

Management of Patients With Syncope: From Guidelines to Clinical Practice

Àngel Moya i Mitjans and Concepción Alonso Martín

Unidad de Arritmias, Servicio de Cardiología, Hospital General Universitario Vall d'Hebron, Barcelona, Spain

Syncope is defined as the transient loss of consciousness with spontaneous recovery, as a result of cerebral hypoperfusion. It is a very common clinical entity.¹ Although it is difficult to establish the prevalence and incidence of syncopal episodes, recent data indicate that 9-35% of the Spanish population present some syncopal episode in their lifetime.^{2,3}

There are a variety of causes which may trigger a syncopal episode.¹ The most common is the neurally mediated response, in which a distinction should be made between vasovagal syncope, situational syncope, and syncope resulting from carotid sinus hypersensitivity. The second major cause is arrhythmia, whether this be bradyarrhythmia or tachyarrhythmia, which are common in patients with abnormal electrocardiograms (ECG) or different grades of structural heart disease. Syncope as a result of orthostatic hypotension is less common and is usually secondary to dysautonomia or the administration of drugs. Occasionally, syncope can be a clinical manifestation of different acute cardiopulmonary conditions, such as pulmonary embolism, myocardial infarction, or cardiac tamponade. On rare occasions it may be caused by subclavian steal syndrome.

The severity and clinical impact of syncopal episodes are determined not only by their etiology, but also by other circumstances, such as how the episodes present themselves, the recurrence rate or the patient's professional circumstances. Occasional syncopal episodes of a vasovagal etiology, with recognisable triggers and prodromes, therefore constitute a benign clinical episode

and are usually well tolerated and have a good prognosis. However, one single sudden syncopal episode in a patient with a left bundle branch block and ventricular dysfunction constitutes a potentially malignant clinical situation which may put the patient's life at risk. There are also some patients with neurally mediated syncope in whom, since they have a high recurrence rate or sudden episodes high risk professional settings (workers on scaffolding or professional drivers), syncope can have a very negative impact and a huge effect on the patient's quality of life.

Despite the very clear outward signs, only between 33%⁴ and 50%² of patients who present with syncopal episodes seek medical assistance and the majority of these are treated in hospitals.⁴ Episodes of loss of consciousness represent approximately 1% of all visits to hospital emergency departments and between 1% and 3% of hospital admissions from the emergency departments.^{5,6} Those patients with syncope who are admitted to hospital are probably not representative of the general population suffering from syncope, since the average age of the majority of those admitted is between 65 and 75 whereas among the general population there are two age groups in which syncope is most common: adolescence and adult age. Therefore, this would seem to suggest that patients who are admitted to hospital emergency departments constitute more severe cases, with a higher number of syncopal episodes and perhaps a higher rate of heart disease or abnormal basal ECG. It may therefore be concluded that the management of patients with syncope in emergency departments is a qualitative and quantitative significant problem.

The mechanisms and clinical presentation of syncopal episodes were first described at the start of the 20th century. However there was an increase in the number of publications regarding syncope during the eighties as new tools for diagnosing this condition were developed, such as the tilt table test, outpatient ECG monitoring, electrophysiological studies and, more recently, implantable loop recorders. All of this has led to significant advances in our knowledge of the mechanisms, etiologies and prognosis of patients with syncope. However, there are still some doubts regarding the role of the different tests and the strategy to be followed when diagnosing these patients.^{6,7} Moreover, these advances have not been associated with an increased knowledge

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Correspondence: Dr. A. Moya i Mitjans.
Unidad de Arritmias, Servicio de Cardiología, Hospital General Universitario Vall d'Hebron.
Pg. de la Vall d'Hebron, 119-120. 08022 Barcelona, España.

of how to treat these patients, in particular those patients with neurally mediated or orthostatic hypotension syncope.

As a result, and in an attempt to organise and provide guidelines for the structured management of patients with syncope, the European Society of Cardiology (ESC) Syncope Guidelines for clinical practice were created in 2001 and updated in 2004.¹ Coinciding with the circulation of these guidelines, there was a series of publications which assessed different strategies aimed at improving the approach to diagnosing patients with syncope.⁵⁻¹¹ The objectives of these strategies were to increase the rate of etiological diagnosis, rationalise the use of tests and reduce the number of unnecessary hospital admissions.

Blanc et al⁵ carried out a study in which they compared a series of variables which included the use of diagnostic test and admission and diagnosis rates in a basal situation, and after a period in which the ESC guidelines had been circulated and practitioners had received training on these. They observed that the aforementioned strategy did not succeed in improving the management offered to these patients.

