Cardiovascular disease

ECG-based tool aids rapid risk assessment for a cardiac cause of syncope

In patients with a syncopal event, a combination of seven ECG criteria enabled a rapid assessment of the likelihood that the event was due to a cardiac cause, in a prospective multicentre trial.

A total of 2,007 patients, aged over 40 years, presenting to the emergency department with syncope within the past 12 hours were recruited to the BASEL IX study from May 2010 to July 2017. The median age of patients was 71 years and 40% were women.

The participating centres ranged from large university hospitals to smaller rural hospitals in eight countries (Switzerland, Germany, Poland, Spain, Italy, Australia, New Zealand, and the USA).

12-Lead ECG recordings were obtained at presentation following the syncopal event. The primary diagnostic outcome was a cardiac cause of syncope, and this was determined by two independent cardiologists using all available clinical information including 12-month follow-up.

The authors identified seven ECG criteria as predictors for a cardiac cause of syncope. These were: heart rate; corrected QT-interval; rhythm; atrioventricular block; ST-segment depression; bundle branch block and ventricular extrasystole/non-sustained ventricular tachycardia. These predictors were used to generate a risk score ALERT-CS.

The Improving Syncope Risk Stratification in Older Adults study was used as the external validation cohort. This prospective multicentre observational cohort study enrolled adults aged 60 years and older at 11 emergency departments in the USA, who presented with syncope or near-syncope. Median age was 72 and 48% were women.

In the BASEL IX study, the diagnostic accuracy of these combined predictors (ALERT-CS) for a cardiac cause of syncope was high with an area under the curve (AUC) 0.80 (95% CI: 0.77-0.83).

Patients with an adjudicated cardiac cause of syncope (n = 267, 16%) were older and had a higher prevalence of known cardiovascular disorders. Bradycardia (n = 121, 45%) and tachyarrhythmia (n = 60, 22%) were the two most common subtypes of a cardiac cause of syncope.

The ALERT-CS performed similarly for diagnosing cardiac causes of syncope of tachyarrhythmic origin AUC 0.82 (95% CI: 0.76-0.87) and bradyarrhythmic origin AUC 0.78 (95% CI: 0.74-0.83, P = 0.328)

Around 10% (n = 175) of patients experienced a major adverse cardiac event within 30 days of the index event, defined as all-cause death, acute myocardial infarction, life-threatening arrhythmia including cardiac arrest, pacemaker or cardioverter defibrillator implantation.

Patients in the ALERT-CS rule-in group for a cardiac cause of syncope had a significantly increased risk: HR 35.7 (95% CI: 8.8-145.5) compared with the rule-out group, which had a very low risk (HR set to 1.0 as the reference group).

Syncope is a relatively common presenting problem in primary care and often causes considerable anxiety in both physicians and patients alike, associated with diagnostic uncertainty, and may result in unnecessary investigations. Prompt determination of syncope aetiology is essential for the initiation of evidence-based therapy, particularly for patients with a cardiac cause.

However, in many cases referral to specialist cardiology services can be avoided with a careful history and 12-lead ECG. This study highlights the importance of performing a 12-lead ECG in all patients presenting with syncope and furthermore highlights criteria that can be used to judge the importance of any abnormalities seen and facilitate prompt referral of those patients with a suspected cardiac cause.

The study authors conclude: 'Combining seven ECG criteria within the simple ALERT-CS may aid emergency department physicians in the early rule-out or rule-in of a cardiac cause of syncope.'

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Zimmermann T, du Fay de Lavallaz J, Walter JE et al, the BASEL IX and SRS Investigators. Development of an electrocardiogram-based risk calculator for a cardiac cause of syncope. *Heart* 2021;107:1796-1804

Cardiovascular disease

Can choice of anticoagulant for AF influence risk of incident dementia?

Dementia and mild cognitive impairment were less common among patients prescribed direct oral anticoagulants (DOACs) for newly diagnosed atrial fibrillation (AF) compared with those prescribed vitamin K antagonists (VKAs), in a UK cohort study.

The authors used electronic health records from the UK Clinical Practice Research Datalink, linked to Hospital Episodes Statistics and Index of Multiple Deprivation data, to identify first-time oral anticoagulant users with non-valvular AF diagnosed between 2012 and 2018.

They compared the incidence of dementia and mild cognitive impairment in patients prescribed VKAs and those prescribed DOACs.

The statistical analysis accounted for variables such as calendar time and time on treatment, sociodemographic and lifestyle factors, clinical comorbidities and other medication.

Of 39,200 first-time oral anticoagulant users (44.6% female), median age 76 years, 20,687 (53%)