

Management of Syncope in 2025

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Case Vignette

- o 27 Y/O man, Recurrent traumatic transient loss of consciousness during the last two years
- o Active: Body building, Football
- o No history of cardiac or non-cardiac disease
- o Abnormal EEG reported during a neurologic investigation treated as epilepsy but attacks persisted

Risk history

- o Waterpipe smoking

DH



Syncope: A Symptom...Not a Diagnosis

- Self-limited loss of consciousness and postural tone
- Relatively rapid onset
- Variable warning symptoms
- Spontaneous complete recovery



Syncope: Reported Frequency

Syncope probably affects most people over the course of their lives.

• Individuals <18 yrs	15%	
• Military Population 17- 46 yrs	20-25%	*during a 10-year period
• Individuals 40-59 yrs*	16-19%	
• Individuals >70 yrs*	23%	

Causes of Syncope in Patients Referred to Syncope Clinics

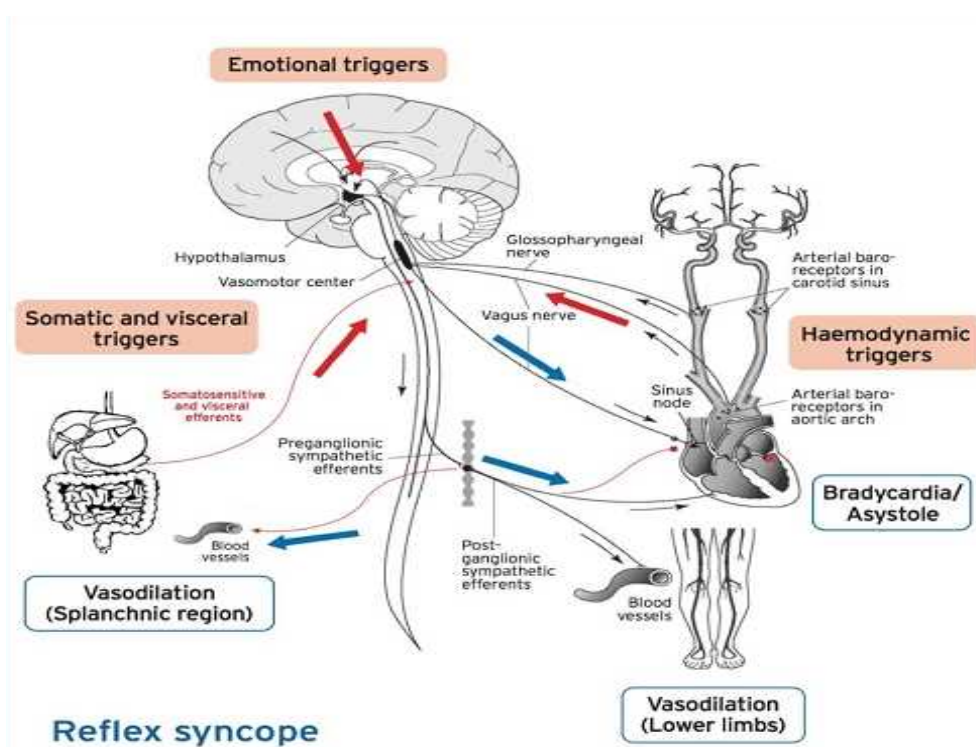
Neurally-Mediated	Orthostatic	Cardiac Arrhythmia	Structural Cardio-Pulmonary	Cerebro-vascular
1	2	3	4	5
• Vasovagal • Carotid Sinus • Situational ➢ Cough ➢ Post-micturition	• Drug Induced • ANS Failure ➢ Primary ➢ Secondary	• Brady ➢ Sick sinus ➢ AV block • Tachy ➢ VT ➢ SVT • Long QT • Brugada	• Aortic Stenosis • HOCM • Pulmonary Hypertension	• Steal Syndrome • TIA • Epilepsy
56%	2%	20%	3%	<1%

