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## Review

## Reflex syncope: Diagnosis and treatment

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## ABSTRACT

For the diagnosis of reflex syncope, diligent history-building with the patient and a witness is required. In the Emergency Department (ED), the assessment of syncope is a challenge which may be addressed by an ED Observation Unit or by a referral to a Syncope Unit. Hospital admission is necessary for those with life-threatening cardiac conditions although risk stratification remains an unsolved problem. Other patients may be investigated with less urgency by carotid sinus massage (> 40 years), tilt testing, and electrocardiogram loop recorder insertion resulting in a clear cause for syncope. Management includes, in general terms, patient education, avoidance of circumstances in which syncope is likely, increase in fluid and salt consumption, and physical counter-pressure maneuvers. In older patients, those that will benefit from cardiac pacing are now well defined. In all patients, the benefit of drug therapy is often disappointing and there remains no ideal drug. A role for catheter ablation may emerge for the highly symptomatic reflex syncope patient.

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## 1. Introduction

Much has been written on the diagnosis and treatment of reflex syncope. This review will attempt to offer emphasis on new aspects and approaches. Syncope is a common symptom that

affects approximately 40% of humans during a lifetime [1]. Many episodes are unreported or are seen later by family physicians who, in the majority of cases, appropriately offer only reassurance [2]. More concerning episodes arrive in the Emergency Department (ED) accounting for about 1% of the workload [3]. In many countries attendance at the ED is followed by hospital admission as an inpatient for a costly attempt at diagnosis of the cause of syncope which often fails to yield the diagnosis sought [4]. In this unsatisfactory state of affairs, there is subsequent recurrence of syncope and mortality that is potentially avoidable [5].

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The justification for the study of syncope is its common occurrence, frequent misdiagnosis, and mismanagement.

## 2. Methods

A PubMed search was conducted using the terms 'Syncope', 'Reflex Syncope', 'Diagnosis of Reflex Syncope', and 'Treatment of Reflex Syncope'. The selected articles from this search plus my own database act as the basis for this review.

## 3. Diagnosis of syncope

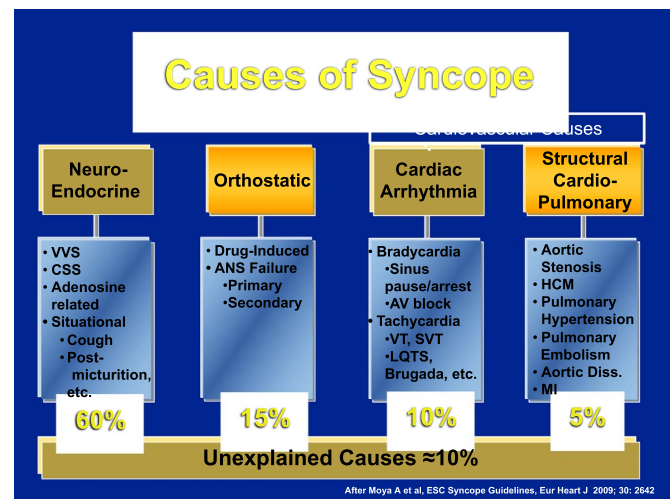
The diagnosis of syncope is clinical in the first instance which is demanding of the physician to address in a thorough, time-consuming, and detailed fashion. Without such an approach, there can be no clinically valuable result. This is not modern medicine, as is generally seen, but old-fashioned 'slow' medicine. As well as the details of all events experienced by the patient from beginning to end, a careful assessment of medication history including diet with special attention to fluid and salt consumption, activity, patient's background, and past medical history and family history are required [6]. Leading questions must be avoided, and when something does not fit into a pre-conceived pattern, it should not be ignored. When attacks are multiple, it may help to ask a family member or friend to record an attack on a cell phone. An appreciation of the circulatory physiology underlying the symptoms is essential to their full understanding. In the case of syncope, much anxiety is embodied in the patient and the family because of the drama of the event. It is necessary for the physician to understand this and to keep it in mind throughout the analysis of the symptom. An approach of this nature will gain the confidence of the patient, lead to more important details being revealed, and the enhancement of the doctor-patient relationship which is very essential during the possible tribulations of the treatment phase [6,7].

