ORIGINAL ARTICLE

The performance of the Evaluation of Guidelines in Syncope Study score in the diagnostic approach to syncope in emergency department

La performance du score Evaluation of Guidelines in Syncope-Study dans la démarche diagnostique d'une syncope aux urgences

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Abstract

Background: Management of syncope in the emergency department (ED) is not yet well codified. Several scores have been developed to facilitate diagnosis and management. According to the European Society of Cardiology, an EGSYS (Evaluation of Guidelines in Syncope Study) score ≥3 predicts cardiac origin.
Objective: Evaluate the performance of the EGSYS score in the diagnosis of cardiac syncope in ED.
Methods: We conducted a prospective study (2011-2021). Inclusion of patients who consult for syncope with calculation of the EGSYS score. Diagnosis of cardiac syncope was based on the results of the cardiological investigation. Patients were divided into two groups: SC+ group with cardiac syncope and SC- group with another etiology.
Results: Inclusion of 526 patients. Mean age =49± 20 years. Gender ratio=1.48. Two hundred and thirty-six patients (45%) had a cardiac syncope. Comparison between the two groups (SC+ versus (vs. SC-) showed the following results: mean age (58 ±19 vs. 42 ±18 years), history of heart disease: 34 (14.5%) vs. 13 (4.5%), rhythm disorders 22(9.4%) vs. 4(1.4%), bradycardia: 40 (17%) vs. 17 (5.8%), atrioventricular block: 26 (11.1%) vs. 8 (2.7%), bundle branch block: 45 (19.1%) vs. 17 (5.8%), High risk criteria: 138 (58.7%) vs. 75 (25.8%). Diagnostic performance of the EGSYS score was satisfactory with AUC=0.769, CI95% [0.73 – 0.81], p < 0.001. The threshold value was 3. Sensitivity, specificity, positive predictive value and negative predictive value were 79, 80, 76 and 83% respectively. Likelihood Ratio: Positive LR=4.04, negative LR=0.26.
Conclusion: The EGSYS score showed good performance in predicting the cardiac syncope.

Key words: Syncope, Emergency, Diagnosis, Prognosis, clinical score, EGSYS score

Résumé

Introduction: La prise en charge des syncopes aux urgences n'est pas encore bien codifiée. Plusieurs scores étaient mis au point pour faciliter la prise en charge. Selon la Société Européenne de Cardiologie, un score EGSYS (Evaluation of Guidelines in Syncope Study) ≥3 prédit une origine cardiaque.
Objectif: Evaluer la performance de l'EGSYS score dans le diagnostic des syncopes d'origine cardiaque aux urgences.
Méthodes: Il s'agissait d'une étude prospective (2011-2021) incluant les patients présentant une syncope avec calcul du score EGSYS. Le diagnostic de syncope cardiaque était retenu sur les résultats des explorations cardiaques. Répartition des patients en deux groupes : groupe SC+ présentant une syncope d'origine cardiaque et groupe SC- présentant une autre étiologie.
Résultats: Inclusion de 526 patients. Age moyen=49±20 ans. Genre ratio=1,48. Deux cent trente-six patients (45%) avaient une syncope d'origine cardiaque. En comparant le groupe SC+ versus (vs). le groupe SC- : âge moyen (58 ±19 vs. 42 ±18 ans). Antécédents de cardiopathie 34(14,5%) vs. 13(4,5%), troubles du rythme: 22(9,4%) vs. 4(1,4%). Anomalies à l'électrocardiogramme : bradycardie 40(17%) vs. 17(5,8%), bloc auriculo-ventriculaire 26(11,1%) vs. 8(2,7%), bloc de branche 45(19,1%) vs. 17(5,8%). Critères de Haut risque :138(58,7%) vs.75(25,8%). La performance diagnostique de l'EGSYS score était satisfaisante avec AUC=0,769, IC95% [0,73 – 0,81] et p < 0,001. La value seuil était de 3. La sensibilité, spécificité, valeur prédictive positive et valeur prédictive negative étaient de 79, 80, 76 et 83% respectivement. Rapport de vraisemblance positif=4,04 et négatif= 0,26.
Conclusions: Le score EGSYS a montré une bonne performance pour prédire l'origine cardiaque de la syncope.

Mots clés: Syncope, Urgence, Diagnostic, Score clinique, Pronostic, Score EGSYS.