Unknown Cause = 18%

Alboni P, et al. JACC 2001; 37: 1921-1928

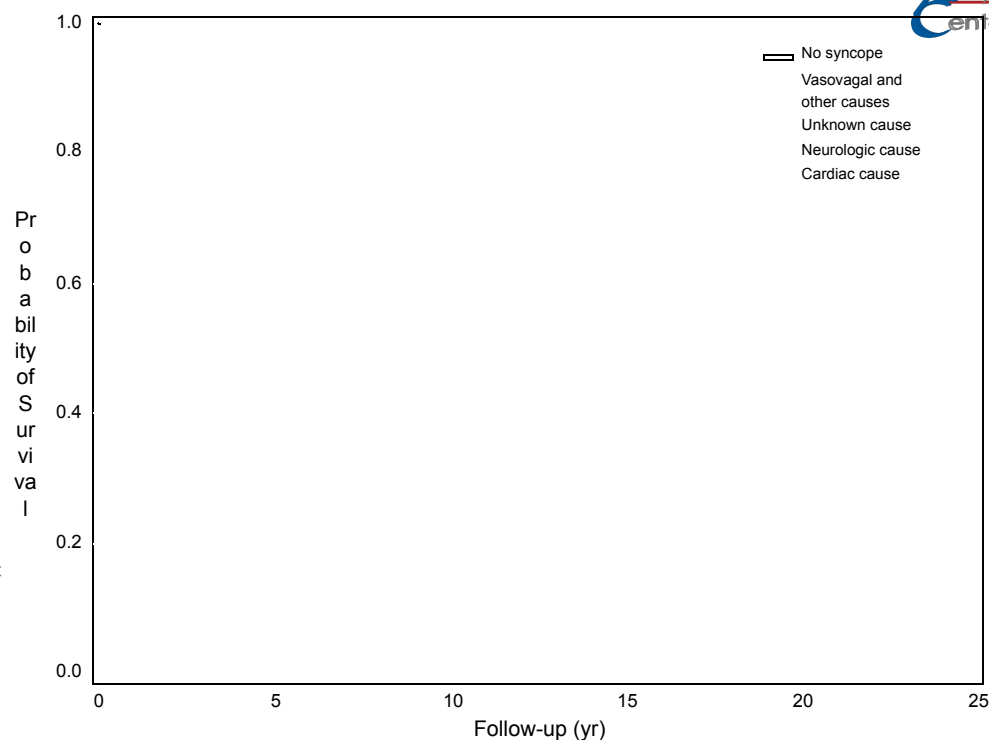
Neurally Mediated Syncope

Vasovagal Syncope

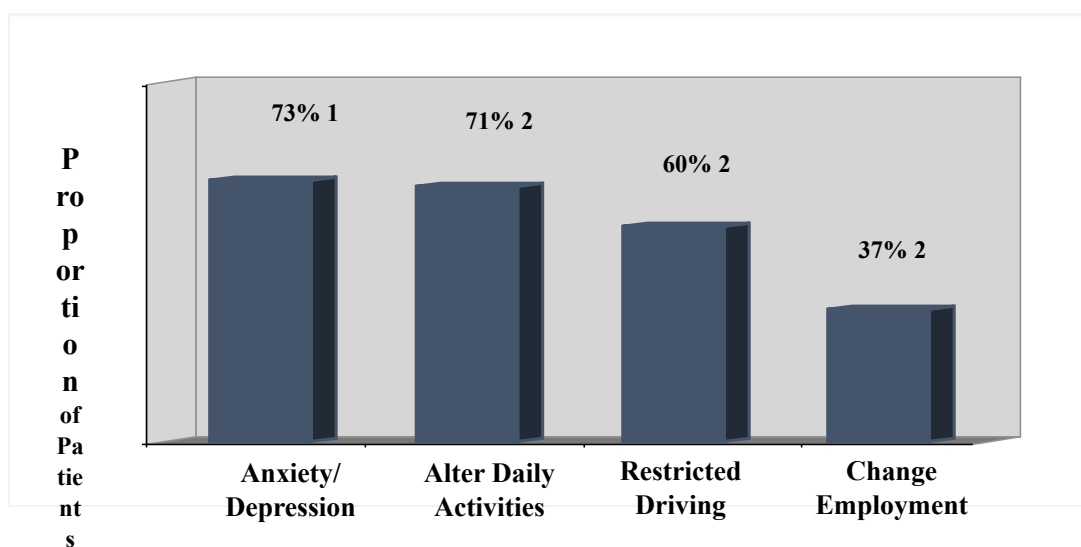


Prognosis

Soteriades ES, Evans JC, Larson MG, et al. NEJM. 2002;347:878-85.



Impact of Vasovagal Syncope (VVS)



1Linzer, *J Clin Epidemiol*, 1991.

2Linzer, *J Gen Int Med*, 1994.

First Question: Is It Syncope?

