Differential diagnosis

A simple algorithm improved physicians' diagnostic performance for patients presenting with syncope

Ammirati F, Colivicchi F, Santini M, on behalf of the investigators of the OESIL study. **Diagnosing syncope in clinical practice. Implementation of a simplified diagnostic algorithm in a multicentre prospective trial—the OESIL 2 Study (Osservatorio Epidemiologico della Sincope nel Lazio).** *Eur Heart J 2000 Jun;* **21** *:935–40.*

QUESTION: In patients presenting to the emergency department (ED) with syncope, what are the relative frequencies of different causes?

Design
2 month cohort study.

Setting
9 community hospitals in Italy.

Patients
195 patients who were > 12 years of age (mean age 63 y, 56% women) and presented to the ED with syncope (sudden transient loss of consciousness and of postural tone with spontaneous recovery). Patients with a known seizure disorder with a prolonged postictal recovery phase or those without a clear loss of consciousness were excluded. Follow up was complete.

Diagnostic strategy
A 2 step diagnostic algorithm was applied to all patients. The first step consisted of a history and physical examination, 12 lead electrocardiogram with rhythm strip, haemoglobin count, and blood glucose test. If no conclusive diagnosis was reached, patients received further evaluation (second step) consisting of clinical and laboratory investigations done on the basis of abnormalities found at the first step assessment. The algorithm indicated 3 diagnostic hypotheses: cardiac syncope, neurally mediated syncope, and neurological or psychiatric syncope. For suspected cardiac syncope, patients received an echocardiogram; for suspected neurally mediated syncope, they received carotid sinus massage and head up tilt testing; and for suspected neurological or psychiatric syncope, they received an electroencephalogram, brain imaging, or carotid Doppler ultrasonography. Further evaluation occurred if the diagnosis was still inconclusive.

Main outcome measure
Final diagnosis.

Main results
After the first step of the algorithm, a diagnosis was achieved for 43 patients (22%). After the second step, a conclusive diagnosis was reached for 161 patients (83%). The table shows the final diagnoses.

Conclusion
In patients presenting to the emergency department with syncope, a 2 step diagnostic algorithm provided a definitive diagnosis in 83%.

Final diagnoses in 195 patients presenting with syncope

Diagnosis	Number of patients (%)
Neurally mediated syncope (Vasovagal 30%, situational 3.5%, carotid sinus syndrome 2.0%)	69 (35.2%)
Cardiac syncope (Bradyarrhythmias 11.3%, tachyarrhythmias 7.1%, hemodynamic 3.0%)	41 (20.9%)
Neurologic syncope (Cerebrovascular 10.8%, epilepsy 3.0%)	27 (13.8%)
Orthostatic hypotension	12 (6.1%)
Psychiatric syncope	11 (5.6%)
Metabolic syncope	1 (0.5%)
Syncope of unknown origin	34 (17.5%)

COMMENTARY

The most pressing goal of the syncope work up is to identify those patients with a cardiac related cause who may have life threatening conditions. Ammirati *et al* completed a well designed study. An impressive number of patients were diagnosed using their 2 step algorithm: 83% of all patients received a definitive diagnosis. Previous studies diagnosed 50% to 60% of the patients.[1] [2]

Several issues, however, limit the applicability of this study, and they may affect the applicability of this algorithm to other settings. For example, the authors failed to provide adequate information about how patients were classified into the 3 groups: cardiac, neurally mediated, or neurological or psychiatric syncope. In addition, how decisions were made regarding the need for admission is unclear.

Finally, although the algorithm reduced the overall number of undiagnosed cases of syncope more than previous studies, it failed to provide adequate follow up to ensure that the correct diagnoses were reached.[1] The increase in the proportion of diagnoses achieved in this study can be mostly attributed to a higher number of patients, given the diagnosis of neurally mediated (vasovagal) syncope by positive tilt table testing. This type of testing, however, may falsely diagnose patients with neurally mediated syncope in up to 25% of the cases,[2] making follow up crucial.

The study by Ammirati *et al* is an important step toward helping clinicians to manage a common problem more efficiently. More studies are needed to validate the accuracy and generalisabilty of this simple and practical diagnostic approach.

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1 Kapoor WN. *Medicine* (Baltimore) 1990;**69**:160–75.
2 Linzer M, Yang EH, Estes NA 3d, *et al. Ann Intern Med* 1997;**126**:989–96.