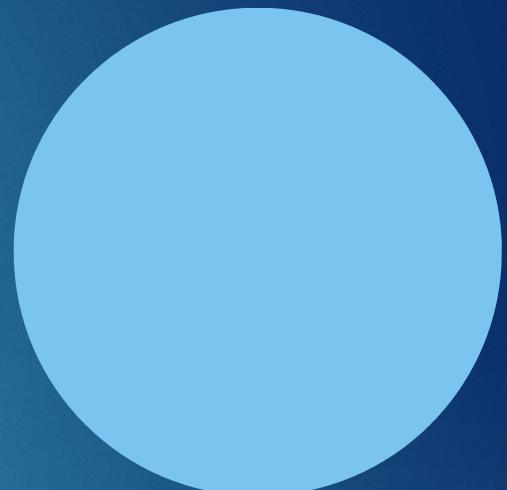
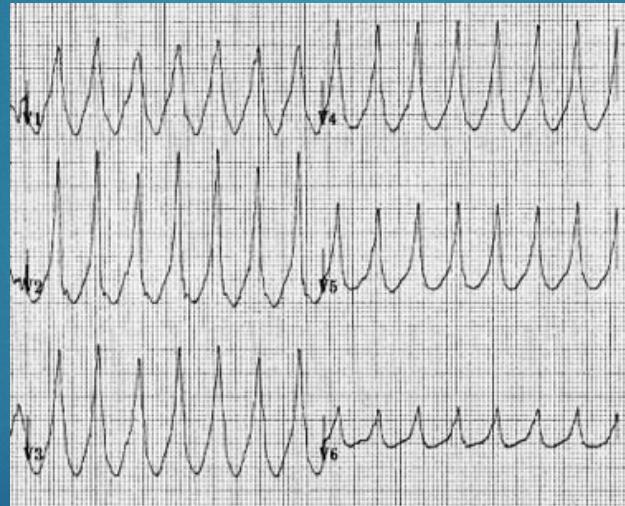
Fusion beats – the first of the narrower complexes is a fusion beat (the next two are capture beats)



HALLMARKS CRITERIAS FOR VT: Negative concordance in PRECORDIAL LEADS



HALLMARKS CRITERIAS FOR VT; Positive concordance in PRECORDIAL LEADS

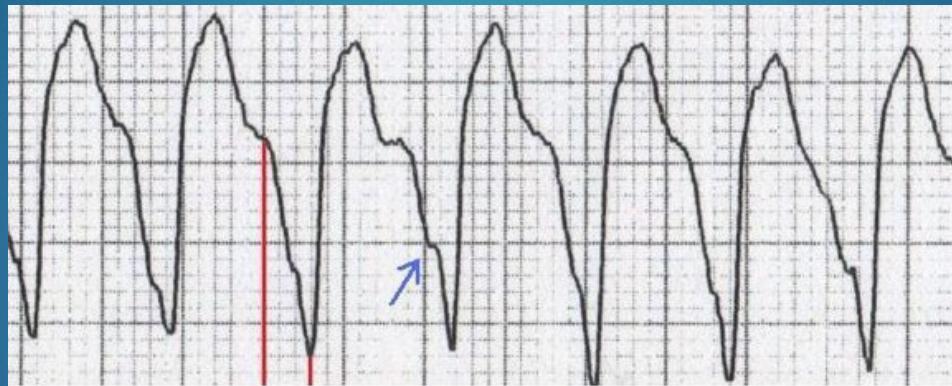


Brugada's sign (red callipers) – The

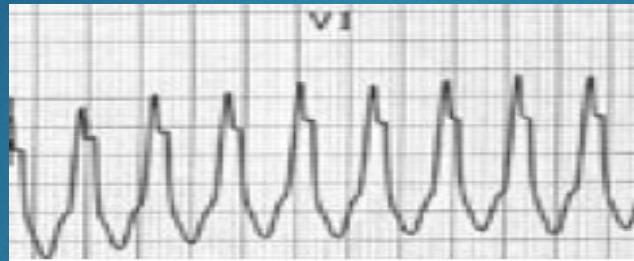
distance from the onset of the QRS complex to the nadir of the S-wave is > 100ms

and Josephson's sign (blue arrow)

Notching near the nadir of the S-wave



RABBIT SIGN:



Taller left rabbit ear in VT



Taller right rabbit ear in RBBB

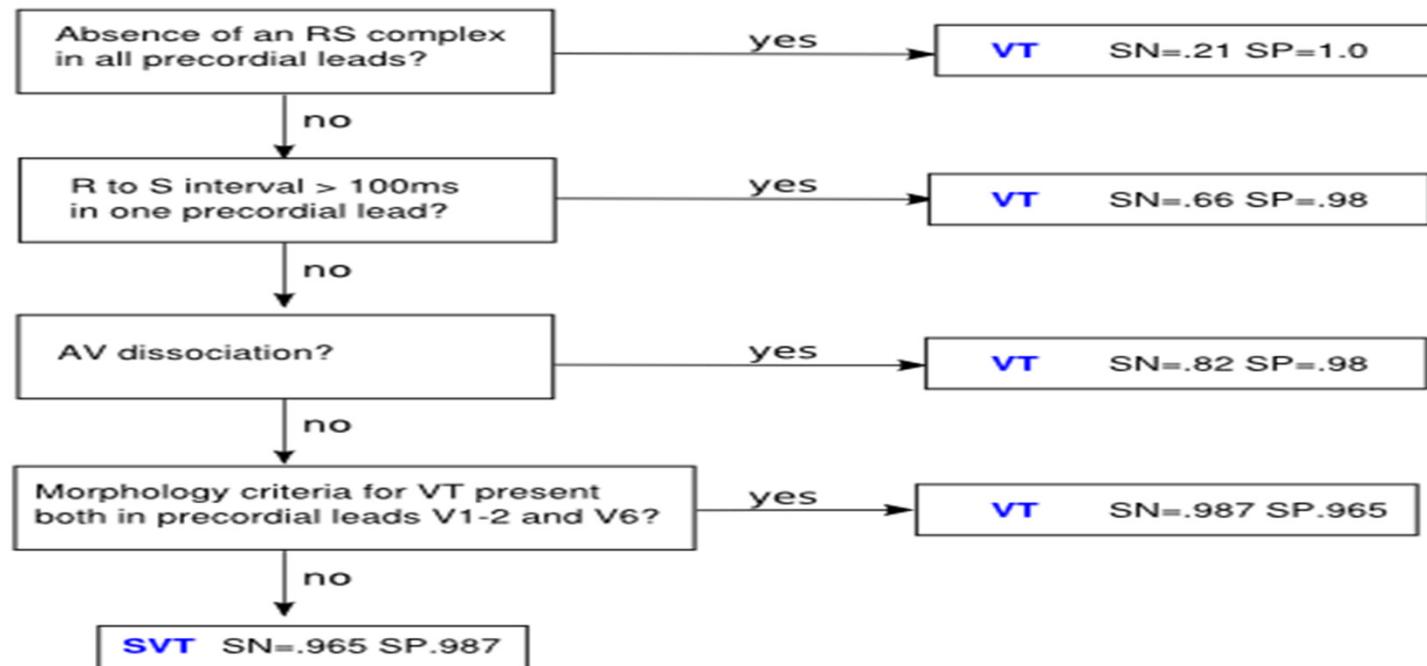
Additional factors associated with ABERRANCY

- ▶ Previous ECGs show a bundle branch block pattern with identical morphology to the broad complex tachycardia.
- ▶ Previous ECGs show evidence of WPW (short PR < 120ms, broad QRS, delta wave).
- ▶ The patient has a history of paroxysmal tachycardias that have been successfully terminated with adenosine or vagal manoeuvres.