The first important issue is distinguishing syncope from several other symptoms.

- Vertigo
- Survived cardiac arrest
- Seizure
- Drop attack (Fall)



Syncope vs. Seizure

Clinical Features	Syncope	Seizure Disorders
Loss of consciousness	Typical	Common
Episode duration	Seconds	Minutes
Involuntary movements	Common	Typical
Amnesia	Yes	Yes
Arrhythmia	Common	Rare
EEG	Slow waves Flattening	Focal or general spike activity
Responsive to AED*	No	Often
Short term mortality	May be high	Low

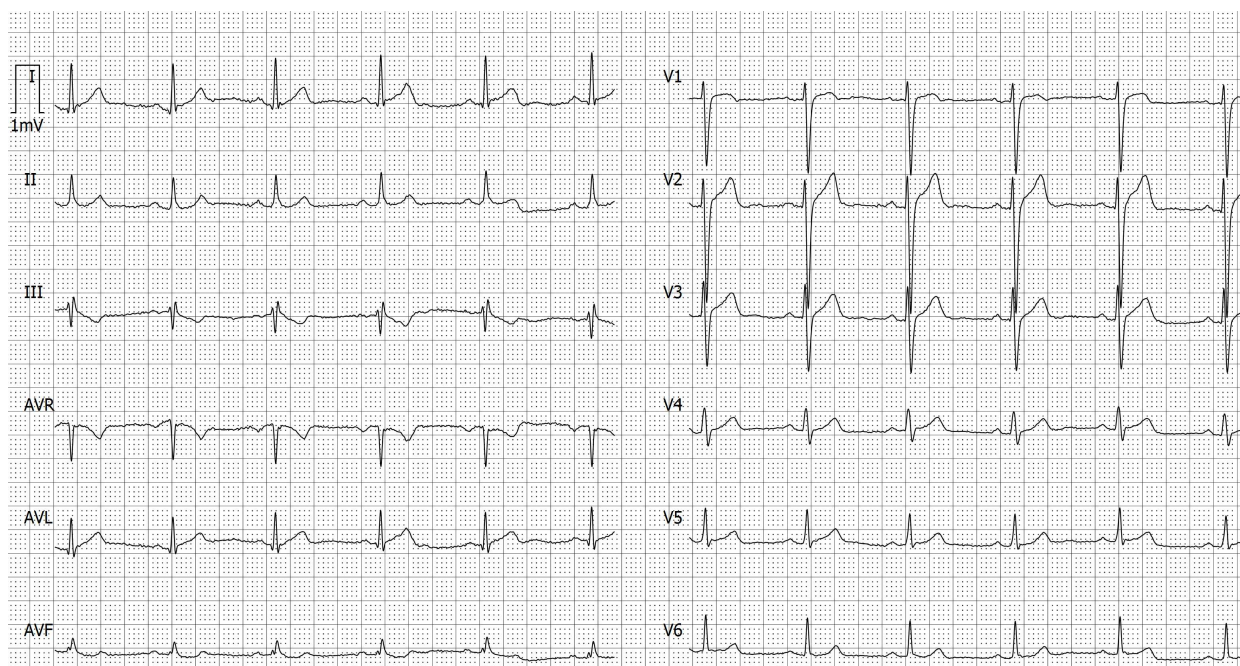
* Anti-epileptic drugs

Initial Evaluation

Of all tests for syncope,
a thorough history &
physical exam has the
highest diagnostic
yield.



