

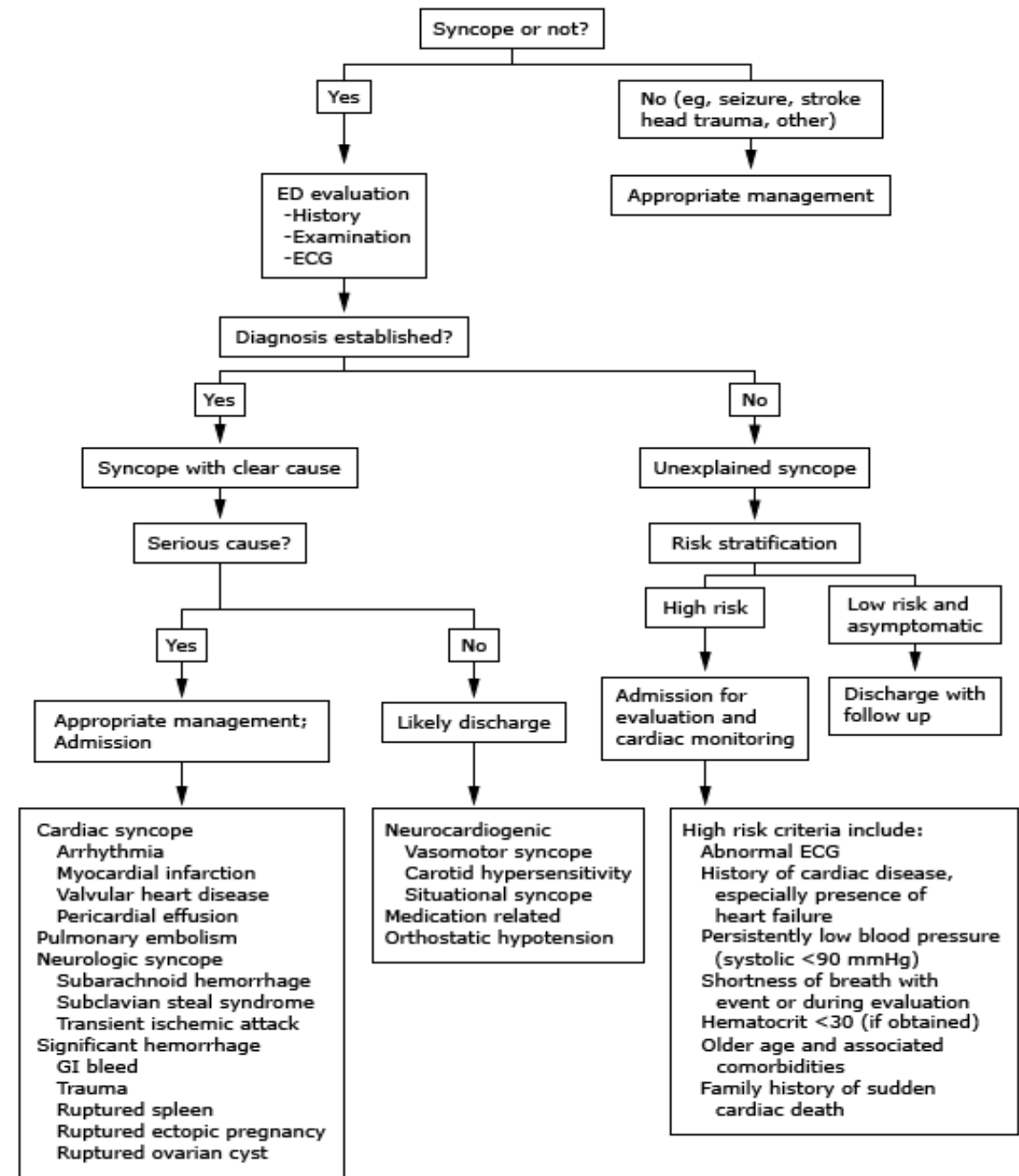


Syncope diagnosis, intervention and management

Tasnim Ahmad Hussein



Algorithm for diagnosis of syncope in ED



History :

- usually sufficient to **secure a diagnosis without the need for detailed investigations.**
- Ask for potential triggers known by the patient or witnesses; because it might suggest the cause
- There are THREE key elements need to be determined :
 - Events **before** syncope (premonitory symptoms/prodrome).
 - **During** syncope (characteristic of the episode itself) .
 - **After** syncopal episodes (recovery) .
- Key features for *history of previous attack* include:
 - Number, frequency, duration of episodes.
 - Onset.
- *Family* history of cardiac, neurological, psychiatric disorder, sudden unexpected death before age of 40 years old.
- Medical history of prior MI, symptoms of congestive cardiac failure.
(Life-threatening if positive)
- Check patient's *medications* (especially important in elderly patients) .