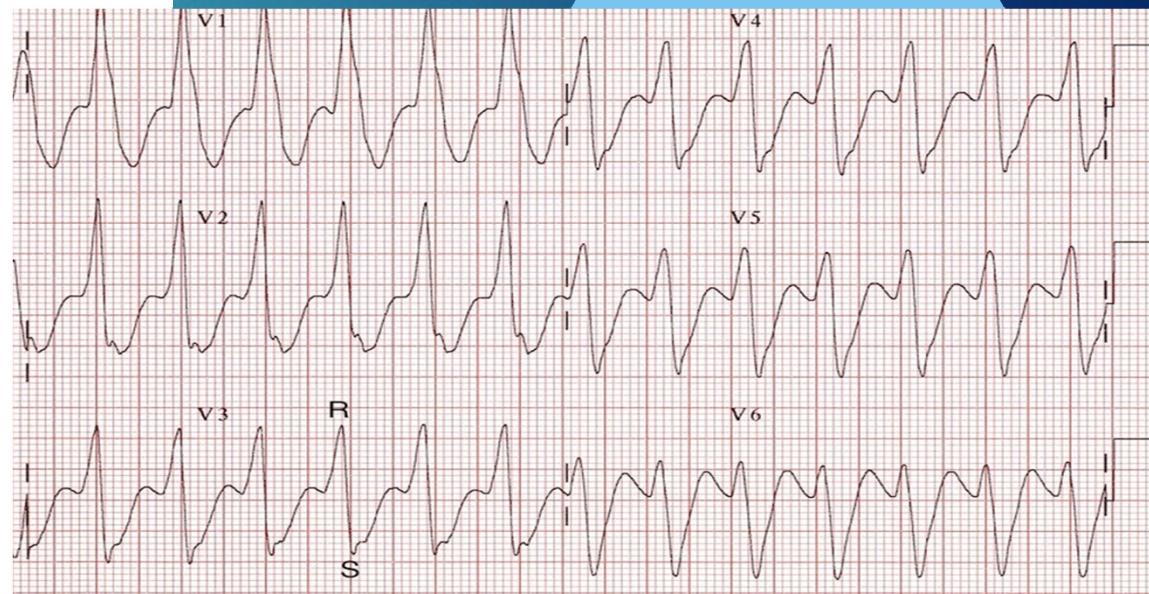
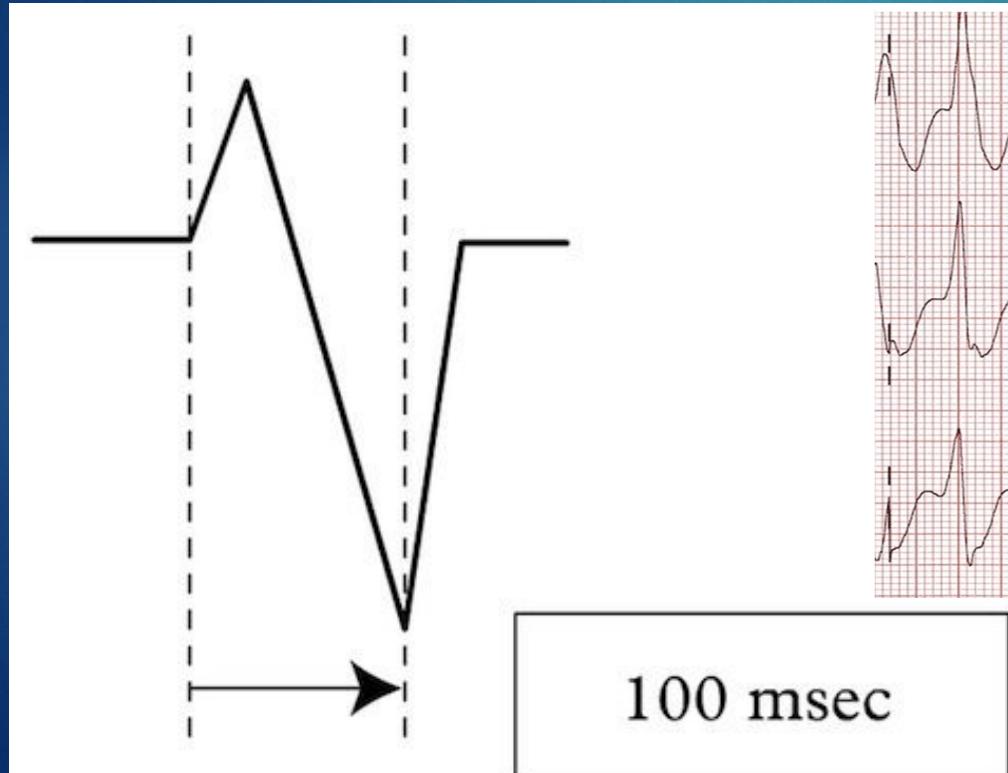
Brugada Criteria

- For difficult cases, the Brugada algorithm can be used to distinguish between VT and SVT with aberrancy.
- The algorithm is followed from top to bottom — if any of the criteria are satisfied then VT is diagnosed.