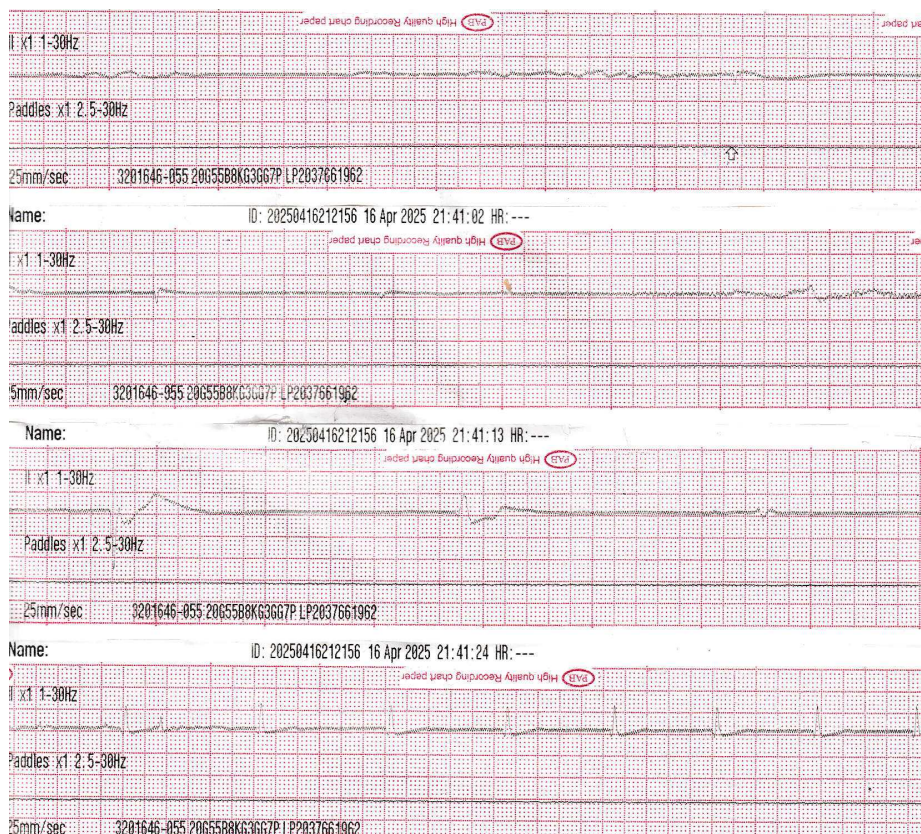
ECG



Head-up Tilt Test



20 seconds pause with symptom reproduction



What would you recommend for this patient?

1. Lifestyle modifications
2. Drugs
3. Pacemaker
4. All of the above

Management Strategies for VVS

Optimal management strategies for VVS are a source of debate

- **Nonpharmacologic/Noninvasive Management**
- Patient education, reassurance, instruction
- Fluids, salt, diet
- Physical counter-pressure maneuvers, Tilt Training
- Support stockings
- Drug therapies
- Pacing
- Cardioneuroablation



Management beyond Lifestyle Recommendations

- The cornerstone of management of these patients is non-pharmacological treatment.
- Only **14% of the highly selected patients** with reflex syncope need such additional treatment.
 - When very frequent syncope alters quality of life;
 - When recurrent syncope without, or with a very short, prodrome exposes the patient to a risk of trauma;
 - When syncope occurs during a high-risk activity (e.g. driving, machine operation, flying, or competitive athletics, etc.).

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Drug Therapy in Vasovagal Syncope

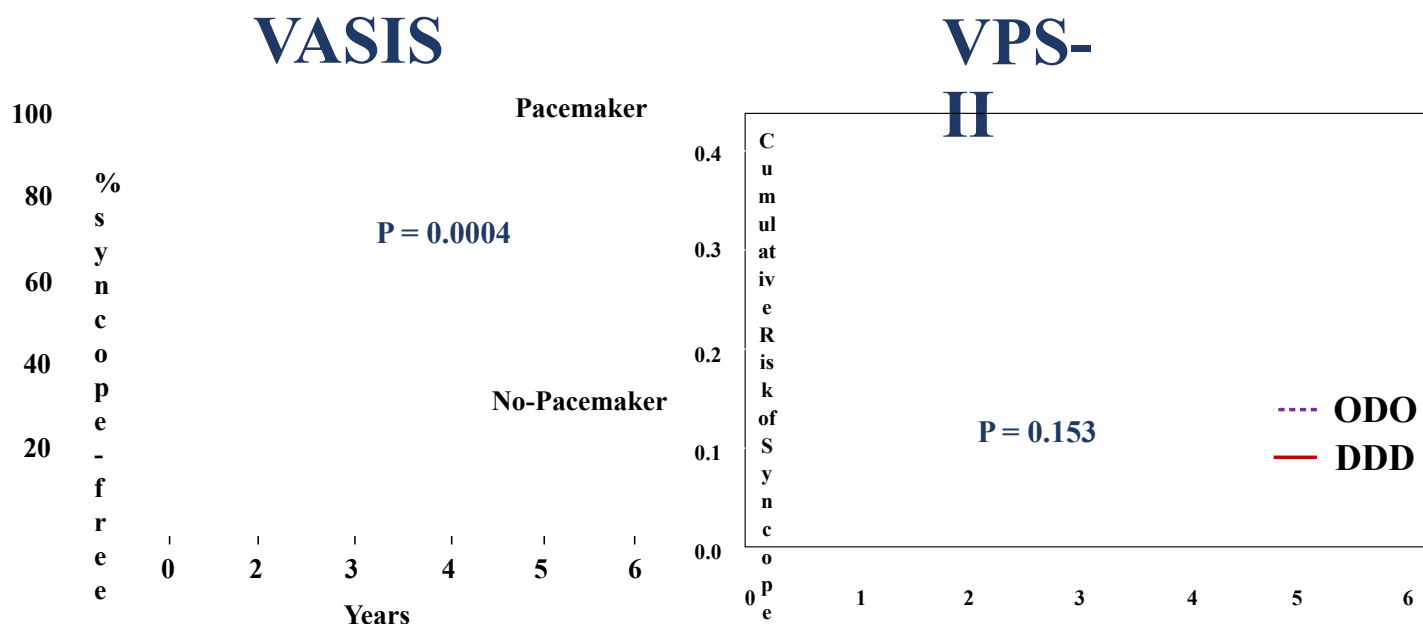
Pharmacological therapy		
Fludrocortisone may be considered in young patients with the orthostatic form of VVS, low-normal values of arterial BP, and the absence of contraindication to the drug. ²⁷⁵	IIb	B
Midodrine may be considered in patients with the orthostatic form of VVS. ²⁷⁸	IIb	B
Beta-adrenergic blocking drugs are not indicated. ^{279,280}	III	A

