SYNCOPE: WHEN TO WORRY
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Relationships with commercial interests:
► Grants/Research Support: Bayer
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► All the recommendations involving clinical medicine are based on evidence that is accepted within the profession.
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► The presentation will mitigate potential bias by ensuring that data and recommendations are presented in a fair and balanced way.
► Potential bias will be mitigated by presenting a full range of products that can be used in this therapeutic area.
Objectives

• To review an approach to investigation of syncope

• To review the management of syncope

• To review the less common but malignant cardiac causes of syncope
Case 1

- 42M with a brief blackout
  - Prior lightheaded episodes x 9 months
  - Occurred while playing soccer

- PMH: prior knee surgery, otherwise healthy

- Meds: Tylenol PRN
Differential Diagnosis

- Vasomotor
- Obstructive / Structural
- Arrhythmia
- Other

Investigations

History

Weight of the evidence?

Common Benign Etiology (Vasomotor)

Rare Malignant Etiology
Vasomotor Syncope

• Most often upright, can occur while sitting

• Common triggers:
  - Post-prandial, warm day, prolonged standing
  - Post-micturition, post-cough, post-exertion
  - Stress, startle, pain

• Prodrome:
  - Fatigue, nausea, sweating, pallor, visual disturbance, abdominal pain, light-headed
Good Questions to Ask

• Don’t ask “Did it happen suddenly?”
• Instead, consider:
  – What’s the last thing you remember?
  – Did you have a chance to brace yourself?
  – Did you know something was about to happen?
Case 1 Syncope History

- Was playing beer-league soccer
- Chasing the ball, found himself on the ground
- Teammates were around him when he awoke
Exertional Syncope – High Risk

• Key differential diagnosis
  - Mechanical: aortic stenosis, hypertrophic obstructive cardiomyopathy
  - Arrhythmogenic: long QT, coronary disease, catecholaminergic polymorphic VT, arrhythmogenic RV cardiomyopathy
Aortic Stenosis / HOCM

Normal aortic valve
Closed

Open

Stenotic aortic valves

Open bicuspid aortic valve with stenosis (congenital defect)

Aortic valve with stenosis (open)

Aorta

Left atrium

Left ventricle

Small left ventricle

Thickened ventricular septum

www.mayoclinic.org
Clues for Diagnosis

Aortic Stenosis
- Delayed carotid upstroke
- Systolic ejection murmur to carotids

HOCM
- Normal carotid upstroke
- Mid-systolic murmur

Murmur + exertional syncope requires an echocardiogram
Coronary Ischemia

Cardiac risk factors

Exertional CP

Key screening test is a treadmill test
Catecholaminergic PMVT

Genetic abnormality in Ca++ handling

Hallmark is ventricular arrhythmias induced by emotional or exertional stress

Family history of sudden death

Key screening test is a treadmill test

Arrhythmogenic RV Cardiomyopathy
Fibrofatty replacement

Fibrofatty replacement of RV
Prevalence ~ 1:1000
1/3 present with syncope

Key screening tests are an ECG, an echocardiogram, and possible MRI

Courtesy: Ottawa Heart Institute
Long QT Syndrome

In general, beware of syncope with a QTc > 480-500ms
Torsades de Pointes
Exertional Syncope Summary

• Syncope after exercise is common
• Syncope **during** exercise is high risk

• Consider causes:
  - Mechanical – Aortic stenosis, HOCM
  - Arrhythmia – Long QT, ARVC, CPVT, and coronary disease

• First tests = ECG, echo, treadmill test
Case 2

• 62M with a fall
  - Unsure if he tripped
  - Thinks he may have blacked out
  - Poor recollection of events

• PMH: hypertension, arthritis, gout
• Meds: HCTZ, ibuprofen, allopurinol
Work-Up for Sudden Syncope

• Similar rules apply as for exertional syncope

• When suspicious, best first tests are
  - ECG
  - Echocardiogram
**Echo / Structural Heart Disease**

- **Clues for structural heart disease**
  - Bundle branch blocks
  - Q wave infarcts
  - LVH, systolic ejection murmur

- Poor LVEF best prognosticator for risk of VF

- In general, structurally normal hearts have a low risk of malignant tachycardia
Sinus with “Tri-fascicular” block

No investigations needed if asymptomatic, but an empiric pacemaker is reasonable for bifascicular block with syncpoe
Brugada Syndrome
Brugada Syndrome

**Type-1**

**Type-2**

**Type-3**

Syncope triggered by fever... think Brugada
Wolff Parkinson White
WPW with Atrial Fibrillation
Quick Case 3

- Worrisome rare syncope (e.g. MVC)
- Normal ECG, echo, treadmill test
- Now what? (this is common)

When in doubt, obtain “Symptom-Rhythm Correlation”
Implantable Loop Recorder

- 2-3 year battery life
- Diagnosis made with next event
Summary

- Vasovagal syncope is largely a clinical diagnosis and, by far, the most common

- Red flags: sudden attacks, during exercise, known cardiac disease, family history

- Key tests: ECG, echo, treadmill test if exertional, and symptom-rhythm correlation
“She’s going to need a prescription for light-headedness. She fainted when I told her how much her meds cost.”