Brugada Algorithm

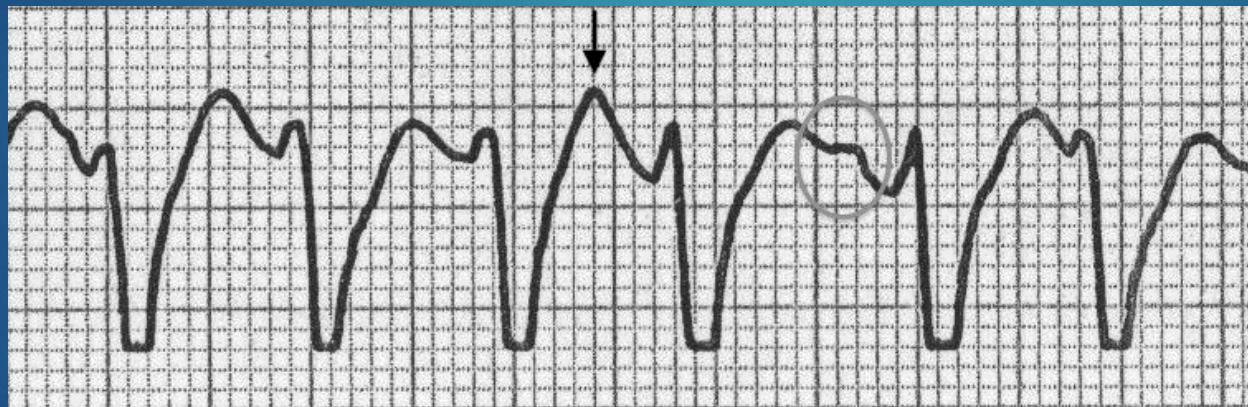


RS interval > 100ms in one precordial lead



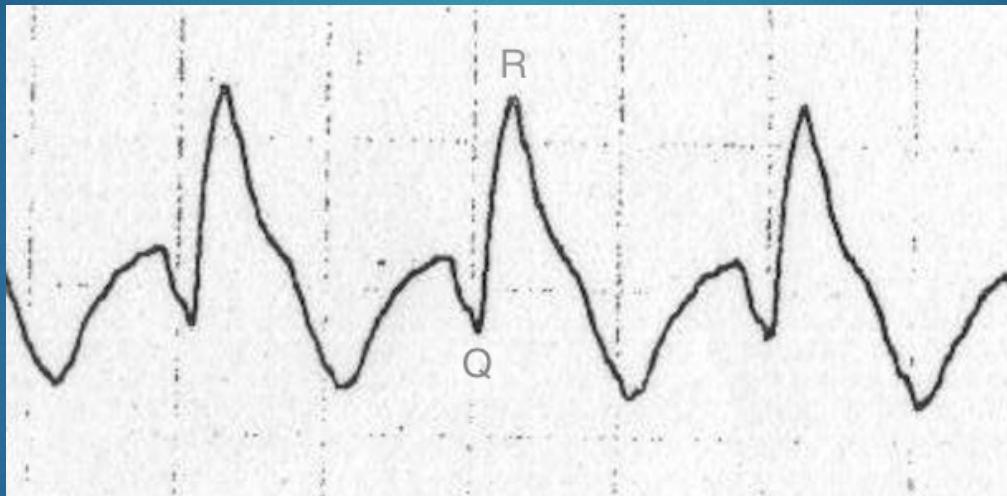
3. AV dissociation: Cherche la P

- The ECG is scrutinised for hidden P waves; these are often superimposed on the QRS complexes and may be difficult to see.
- If P waves are present at a different rate to the QRS complexes → AV dissociation is present and VT is diagnosed.
- If no evidence of AV dissociation can be seen → go to step 4.



- ▶ AV dissociation: P waves can be spotted in between QRS complexes (circled) and superimposed upon the T wave causing a peaked appearance (arrow)

V1:qR



qR pattern → VT

Appearance in V6

In V6, the following patterns are consistent with VT:

- QS complex — a completely negative complex with no R wave (= strongly suggestive of VT).
- R/S ratio < 1 — small R wave, deep S wave (indicates VT only if LAD is also present).



QS waves in V6 → VT

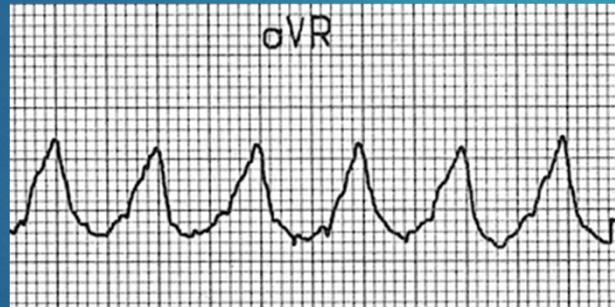
Conversely, SVT with LBBB is associated with absent Q waves in V6.