Another alternative put forward is the so-called "syncope units" (SU). The concept of SU has differed according to authors. For example, Shen et al⁸ describe the SU model as a specific area within the emergency department, in which ECG monitoring is available for several hours and preferential access to all examinations specifically required for syncope is provided. However, for other authors,⁹ a SU is a structure coordinated by specialist cardiologists, to whom all patients seen for syncope may be referred. At the same time, the unit provides preferential access to the necessary tests and the possibility of consulting other specialists when necessary. Shen et al⁸ compared the usual strategy for managing patients with that in an emergency department SU among a subgroup of patients defined as having an intermediate risk. With this strategy, they observed an increase in the diagnosis rate and a reduction in hospital admissions, with similar survival rates for both groups. However, based on their model of an SU, Brignole et al⁹ compared the care received by patients with syncope in 6 hospitals equipped with a SU to that in 6 hospitals which did not have it. In this study, it was observed that in the group of hospitals which did have a SU, there was a reduction in the number of hospitalisations and fewer tests were carried out per patient; in particular, there were a reduced number of tests which are not specifically required for syncope. There was also an increase in the number of patients who were given a definitive etiological diagnosis.

As a result of the above observations, the updated ESC Syncope Guidelines which were published in 2004¹ included a section dedicated to the organisational model for managing patients with

syncope. This section highlights the fact that conventional treatment of patients with syncope is heterogeneous, often includes unnecessary diagnostic tests and has a high rate of hospital admissions.^{5,6} For this reason, it was decided that a model should be established to improve the management of these patients. Different care models were established rather than one single rigid structure. The models all shared certain things in common: a structured and uniform protocol, which adhered as closely as possible to the guidelines for clinical practice; each centre had a specific group of specialists to coordinate the application of the protocol; and processes were established so that these patients were given quick and preferential access to the examinations required for stratification and diagnosis. This section of the guidelines specifically refers to the fact that the type of specialist responsible for the unit may vary depending on the characteristics of the centre or the type of patients referred.¹⁰ However, it emphasises the multidisciplinary aspect required in caring for these patients and the need for collaboration between the different departments which may be involved in the care process.¹⁰ Recently, Brignole et al¹¹ have showed that in the same hospital, the systematic application of a regulated protocol, which follows the diagnosis process established in the ESC guidelines, reduces the number of hospital admissions and unnecessary tests and improves the diagnosis rate, when compared to an unregulated practice.

In this issue of *Revista Española de Cardiología*, Rodríguez-Entem et al¹² have published an experience which aims to evaluate a protocol for managing syncope within the emergency department itself, based on the application of a diagnostic algorithm and risk stratification specifically aimed to avoid hospital admissions. In their emergency department there is a number of beds available to these patients with ECG monitoring until they are discharged or admitted. A carefully prepared and stratified process for diagnosing syncope is applied to these patients. This includes all the diagnostic tests and eventual treatment of the patient, who remains within the emergency department. Of the 199 patients who visited emergency departments for syncope, an etiological diagnosis was obtained following an initial assessment in 120 (60%). Of the remaining 79 patients, 52 who had normal ECG and echocardiography were discharged and scheduled for an outpatient tilt table test. In the other 27, who had abnormal ECG or echocardiography, an electrophysiological study was performed, which was abnormal in 8 and normal in 16, and a tilt table test, which provided a diagnosis for 1 and none for the remaining 15. In these remaining 15 patients a subcutaneous loop recorder was implanted. At the end of the study, a pacemaker was implanted in 36 patients and an automatic implantable defibrillator in 3.

In this study, the application of a strict and step-by-step protocol resulted in definitive diagnosis in 78% of patients and the tests were carried out rationally. The most significant contribution of this study was that the diagnostic and therapeutic process was applied to the patients from the moment they arrived at hospital and that they remained within the emergency department. As a result, 90% of the patients were stratified, diagnosed and eventually treated within 19 ± 15 hours and only 10% of the patients needed admission to hospital.

For the study, the authors put in place a similar strategy to that described by Shen et al.⁸ It consisted of the following: close collaboration between the emergency and cardiology departments, the availability of the tests required by these patients, in particular the echocardiography and electrophysiological study, so that they had preferential and immediate access to such tests, and finally, the availability of beds specifically for monitoring these patients, with the possibility of a prolonged stay within the emergency department itself. This is an interesting approach to what should be a multidisciplinary management of patients with syncope. There are however some questions regarding its design. First of all, one of the authors' objectives was for the patients to remain within the emergency department, without being admitted to hospital, during the entire diagnosis process. The concept of "no hospitalisation" is relative, since in reality the patients are kept in emergency departments until stratification, diagnostic testing and eventual treatment has been completed, which is, in effect, a form of hospitalisation. Moreover, the study is not designed to provide information on whether this strategy saves costs,¹³ whether it is more comfortable for the patient and whether it is an advantage for or an excess load on these services, taking into account the saturation of emergency departments in most Spanish hospitals. In reality, the collaboration established between the 2 services, as well as the speed at which the necessary tests are carried out, should not prevent patients requiring specific diagnostic tests or cardiological treatments within cardiology departments from being admitted as quickly as possible. Another important aspect of this study is the speed and availability of the examinations required by these patients. Implementing this strategy in some cardiology departments with echocardiography laboratories and arrhythmia units which are increasingly more saturated and involved in complex treatments, could cause a logistics problem. Nevertheless, since the majority of these patients only require relatively simple studies, preferential access of these to studies aimed at confirming or ruling out an arrhythmic etiology of syncope should be assessed to see whether it is feasible and profitable within the Spanish context.¹³