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Introduction

Syncope, a frequent reason for consultation in emergencies departments (ED), is a brief loss of consciousness secondary to global cerebral hypoperfusion.
The annual incidence of syncope ranges from 18.1 to 39.7 per 1000 patients, with similar results between genders (1).
In the United States, syncope accounts for 1 to 3.5% of emergency room visits and 6% of admissions. It is most often due to benign causes, but sometimes reflects a serious underlying cause of cardiac origin (2).
The prognosis of syncope may be related to its etiology, but also to the consequences of the loss of consciousness. The annual mortality rate vary from 0 to 12% in patients with a non-cardiac cause and from 18 to 33% in patients with a cardiac cause (3).
Syncope is responsible for 29% of post-traumatic injuries such as wounds, bruises and fractures, and 4.7% of severe trauma (1).
The recurrence rate is 35% during the first two years (1), which can impact the patient's psychological well-being, by impairing their quality of life.
All this morbidity and mortality has an economic burden, with a significant annual cost in terms of public health expenditure (1).
All this socio-economic impact is essentially due to the absence of a well-coded management algorithm for syncopal patients.
Indeed, the initial management of patients consulting the ED for syncope is a challenge for the emergency physicians to confirm the diagnosis of syncope, to choose the adequate complementary examinations for the etiological diagnosis, to determine whether urgent treatment is necessary and finally to decide on the patient's referral.
Several simple scores have been established and validated by the 2018 recommendations of the European Society of Cardiology (ESC) to simplify this process using a list of simple criteria with a high prognostic value, with the aim of identifying cardiac syncope and avoiding unnecessary investigations (4).
Among these scores, the Evaluation of Guidelines in SYncope Study score (EGSYS) represents one of the most widely used and validated scores for predicting the cardiac causes of syncope, with high sensitivity and specificity (5).
In this context we conducted our study in the ED of the regional hospital of Ben Arous, with the aim to evaluate the performance of the EGSYS score in the diagnosis of syncope of cardiac origin.

Methods

We conducted a prospective, observational and monocentric study in the ED of regional hospital of ben Arous over a period of 11-years period from October 2011 to October 2021.

Patient selection

We included consecutive patients older than 18 years, presenting a transient loss of consciousness according to the definition of syncope. The diagnosis was based on the clinical judgement of the emergency physician.
Patients whose loss of consciousness was related to a traumatic, toxic, neurological (stroke, transient ischemic attack, convulsion, ...) or metabolic cause and patients whose diagnosis of syncope remains uncertain due to lack of anamnestic data or absence of a witness were not included.
Exclusion criteria for the study were patients discharged against medical advice or subsequently lost to follow-up and patients in whom the etiology of the syncope was undetermined.

Data collection

Data collected from patients included demographic data, comorbidities (hypertension, diabetes, dyslipidemia, stroke, ischemic heart disease, hypertrophic cardiomyopathy (HCM), congenital heart disease, valvulopathy (mitral or aortic stenosis), atrial fibrillation (AF) and other rhythm disorders, chronic heart failure, epilepsy and chronic renal failure (patients with calculated glomerular filtration rate (GFR) less than 60 ml per minute / 1.73m2), previous episodes of syncope, the ongoing medical treatment, the circumstances in which the loss of consciousness occurred and the precipitating factors (confined or crowded space, prolonged standing position, change of position, at rest, exertion, emotion, pain, nausea and vomiting, post prandial,,,,),prodromal symptoms and accompanying signs (nausea and vomiting, dizziness and blurred vision, sweating, palpitations, skin color, sensation of cold).
High risk criteria were sought in all patients. These criteria have been established in The new edition of the European guidelines for the management of syncope (ESC 2018). It includes factors that have been significantly linked to a higher risk of cardiac syncope and sudden death

Study protocol

Patients with symptoms suggestive of syncope were admitted to the emergency room.
Initial vital parameters were measured: systolic (SBP) and diastolic (DBP) blood pressure in standing and sitting positions to look for orthostatic hypotension, heart rate (HR), respiratory rate (RR), peripheral oxygen saturation (Spo2), fingerstick blood glucose (FBG), temperature, Glasgow Coma Score (GCS).
An electrocardiogram (ECG) was performed and interpreted systematically. A ventricular or supra-ventricular rhythm disorder, conduction disorders, QT interval, acute phase myocardial infarction or with Q wave necrosis, other repolarization disorders (ST segment or T wave abnormalities), electrical signs of Left Ventricular Hypertrophy (LVH) or Right Ventricular Hypertrophy (RVH) were analyzed.
A blood test was taken on admission for all the

patients, including a blood count (CBC), blood glucose, renal function, blood ionogram and measurement of hypersensitive troponins if an associated acute coronary syndrome (ACS) was suspected.