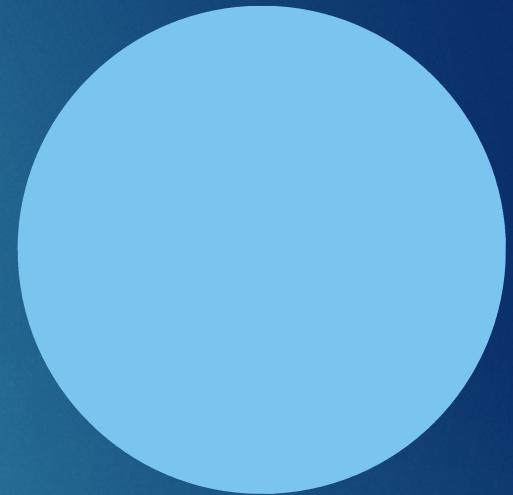
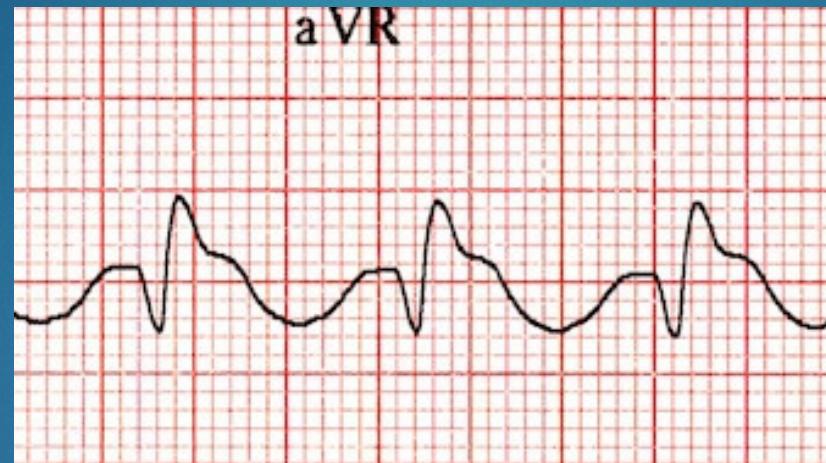
- ▶ Absent Q waves in V6 with LBBB

More Advanced Tips — The Vereckei Algorithm

- A dominant *initial R wave* in aVR is indicative of VT.
- A dominant *terminal R' wave* in aVR (i.e. following a Q/S wave)
- is more likely SVT with aberrancy — this pattern is most
- commonly seen in tricyclic poisoning.