Management Strategies for VVS

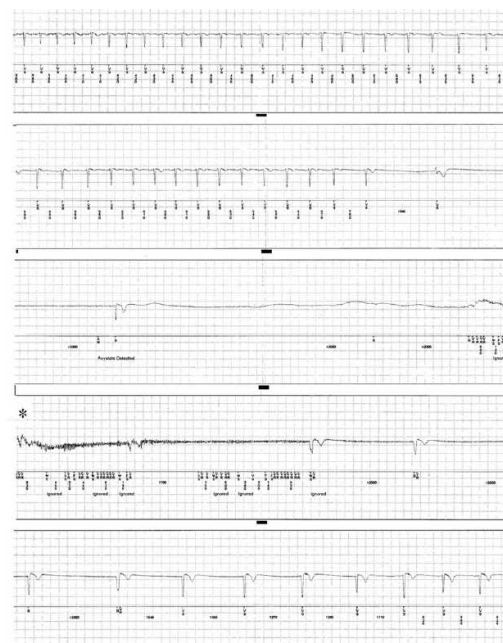
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Pacing in Cardioinhibitory VVS



Insertable Loop Recorder



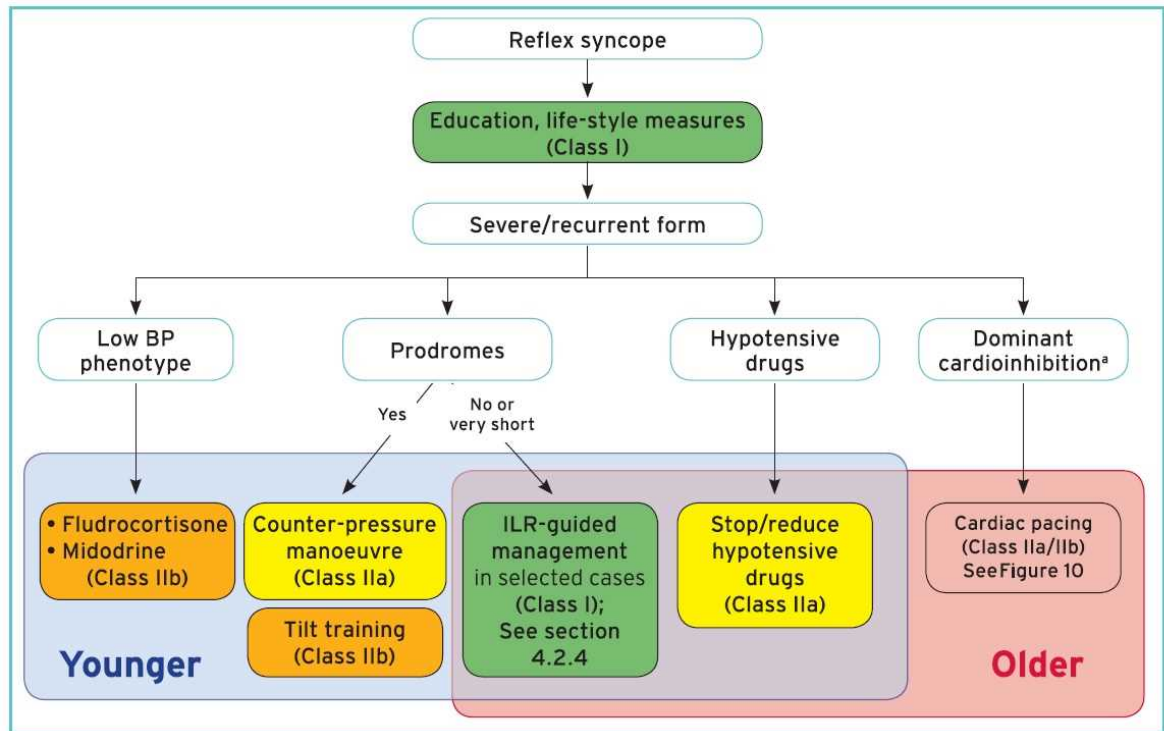
Pacing in Cardioinhibitory VVS



- In RCTs, there was no statistically significant benefit seen with active pacing.
- However, in a select population of patients **>40 years of age** with **recurrent syncope** and documented **spontaneous pauses ≥ 3 seconds correlated with syncope** or an **asymptomatic pause ≥ 6 seconds**, dual-chamber pacing reduced syncope recurrence.

