Syncope with HCM: Hemodynamic or Arrhythmic?

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Unexplained origin of syncope is regarded as one of the risk factor of sudden cardiac death in hypertrophic cardiomyopathy (HCM), and therefore suggested as a one of criteria for prophylactic implantable cardioverter defibrillator (ICD). However, the mechanism of syncope in HCM has not been elucidated fully. Therefore, the recent expert consensus guideline for management for HCM patients with syncope is relied on clinical instituition rather than data-based evidence.

The cause of syncope in patients with HCM could be broadly divided into two underlying mechanisms: arrhythmia and a primary hemodynamic mechanism. Almost 50% of SCD's in HCM patients occur during or soon after exercise. LV outflow tract obstruction was initially thought to be the usual cause of syncope and hypotension on exertion in HCM. Syncope during effort was significantly more common in patients with LV outflow obstruction than in patients without obstruction, whereas unexplained syncope at rest and neurally mediated syncope showed no relation to obstruction. These findings suggest that syncope may have a hemodynamic basis in some patients with outflow obstruction.

Syncope in HCM may be related to atrial or ventricular tachyarrhythmias or bradyarrhythmias, heart block, or sinus node dysfunction. Non-sustained ventricular tachycardia is common in HCM, but is not usually associated with symptoms. Indeed, typically episodes occur most commonly during sleep. In contrast, sustained ventricular tachycardia (VT) is relatively uncommon in HCM, but can be a cause of syncope.

Syncope and presyncope occur in about 15–25% of patients with HCM, and in young patients with a history of recurrent syncope are associated with an increased risk of SCD. Detailed investigations identify a probable mechanism usually paroxysmal atrial fibrillation or VT. In the majority of cases, however, no likely mechanism is found despite extensive investigation. However, it is still of vital importance to exclude the potentially treatable causes of syncope.