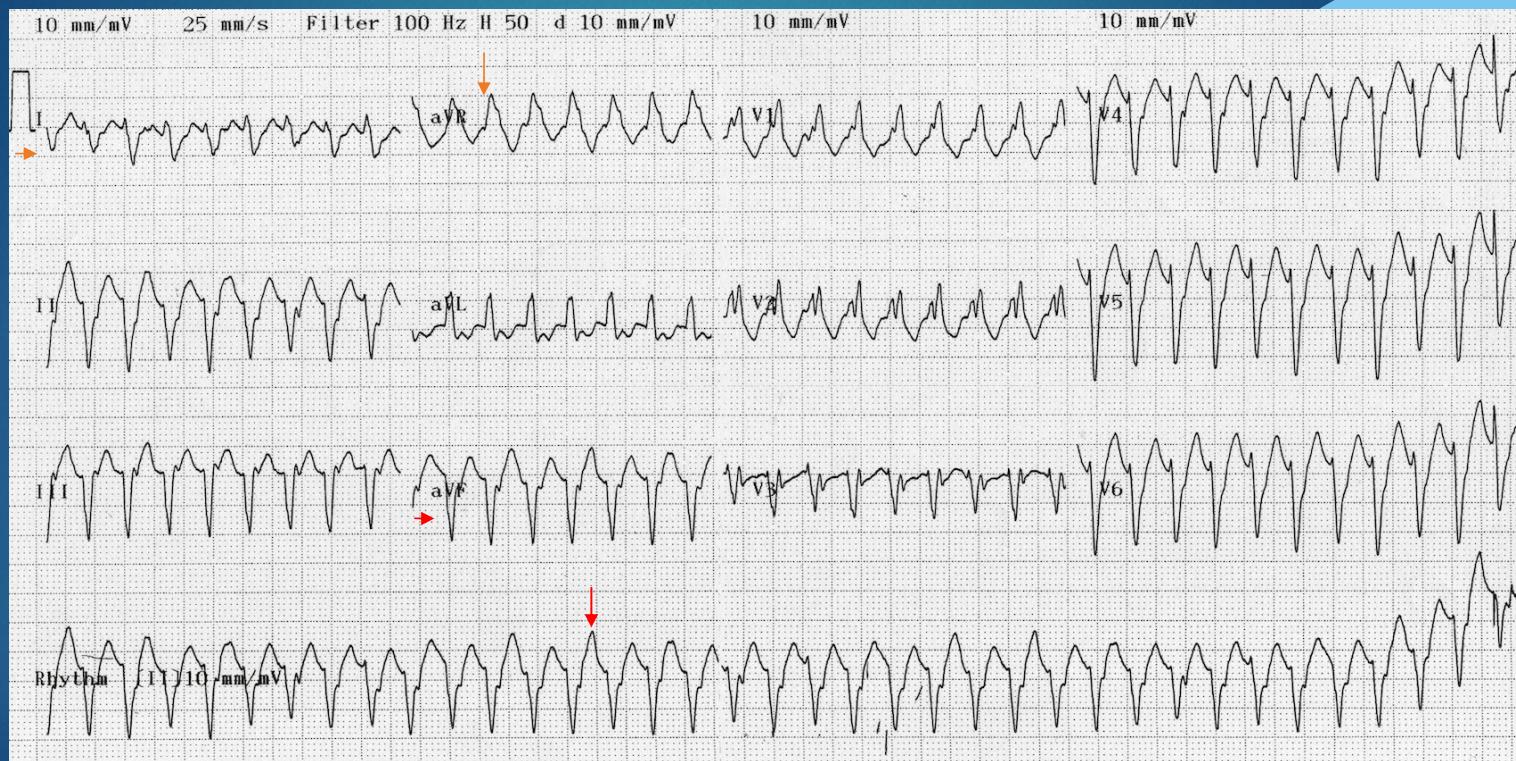


Dominant initial R wave in aVR -> VT

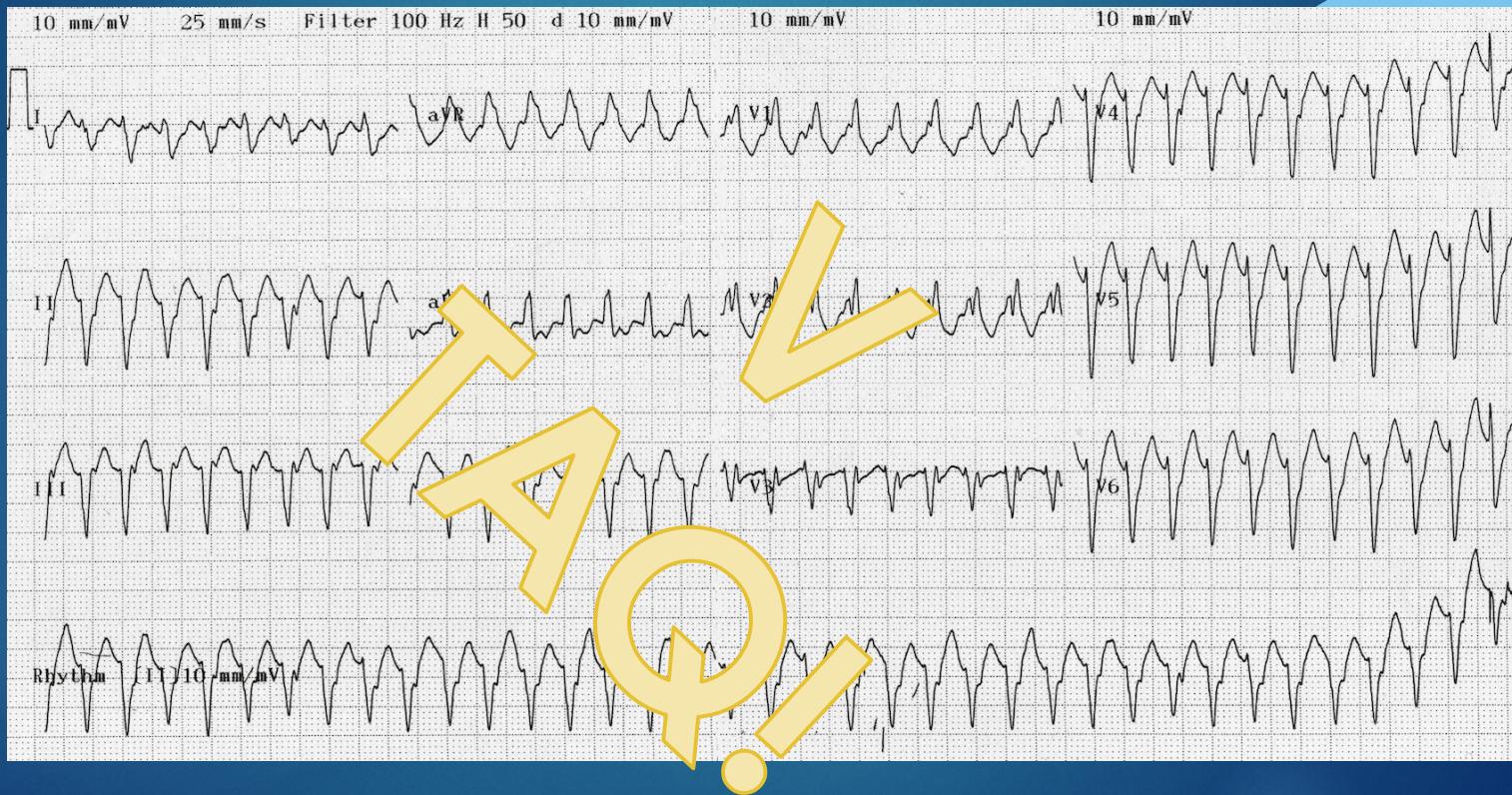