COR	LOE	RECOMMENDATION
IIb	B-R ^{SR}	Dual-chamber pacing might be reasonable in a select population of patients 40 years of age or older with recurrent VVS and prolonged spontaneous pauses (404-408,410).

2017 ACC/HRS Guidelines



2018 ESC Guidelines

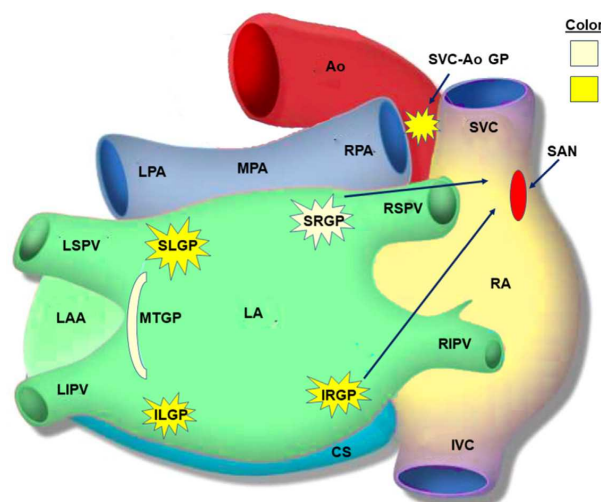
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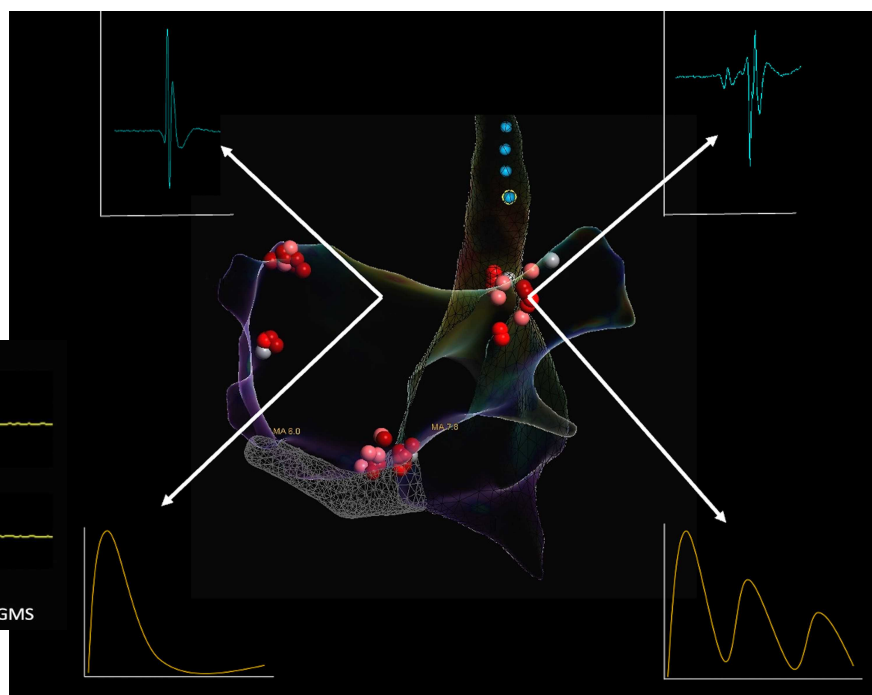
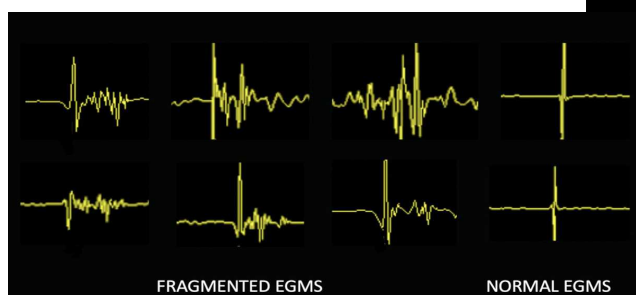
Cardioneuroablation