Risk stratification and patient orientation (hospitalization or outpatient care) were based on the calculation of the EGSYS score in all included patients.

The EGSYS score was calculated on the basis of 6 items: - Palpitations preceding syncope: 4 points (pts) - heart disease or abnormal ECG: 3pts - Syncope during exertion: 3pts - Syncope in decubitus position :2pts - Precipitating or predisposing factors: 1pt - Nausea or vomiting: 1pt.

According to the ESC recommendations, if the EGSYS score was ≥3, the probability that the syncope was of cardiac origin is high and hospitalization in a cardiology department is indicated.

After stratifying the risk of cardiac syncope on the basis of the patient's history, the clinical presentation, the circumstances in which the syncope occurred, the ECG and biological findings and the calculation of the EGSYS score, patients were referred either to a cardiologic department for hospitalization and further management or discharged home according to an algorithm based essentially on examination data and the EGSYS score.

Patients discharged were referred to the outpatient cardiology department during the week for further investigations.

A collaboration with the cardiologists of our hospital was created through a channel for the management of syncope in the ED. This collaboration consisted of carrying out a cardiological exploration to all the patient included in the study, either on the day of the patient's admission or within the week following the consultation.

The cardiological explorations included a transthoracic ultrasound with the possibility of adding a rhythmic Holter and a Tilt-test.

The results of the cardiological explorations were retrieved from the cardiology department for transferred patients or from our outpatient cardiology department for patients discharged from the ED.

In our study, syncope of cardiac origin (SC+) was defined in the presence of a history of heart disease, an abnormality in the ECG, or abnormalities in cardiological exploration (transthoracic ultrasound and rhythmic Holter).

All patients were followed up by telephone at one year. The occurrence of a recurrence of syncope requiring urgent consultation, or death from all causes were searched.

To assess the performance of the EGSYS score in predicting the cardiac origin of syncope, patients were divided into two groups: cardiac syncope (SC+) and non-cardiac syncope (SC-).

Data Analysis

Statistical analysis was carried out with SPSS (version 25.0) statistical software package. Continuous variables are presented as means ± standard deviation (SD) and discrete variables as absolute values and percentages.

An univariate analysis comparing the two groups (SC+ versus (vs). SC-) was performed, with the chi -square test with Yates' correction or Fisher's exact test when appropriate, odds ratio (OR) with 95% confidence intervals (CI), and the unpaired test.

The logistic regression analysis with the cardiac origin of syncope as dependent variable was there done. The analysis was performed with a binary logistic regression and "enter" method, with an entry criterion of 0.05 and a removal criteria of 0.10.

Differences were considered to be statistically significant with $p<0.05$ or when the 95 % confidence interval (CI) of the odds ratio (OR) excluded the value of 1.

The threshold value of the score was determined using the ROC curve method. The performance of the EGSYS score in predicting the cardiac origin of syncope was studied by calculating the Youden index and using the Fagan nomogram.

Results

Characteristics of the study population

Between Octobre 2011 and Octobre 2021, 440000 patients were presented to the ED, 655 of these patients were found to have syncope and 526 patients were included in the study (Figure 1).

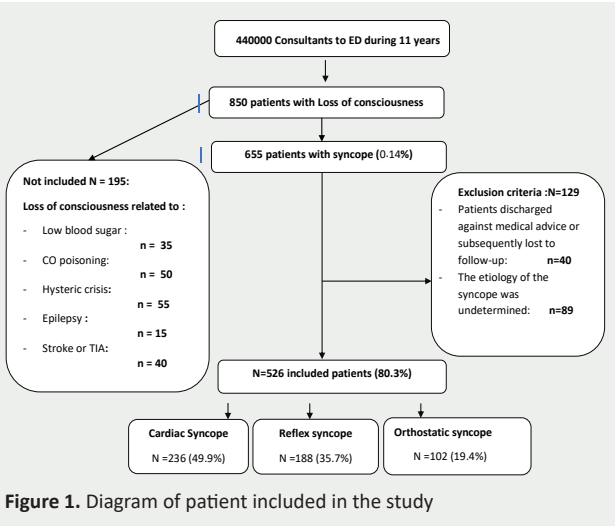

Figure 1. Diagram of patient included in the study

The mean age of the patients was 49 ± 20 years, with extremes of 18 and 99 years, with an estimated gender ratio of 1.48.

