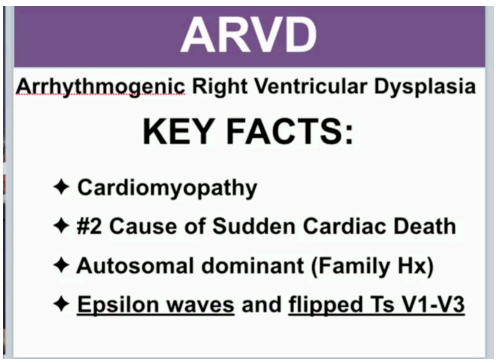
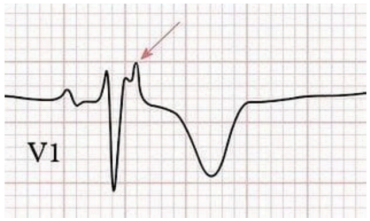
SYNCOPE & ECGs NOTES

Always order an ECG for syncope evaluations.



ARVD= pt can be any age (infant to elderly).
Overview of ARVD

- Autosomal dominant genetic disorder of myocardium in which there is fatty infiltration of the right ventricular free wall, predisposing to paroxysmal ventricular arrhythmias, sudden cardiac death, and biventricular failure
- Second most common cause of sudden cardiac death in young people (after HOCM), accounting for up to 10% of sudden cardiac deaths in patients < 65 yrs of age
- Prevalence ~ 1 in 5000
- Diagnosis is difficult and relies on a combination of clinical, electrocardiographic and radiological features, as defined by the (horribly complicated) 2010 Task Force Criteria

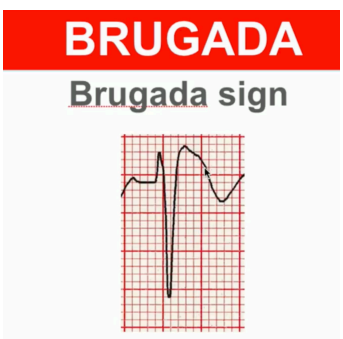


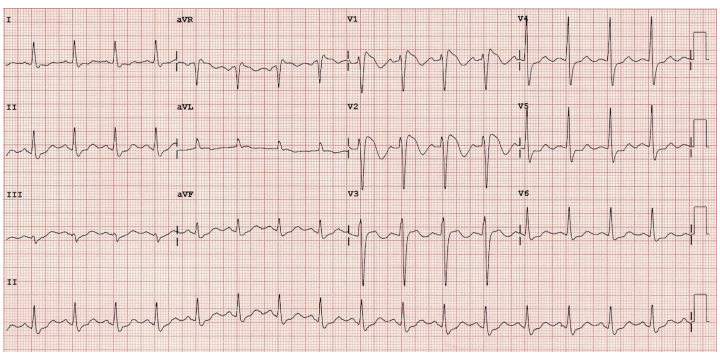
Epsilon wave in V1, due to RV conduction delay

Prolonged S-wave upstroke in V2 with localized QRS widening

ECG features

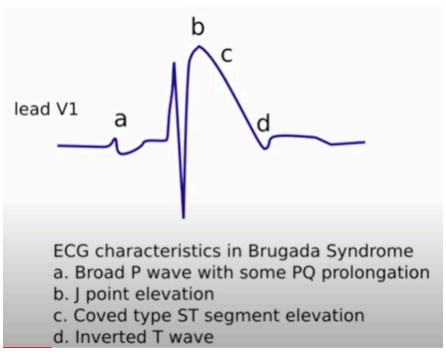
- T wave inversion in right precordial leads V1-3, in absence of RBBB (85% of patients)
- Epsilon wave (most specific finding, seen in 50% of patients)
- Localised QRS widening in V1-3 (> 110ms)
- Prolonged S wave upstroke of 55ms in V1-3
- Ventricular ectopy of LBBB morphology, with frequent PVCs > 1000 per 24 hours
- Paroxysmal episodes of ventricular tachycardia (VT) with LBBB morphology (RVOT tachycardia)





Mneumonic:
RBBB with STE in V1-3
= Brugada

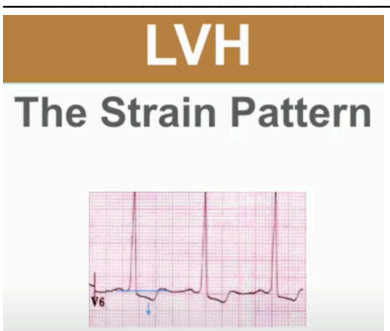
(when you say it out loud, it rhymes)