- Cardioneuroablation (CNA), by ablating the ganglionated plexi (GP), has emerged as a novel therapy for selected patients with VVS as well as functional SA disease and AV block.
- The aim of CNA is to achieve parasympathetic denervation of the SA node and/or AV node to minimize the bradycardic responses during VVS.

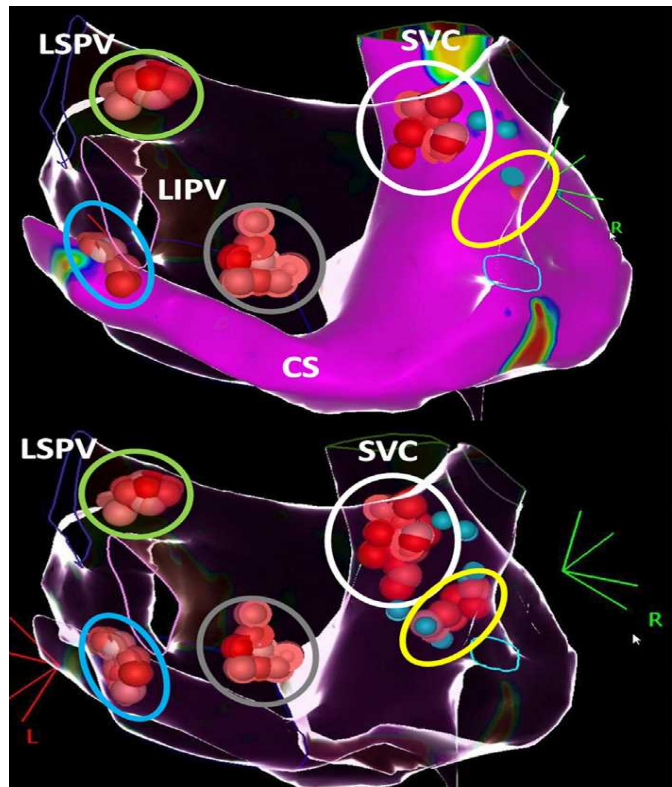


EP Europace. 2005;7(1):1-13.
Circul Arrhythm Electrophysiol. 2012;5(2):279-286.

Electrogram Approach



Anatomically Guided Approach



Studies on CNA

- Based on the possible pathophysiological role of the autonomic nervous system in triggering atrial fibrillation (AF), the first visionary study on CNA was published by Pachon et al in 2005.
- Yao et al. published the first experience on autonomic denervation in the left atrium in treating vasovagal syncope in 10 patients in 2012.
- There is now an increasing enthusiasm in the cardiac electrophysiology community to adopt CNA to treat VVS.
- Several trials, mostly non-randomized, have demonstrated the efficacy of CNA as an alternative treatment of VVS and there has been a rapid surge in CNA procedures across the world.

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Circul Arrhythm Electrophysiol. 2012;5(2):279-286.

What would you recommend for this patient?

1. Lifestyle modifications
2. Drugs
3. 3. Cardioneuroablation (CNA)
4. All of the above

Take Home Messages

- Syncope may be a harbinger of SCD.
- Investigations and Risk stratification are the key.
- Lifestyle modifications and Nonpharmacologic treatments are effective for most patients.
- For the exceptional refractory ones newer treatment modalities including pacing therapies and Cardioneuroablation should be considered.



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