Dominant secondary R' wave in aVR -> TCA toxicity

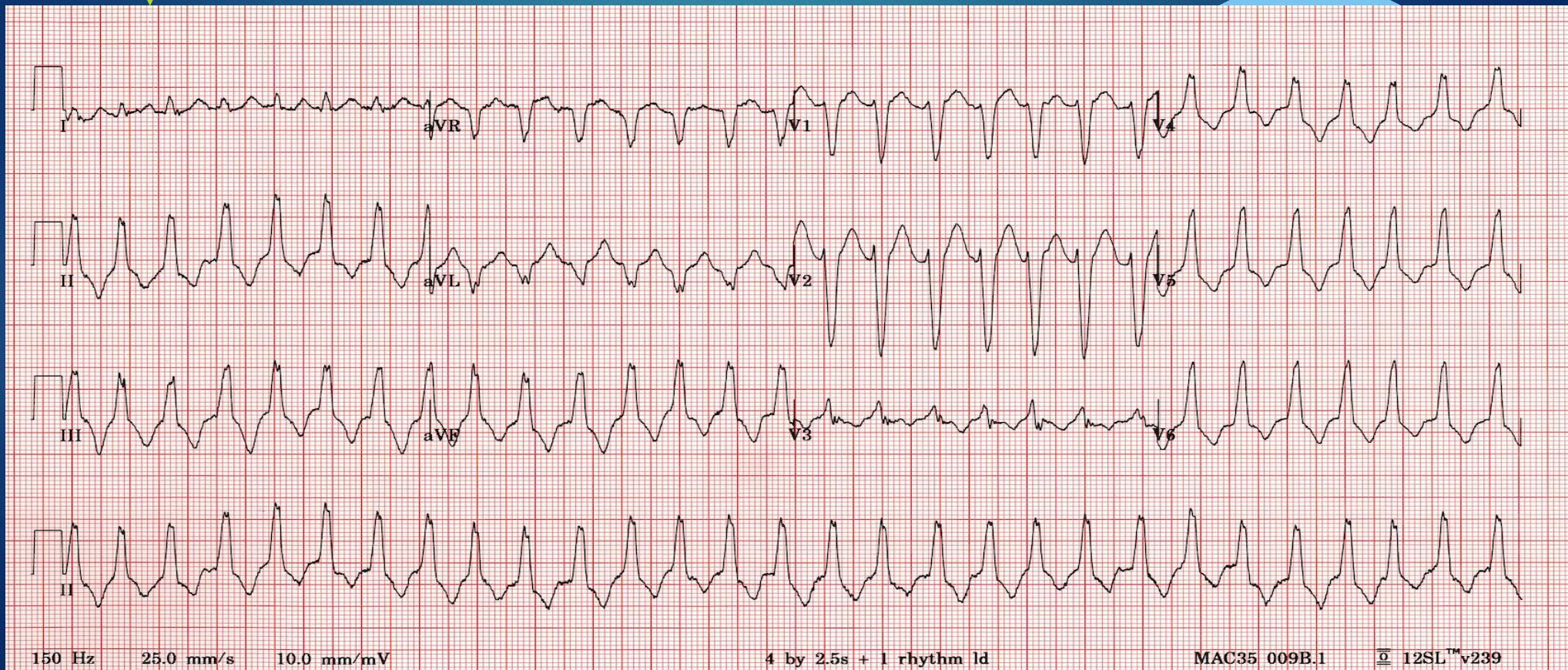
CHALLENGE: SVTAb, Fascicular, V.Taq?