In conclusion, the results of this study show how close collaboration between the emergency and cardiology departments can lead to a higher number of diagnoses

within a short period of time. They should therefore act as an incentive for establishing strict care protocols, based on the clinical practice guidelines, to be applied from the moment the patients arrive at hospital and with multidisciplinary collaboration. Moreover, they should also provide stimulus to carry out studies to establish the best management strategy for the Spanish context, to obtain a high diagnosis rate, with the best use of financial resources and which may be applied to the majority of centres.

REFERENCES

1. Brignole M, Alboni P, Benditt D, Bergfeldt L, Blanc JJ, Bloch Thomsen PE, et al. Guías de Práctica Clínica sobre el manejo (diagnóstico y tratamiento) del síncope. Update 2004. Summarized Version. *Rev Esp Cardiol*. 2005;58:175-93.
2. Soteriades ES, Evans JC, Larson MG, Chen MH, Chen L, Benjamin EJ, et al. Incidence and prognosis of syncope. *N Engl J Med*. 2002;347:878-85.
3. Ganzeboom KS, Mairuhu G, Reitsma JB, Linzer M, Wieling W, van Dijk N. Lifetime cumulative incidence of syncope in the general population: a study of 549 Dutch subjects aged 35-60 years. *J Cardiovasc Electrophysiol*. 2006;17:1172-6.
4. Cosín Agullar J, Solaz Minguez J, García Civera R, Ruiz Granell R. Epidemiología del síncope. In: García Civera R, Sanjuán Mañez R, Cosín Aguilar J, López Merino V, editors. *Síncope*. Barcelona: MCR; 1989. p. 53-74.
5. Blanc JJ, L'her C, Gosselin G, Cornily JC, Fatemi M. Prospective evaluation of an educational programme for physicians involved in the management of syncope. *Europace*. 2005;7:400-6.
6. Martín Martínez A, Moya i Mitjans A, Del Arco Galán C, García Civera R, Laguna del Estal P, Martínez Alday J, et al. El síncope en el siglo XXI: análisis multidisciplinario de sus características clinicoepidemiológicas e implicaciones (estudio GESINUR-1) [Abstract]. *Rev Esp Cardiol*. 2005;58 Supl 1:117.
7. García Civera R, Ruiz Granell R, Morell Cabedo S, Sanjuan Mañez R, Perez Alcalá F, Plancha E, et al. Selective use of diagnostic tests in patients with syncope of unknown cause. *J Am Coll Cardiol*. 2003;41:787-90.
8. Shen WK, Decker WW, Smars PA, Goyal DG, Walker AE, Hodge DO, et al. Syncope Evaluation in the Emergency Department Study (SEEDS): a multidisciplinary approach to syncope management. *Circulation*. 2004;110:3636-45.
9. Brignole M, Disertori M, Menozzi C, Raviele A, Alboni P, Pitzalis MV, et al. Management of syncope referred urgently to general hospitals with and without syncope units. *Europace*. 2003;5:293-8.
10. Kenny RA, O'Shea D, Walker HF. Impact of a dedicated syncope and falls facility for older adults on emergency beds. *Age Ageing*. 2002;31:272-5.
11. Brignole M, Ungar A, Bartoletti A, Ponassi I, Lagi A, Mussi C, et al. Standardized-care pathway vs. usual management of syncope patients presenting as emergencies at general hospitals. *Europace*. 2006;8:644-50.
12. Rodríguez-Entem F, González-Enríquez S, Olalla-Antolín JJ, Cobo-Belaustegui M, Expósito-García V, Llano-Cardenal M,

et al. Manejo del síncope en el servicio de urgencias sin ingreso hospitalario: utilidad de un protocolo coordinado con la unidad de arritmias. *Rev Esp Cardiol.* 2008;61: 22-8.

13. Barón-Esquivias G, Moreno SG, Martínez A, Pedrote A, Vázquez F, Granados C, et al. Cost of diagnosis and treatment of syncope in patients admitted to a cardiology unit. *Europace.* 2006;8:122-7.