### 3.1. Transient loss of consciousness

Transient loss of consciousness (TLoC) will be reported by an observer or by the patient. It is necessary to determine the cause of the TLoC. There are three categories that are pertinent. First, concussion causes TLoC, but in such cases, trauma is usually evident before the TLoC, and the loss of consciousness may be of a longer duration than that of a typical syncope which is 1–2 min. The second group of TLoC presentations is composed of syncope and epileptic seizures. An initial consideration is that syncope presenting in the ED is approximately 10 times more common than is epileptic seizure. The differential diagnosis between syncope and epilepsy has recently been reviewed by Sheldon [8]. Separation is of great importance as substantial numbers of patients have been shown to be attending epilepsy clinics where the diagnosis is reflex syncope [9]. Both reflex syncope and epilepsy carry risk to the patient in the short- and long-term, emphasizing the importance of correct diagnosis. The third category is syncope mimics which are mainly psychogenic pseudosyncope (PPS). These two latter categories will receive more attention and in doing so, a definition of syncope is helpful. This definition is now accepted in Europe [3] and in North America [10].

### 3.2. Syncope definition

Syncope is a syndrome in which loss of consciousness is of relatively sudden onset, temporary (usually < 1–2 min), self-terminating, and of usually rapid recovery. It is due to inadequate



**Fig. 1.** Causes of syncope. Adapted from Moya et al. [3]. Abbreviations: ANS, autonomic nervous system; AV, atrioventricular; CSS, carotid sinus syndrome; Diss., dissection; HCM, hypertrophic cardiomyopathy; LQTS, long QT syndrome; MI, myocardial infarction; SVT, supraventricular tachycardia; VT, ventricular tachycardia; VVS, vasovagal syncope.

cerebral perfusion most often caused by a fall in systemic arterial pressure.

### 3.3. Causes of syncope

The causes of syncope are many and these are laid out in Fig. 1. Physicians attending patients with syncope are required to know these causes and consider them. The Figure has been modified from that in the European Society of Cardiology (ESC) Guidelines to include adenosine-related syncope, but since this is not considered to be a reflex syncope, it is not covered in this article. Reflex syncope includes vasovagal syncope (VVS), situational syncope, and carotid sinus syndrome (CSS).

Having first determined from the patient's history and a witness account that the episode was TLoC and subsequently determined that it was syncope, with further probing by history taking, better termed history-building, the cause of syncope can be determined in up to 90% of cases. The history from a witness is as important as the history from the patient because the patient can tell us nothing about the period of loss of consciousness. A witness may not necessarily attend the hospital with the patient but may often be reached by cell phone. This must be part of the history-building. History-building is an old technique of bringing the patient into a face-to-face discussion of what happened with interest, empathy, and enthusiasm shown by the physician in contrast to today's norm of a physician, invisible to the patient behind a computer, bawling out questions with great rapidity, and barely listening to the answers. The slow and empathetic approach not only builds the history but also builds the doctor-patient relationship [7,11]. The two aims of history-building are (1) to identify the specific cause and mechanism of the event in order to apply effective treatment, and (2) to assess the prognostic risk including death, severe adverse events, and syncope recurrence.

For syncope, interrogation must begin with how the day started, for example, was the patient tired on arising from bed? The role of triggers must be probed. Details of the prodrome must be collected. The unconscious period will be reported by the witness and the patient will explain how the recovery and the remainder of the day were. This is the required level of detail for each and every attack [6,7,11].

Syncope has a bimodal distribution through life with peaks in teenage years and when old, rising progressively beyond 40 years

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