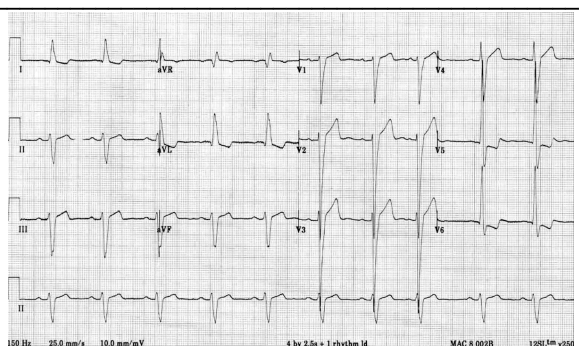


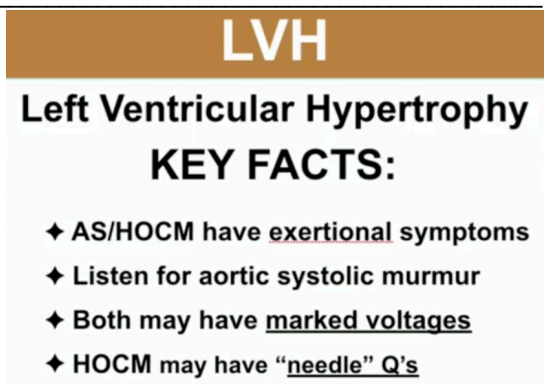
Type 1 (there are 3 types but type 1 is most fatal and most important):
Coved ST segment elevation >2mm in >1 of V1-V3 followed by a negative T wave.
This is the only ECG abnormality that is potentially diagnostic.
It is often referred to as Brugada sign.

This ECG abnormality **must be associated with one of the following clinical criteria to make the diagnosis**:

- Documented ventricular fibrillation (VF) or polymorphic ventricular tachycardia (VT).
- Family history of sudden cardiac death at <45 years old .
- Coved-type ECGs in family members.
- Inducibility of VT with programmed electrical stimulation .
- Syncope.
- Nocturnal agonal respiration.



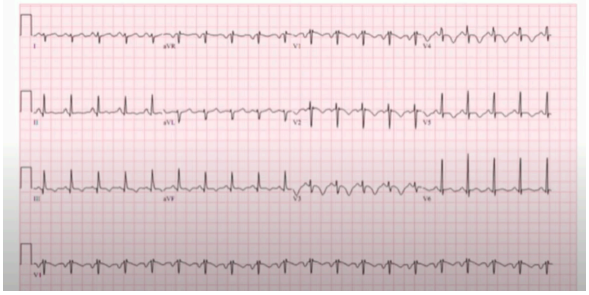




LVH **with syncope** is indicative of the beginnings of an infarct, where the vessels can't go through all that built up, hypertrophic tissue.
Therefore, LVH in the presence of a syncope event warrants a full workup with cardiology and likely a trip to the cath lab.

PE

Pulmonary Embolus



Signs of a PE on ECG (may have all, some, or none of these signs):

- tachycardia
- axis shift (right axis shift in the example ECG)
- deep, symmetrical T wave inversions in precordial leads (the Vs)
- as it worsens, might see RBBB

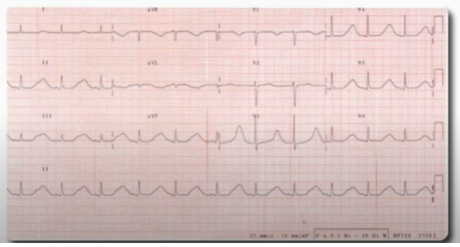
PE

Pulmonary Embolus KEY FACTS:

- ECG most commonly non-specific
- Look for signs of acute right heart strain:
  - Rightward axis shift (S1Q3T3)
  - RBBB
  - Deep Flipped Ts V1-V4

QT

QT Prolongation



QT

QT Prolongation KEY FACTS:

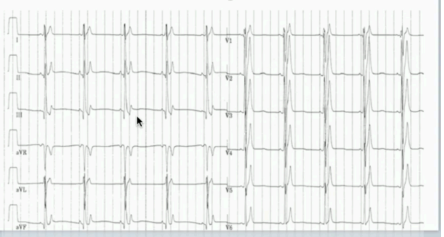
- Main categories of culprit drugs:
  - Antiarrhythmics (e.g. amiodorone)
  - Antifungals (e.g. ketoconazole)
  - Antipsychotic/antinausea (e.g. chlorpromazine)
- QT interval should be less than half of the RR interval

Quick trick on how to measure if QT interval is elongated or shortened:

The QT interval should be **less than half** the distance **between R-R intervals.**

QT

Short QT Syndrome



QT

Short QT Syndrome KEY FACTS:

- Another "channelopathy" with genetic cause
- Short QT interval (< 340 ms)
- No change in QT with heart rate
- Peaked precordial T waves
- Treatment is with AICD

WPW

Wolf-Parkinson White

and other pre-excitation syndromes

WPW

Wolf-Parkinson White

and other pre-excitation syndromes

KEY FACTS:

- Not always visible on resting ECG
- Look for:
  - Short PR interval
  - Delta wave

The characteristic ECG findings in the Wolff-Parkinson-White syndrome are:

- Short PR interval (< 120ms)
- Broad QRS (> 100ms)
- A slurred upstroke to the QRS complex (the delta wave)

The ECG in SYNCOPE

6 Exotic things to look for

ARVD	Arrhythmogenic Right Ventricular Dysplasia
BRUGADA	Brugada syndrome
LVH	Left Ventricular Hypertrophy (AS and HOCM)
PE	Pulmonary Embolism
QT	QT Too Long / Too Short
WPW	Wolf-Parkinson-White