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Syncope – When do the Weak & Dizzies Need More Evaluation

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Pre-questions

1. Seizure excludes cardiac arrhythmia. Yes or No.

- 2. The most important diagnostic tool in syncope is carotid Doppler. Yes or No.
- 3. All patients with vasovagal syncope need permanent pacer. Yes or No.
- 4. All patients with long QT who has syncope needs ICD. Yes or No.





Syncope

Temporary loss of consciousness

<u>Differentials</u>

- Vasovagal syncope (VVS) most common
- Cardiac arrhythmia (tachy or brady)
- Seizure (can be secondary seizure from above due to hypoperfusion)
- Must differentiate arrhythmic from VVS
- Detailed history, physical, EKG, Echo



Features that may differentiate Vasovagal vs Arrhythmic (History)

<u>VVS</u>

- Triggers: needle, hot, fear, distress
- Prodromes (does not rule out arrhythmia)
- Position: often standing, could occur sitting or driving

<u>Arrhythmia</u>

- No triggers
- Could have prodromes
- No position related
- Face plant



Features that may differentiate Vasovagal vs Arrhythmic (Echo) <u>Arrhythmia</u>

- Normal LVEF
- No valvular abnormalities
- Reduced LV function or structure (high risk for VT, VF)
- Abnormal RV function or structure (arrhythmogenic RV dysplasia)
- Thick septum (hypertrophic cardiomyopathy)



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Critical aortic stenosis can also cause non arrhythmic syncope





Features that may differentiate Vasovagal vs Arrhythmic (EKG)

<u>VVS</u>

- Sinus rhythm
- No preexcitation
 , delta wave
- PR, QRS durations are normal
- QTc normal

<u>Arrhythmia</u>

- Wide QRS (conduction system disease)
- Delta wave (WPW, VF)
- Brugada
- Long QT
- LVH (Hocm)
- Ipsilon (ARVD)
- Ectopies on exercise (CPVD)



80 year old with murmur and face plant syncope while sitting

- EKG: bradycardia, LBBB
- Echo: severe aortic stenosis
- Differential: Bradycardia >> AS (sitting)

2:1 AV block with LBBB Pacemaker implanted



50 year old man with nocturnal syncope reported by wife

- He does not recall these events
- He has a brother and a father who passed away at his age





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55 year old man with murmur and exertional syncope

- Loud systolic murmur <u>RUSB</u>
- Exertional syncope
- EKG with LVH, NSVT 3
- Family history of cardi
- Became hypotensive c



Hypertrophic Obstructive Cardiomyopathy High risk features with syncope -> ICD



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75 year old man with prior MI presents with syncope

- Prodrome: dizziness, sense of impending doom



41 year old woman with syncope

- Saw a needle for a blood draw
- Prodroms: warmth, diaphoresis, clammy
- Had similar episodes in the past
- Normal Echo





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Vasovagal syncope (neurocardiogenic syncope)

- Could occur at any age.
- By age 60, 42% of women and 32% of men will have had at least 1 vasovagal syncope
- Generally benign with no increased mortality but recurrence rate is high
- History taking is the key triggers and prodromal symptoms

Reference: Sheldon et al. 2015 HRS Expert Consensus Statement on the Diagnosis and Treatment of Postural Tachycardia Syndrome, Inappropriate Sinus Tachycardia, and Vasovagal Syncope







Reference: Baron-Esquivias et al. Tilt Table Test: State of the Art. Indian Pacing and Electrophysiology Journal, 3: 239-252.



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Vasovagal Pacemaker Trial | & ||

- Pacer vs No pacer showed benefit in VPS I
- VPS II with pacer in both arms (on vs off), showed no significant benefit
- Current indication of pacing in VVS is for Tilt proven cardioinhibitory VVS – Class IIB

References: Connolly et al. J Am Coll Cardiol. 1999 Jan;33(1):16-20.; Connolly et al. JAMA. 2003 May 7;289(17):2224-9.





VPS I: risk of syncope



VPS II: time to first recurrence of syncope

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Special pacing mode for VVS

- Detect sudden drop of heart rate
- Pace rapidly >100bpm
- Attempt to increase cardiac output (CO = HR x SV)







Syncope with a needle stick

50 year old woman presents with recurrent syncope and her EKG shows QTc of 502ms. Her syncope occurs when she has blood draws. Her electrolytes are normal and she takes no medications. Next step?



- **1. ICD implantation**
- 2. Education for vasovagal syncope
- 3. Beta blocker therapy





Congenital LQTS Type I

1. She was treated for vasovagal syncope and life style modification was provided with no further syncope.

2. Beta blocker therapy was initiated with appropriate shortening of QTc to 470ms.

Genetic test confirmed Type I LQTS.
No ICD was implanted.





ICD indication (HRS Expert Consensus 2013) 1. ICD is mainly reserved for LQTS patients who are survivors of cardiac arrest (Class I)

- 2. ICD is contraindicated in patients with LQTS who are asymptomatic
- 3. ICD may be considered in patients who are symptomatic after beta blocker Rx (IIa)

$LQTS \neq ICD$

Treat with beta blockers first!





Evaluation of Syncope

- Most common: Vasovagal Syncope
- EKG features
 - Long QT
 - Brugada
 - WPW
 - ARVD
 - CPVT
 - Fascicular blocks, AV blocks
- Echo features
 - Cardiomyopathy (suspect VT)
 - Critical/severe aortic stenosis (exertional)
 - HOCM (exertional)