The mean age was higher in the SC+ group 58± 19 vs. 42± 18 years, in the SC- group.

The main comorbidities were arterial hypertension (27.2%), followed by diabetes (21.7%) and a history of heart disease (8.9%).

History of heart disease, rhythm disorders, heart failure and valvulopathy were more observed in the SC+ group, with percentages of 14.5, 9.5, 4.7 and 2.6% respectively.

Syncope occurred at rest in 45.8% of cases, during exercise in 23.2% of cases and after a sudden change of position in 17.7% of cases.

Syncope following exertion was most often of cardiac origin in 59.8% of cases.

Precipitating factors were observed in 39.4% of cases. Sympathetic signs were observed in 45.8% of cases.

Palpitations were observed in 21.5% of cases, followed by nausea and vomiting in 16.9%.
Palpitations were the most frequently associated sign in the cardiac syncope group.
Prodromal symptoms such as headache, vertigo and visual blur were more common in the non-cardiac syncope group (30.2%).
ECG abnormalities were observed in 74% of cases in the cardiac syncope group and the presence of bradycardia, BAV, left or right bundle branch block and repolarization disorders were significantly associated with syncope of cardiac origin.
All patients included in our study underwent further investigations for etiological purposes. TTE was pathological in 21.5% of cases.
A rhythm Holter was performed in 48.5% of cases and was pathological in 52.2% of cases. Conduction anomalies were observed in 9% of cases and rhythm disorders in 12.5%.
Syncope was of cardiac origin in 236 patients (44.9%) and of non-cardiac origin in 290 patients (55.1%). Syncope of non-cardiac origin was divided between reflex syncope (35.7%) and orthostatic syncope (19.4%).
The overall hospitalization rate was 23.6%, split between admission to a cardiology department (15.4%) and ED (8.2%).
The one-year mortality rate was 4.8% for all causes of syncope combined. The one-year recurrence rate was 18.3%.
The mains factors significantly associated with cardiac syncope were resumed in the table 1 and 2.

Table 1. Comparison of demographic, anamnestic and clinical features of the two groups

	SC+ group N=236 (44.9%)	SC- group N=290 (55.1%)	p
Age (years) mean±SD	58±19	42±18	0.76
Comorbidities n(%):	148(63)	119(40.9)	<0.001
- HTA n(%)	89(37.1)	54(18.6)	<0.001
- Diabetes n(%)	71(30.2)	43(14.8)	<0.001
- History of heart disease n(%)	51(21.6)	15(5)	<0.001
- Rhythm disorders n(%)	22(9.4)	4(1.4)	<0.001
Syncope following exertion n (%)	73(31.1)	49(16.8)	<0.001
Palpitations n(%)	63(26.8)	50(17.2)	0.008
Nausea and or vomiting n(%)	31(13.2)	58(19.9)	0.04
Heart rate <40 bpm n(%)	15(6.4)	0	<0.001
Heart rate >120 bpm n(%)	11(4.7)	6(2.1)	0.09

The performance of the EGSYS score in the diagnostic of cardiac syncope

The diagnostic performance of the EGSYS score was satisfactory with an area under the curve: (AUC)=0.769, confidence interval IC95% [0.73 - 0.81] and p<0.001. The threshold value was 3 (Figure 2).