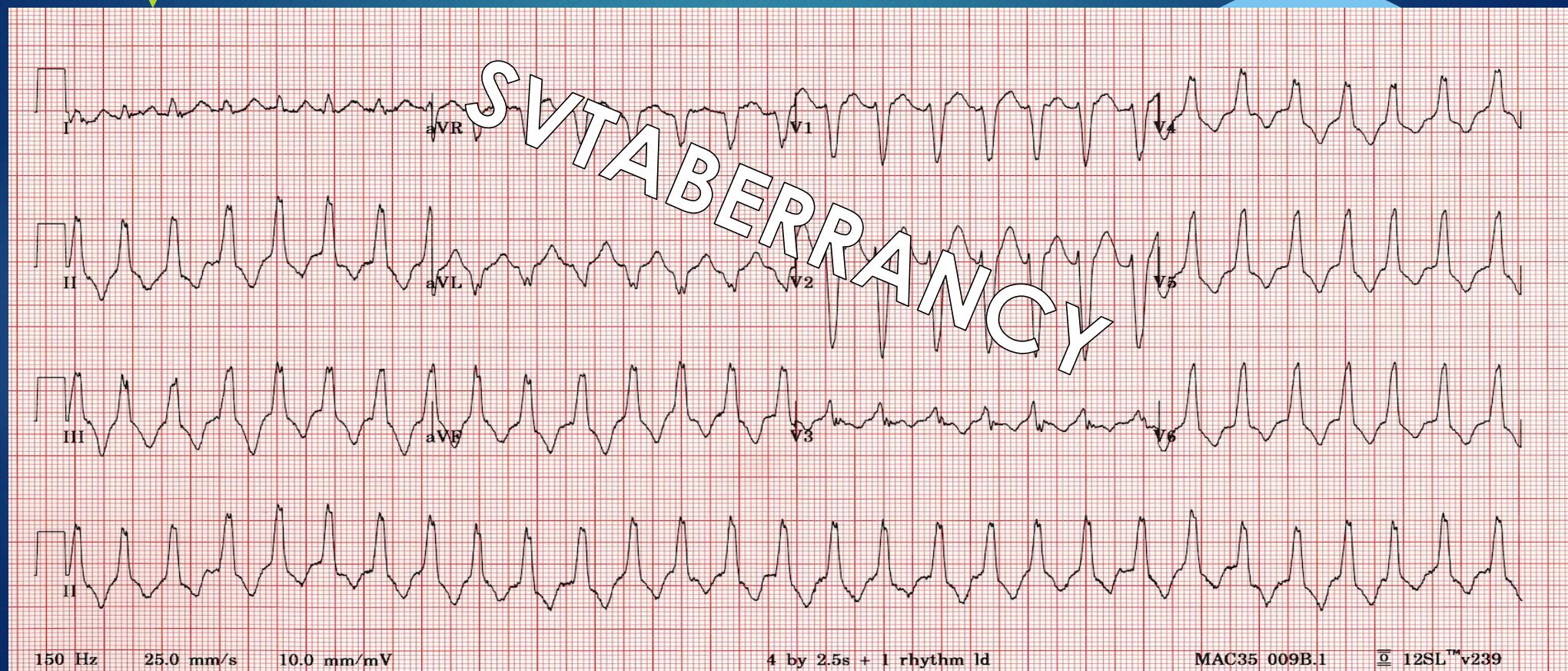
CHALLENGE: SVTAb, Fascicular, V.Taq?



Another challenge:



Another challenge:





**WE SEE WHAT WE LOOK FOR
AND RECGNIZE WHAT WE KNOW!**