PHYSICAL EXAMINATION:

- Priority given to cardiovascular system.
- Transient hypotension/ bradycardia is normal during most syncopal events, So persistent is the abnormal.
- Worrisome signs:
 - abnormal vitals.
 - abnormal cardiac, pulmonary, neurologic exam.
- Look for :
 - **Vitals** as Pulse rate and rhythm, BP measurement.
 - **Cardiac auscultation:** to identify structural (valvular) heart disease, as Murmurs that indicate for aortic stenosis, hypertrophic cardiomyopathy.
 - **Neurologic findings:** as facial/arm weakness , dysarthria (difficulty in speaking) that suggests neurological cause like stroke, transient ischemic attack.
 - **Injuries** which might be happened as a result of syncope especially if patient falls.
 - **Mental status** (postictal state).
 - **ECG:** should be obtained for all patients with syncope.
 - May identify *life-threatening* causes (arrhythmias, new/old heart attack).
 - Sometimes ECG doesn't capture arrhythmia disturbances that seems HOLTHER MONITER to be used.

Investigation :

- **Ambulatory ECG monitoring** (Prolonged ECG monitoring) :
 - Non-invasive ambulatory monitoring: a portable ECG that records the heart rhythm during day and night.
- **Holter Monitor** for 24-48 hours OR **continuous loop recorders** for a few weeks.
 - In order to catch the next syncopal episodes that might happen.
- **Cardiac electrophysiological (EP) study:** invasive catheter for placement of electrodes into the heart to assess the cardiac rhythm in response to atrial and ventricular stimulation protocols.
- **TILT TABLE TEST.**
- **Lung scan.**
- **Blood test such as:** - CBC & HEMATOCRIT. - Metabolic panel.
- **Carotid sinus massage.**
- **Echocardiograph:**
 - non-invasive, undetermined cause outpatient test, which should be considered early in the investigation of syncope.
 - essential before an exercise test, undertaken for exertional syncope.
- **Exercise testing:**
 - Targeted use of exercise testing aims to confirm and quantify coronary artery disease in those suspected of having it, and in ruling out coronary disease and exercise-induced arrhythmias in patients presenting with exertional syncope.
- **Brain Imaging: CT / MRI .**
- **Neurologic studies** such as EEG or neurovascular imaging .

Investigation	Indication
ECG	- all patients presenting with syncope
Echocardiogram	- all patients with syncope of undetermined origin based on a detailed history, physical examination and ECG analysis. - essential before an exercise test, undertaken for exertional syncope.
Exercise test	- when symptoms are associated with exertion, or there is suspected coronary disease.
Prolonged ECG monitoring	- syncope in individuals with a family history of premature sudden unexpected death. - syncope occurs with suspected structural heart disease, in suspected arrhythmogenic syncope
Cardiac electrophysiological (EP) study	- in patients with recurrent syncope and structural heart disease.
Tilt table testing	- in patients with recurrent unexplained syncope (likely to be vasovagal) where structural heart disease is either not suspected or has been excluded as the cause.
Carotid sinus massage	- Carotid sinus massage is indicated in elderly patients with recurrent unexplained syncope or falls (“drop attacks”), especially if the symptoms suggest carotid sinus syndrome.
Electroencephalogram (EEG)	- may be useful where the diagnosis of syncope is uncertain and a spontaneous epileptic seizure is suspected, especially in a patient below the age of 25 years.
Brain imaging	- only if there is a significant likelihood of seizure, new onset focal neurological symptoms or signs, or if headache consistently precedes the episodes.

TABLE:
Summary of
investigation
method and
its indication

Management:

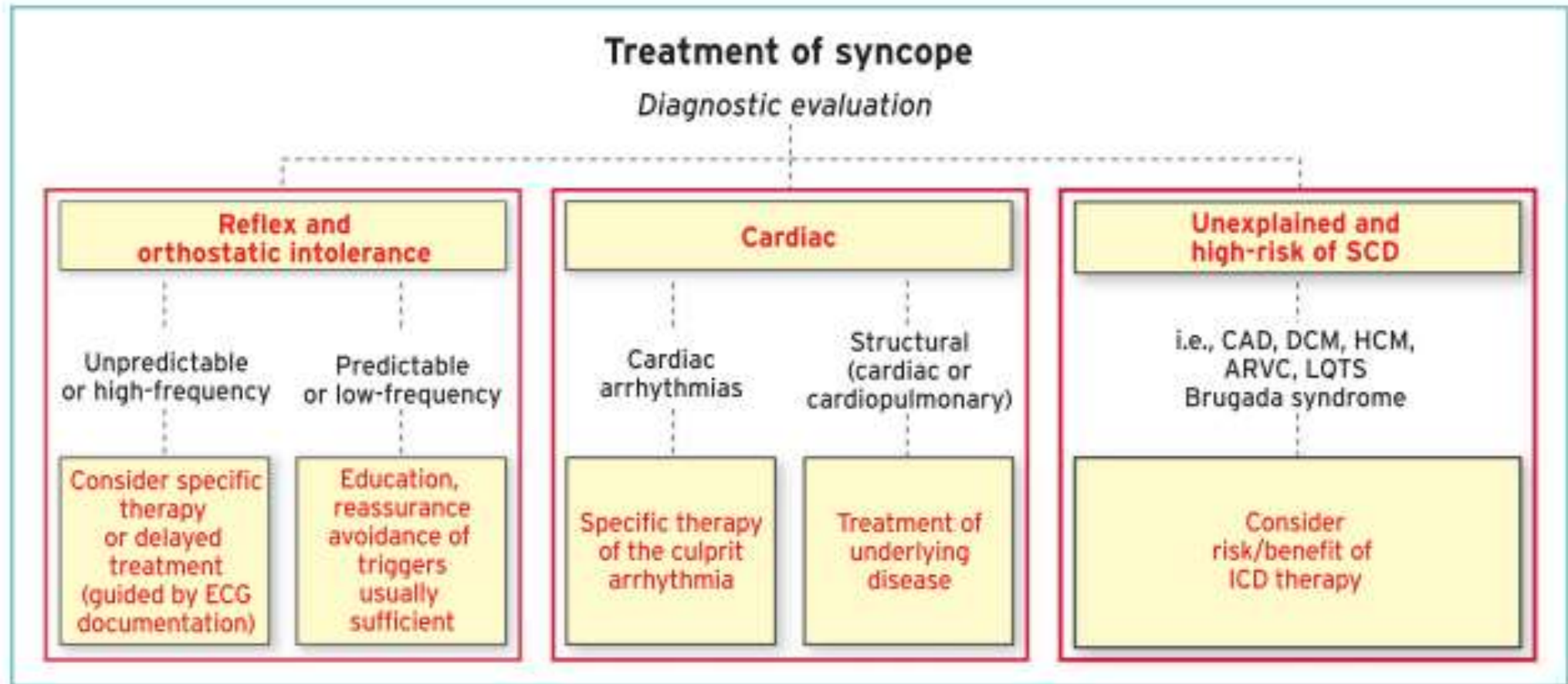
- Focuses on the underlying cause .
- When a clear diagnosis may not be found it's called unexplained syncope.
- We can divide the cases into :
 - When there is a clear cause and it's a Life-threatening (as cardiac syncope, PE, severe hemorrhage), Then the patient should be admitted for proper management (In-patient) .
 - When there is a clear cause and it's a not Life-threatening (as orthostatic hypotension), Then the patient may discharge for follow up (out-patient).
 - When the cause is unexplained, High risk features present, including:
 - abnormal ECG
 - History of cardiac disease.
 - Persistently low BP.
 - Dyspnea .
 - Hematocrit < 30 %.
 - Older age & associated comorbidities .
 - Family history of sudden cardiac death.should be managed as Life-threatening syncope, Then admitted for management and cardiac monitoring.
 - When the cause is unexplained, Low risk features present , should be managed as non-life-threatening Then discharged as outpatient follow up.

Acute episode of syncope

- The goal is to make sure blood returns into brain By positioning the person on the ground with like slightly elevated to leaning forward with the head between the knees for at least 10-15 minutes.

Treatment:

- If syncope caused by cardiac disease :
 - Treat the underlying cause for example by Pacemaker, cardioversion-defibrillators, to maintain adequate heart rate depending on precise cardiac cause.
- If it was vasovagal syncope (reflex syncope):
 - Can usually be reversed by assuming the supine posture and elevating the legs.
 - Beta-blockers and disopyramide.
 - Prognosis is excellent.
- If it was orthostatic hypotension :
 - Increase the sodium intake and fluids.
 - Consider fludrocortisone if recurrent.
 - Remember to treat other underlying causes if identified such as withdrawal of offending medication .



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Figure 8 General framework of treatment is based on risk stratification and the identification of specific mechanisms when possible. ARVC = arrhythmogenic right ventricular cardiomyopathy; CAD = coronary artery disease; DCM = dilated cardiomyopathy; ECG = electrocardiographic; HCM = hypertrophic cardiomyopathy; ICD = implantable cardioverter defibrillator; LQTS = long QT syndrome; SCD = sudden cardiac death.

Thank you

Resources:

- Step up to medicine 5th edition.
- Davidson's Principles & Practice of Medicine.
- Macleod's 14 edition.
- Online Articles and Videos.