Table 2. Comparison of electrocardiographic, biological and prognostic features of the two groups

	SC+ group N=236 (44.9%)	SC- group N=290 (55.1%)	p
Electrocardiographic abnormalities			
- Bradycardia n(%):	40(17)	17(5.8)	<0.001
- Atrio-ventricular block n(%):	26(11.1)	8(2.7)	<0.001
High degree	4(1.6)	0	<0.001
Low degree	22(9.3)	8(2.7)	0.04
- Left or right bundle branch block n(%)	45(19.1)	17(5.8)	<0.001
- Repolarization disorders n(%)	11(4.7)	0(-)	<0.001
- Rhythm disorders (supra-ventricular or ventricular tachycardia) n(%):	21(8.9)	11(3.8)	0.01
Supra-ventricular tachycardia	20(8.4)	11(3.8)	0.01
Ventricular tachycardia	1(-)	0(-)	0.26
- Atrial fibrillation n(%)	9(37.5)	1(-)	0.01
- Pre-excitation syndrome n(%)	16(6.8)	0(-)	<0.001
High risk criteria n (%)	138(58.7)	75(25.8)	<0.001
EGSYS mean ±SD	3.1±2.5	0.7±2.1	<0.001
Prognostic features			
- Recurrence n(%)	48(20.4)	47(16.2)	0.2
- Mortality n(%)	20(8.5)	5(1.7)	<0.001

SD: standard deviation

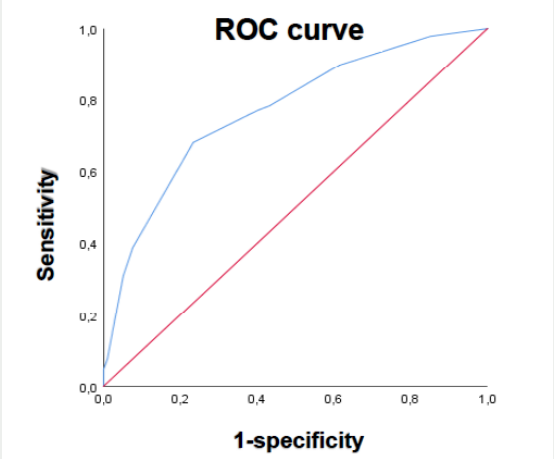

Figure 2. ROC curve of the performance of the EGSYS score

The sensitivity, specificity, positive predictive value and negative predictive value were 79, 80, 76 and 83% respectively for detecting the cardiac origin of syncope.
The Youden index was 0.6 with a positive Likelihood Ratio (PLR) =4.04 and negative likelihood Ratio (NLR)=0.26.
The prior probability test was 45%. The characteristics of the Fagan nomogramme are showed in the Table 3.

The table below summarizes the comparison of the main demographic, anamnestic and prognostic characteristics between the two groups EGSYS≥3 and EGSYS<3.

Table 3. Characteristics of the Fagan nomogramme

	LR	IC[95%]	Probabilité post test	Odds	IC[95%]
Positif Test PLR	4.04	[3.17-5.15]	77%	3.3	[72-81]
Negatif test NLR	0.26	[0.2-0.33]	17%	0.2	[14-21]

LR : likelihood ratio, PLR : Positif likelihood ratio, NLR : Negatif likelihood ratio

Table 4. Comparison of the two groups EGSYS≥3 vs. EGSYS<3

Factors	EGSYS ≥3 N=143(46.2%)	EGSYS<3 N=283(53.8%)	P
Age (years) mean±SD	56 ±20	43 ±19	**<0.001**
Age > 65 years n(%)	100 (41.2)	45 (15.9)	**<0.001**
Gender ratio	1.7	1.3	0.15
Comorbidities n(%)	146 (60.1)	121 (42.8)	**<0.001**
- Hypertension	85 (35)	58 (20.5)	**<0.001**
- Diabetes	68 (28)	46 (16.3)	**0.001**
- Rhythm disorders	18 (7.4)	8 (2.8)	**0.016**
- Valvulopathy	6 (2.5)	1 (-)	**0.035**
- Heart disease	35 (14.4)	12 (1.4)	**<0.001**
- Heart failure	35 (14.4)	12 (4.2)	**<0.001**
Cardiac syncope	186 (76.5)	50 (17.3)	**<0.001**
Non-cardiac syncope	57 (23.5)	234 (82.7)	**<0.001**
High risk criteria	144 (59.3)	56 (19.8)	**<0.001**
Recurrence n (%)	39 (16)	56 (19.8)	0.2
Mortality n (%)	19 (7.8)	6 (2.1)	**<0.001**

SD: Standard deviation

Discussion

The challenge in the management of syncope in the ED is to recognize syncope of cardiac origin since it is associated with a worse prognosis. For this purpose, several clinical scores have been developed to assess the probability of a cardiac cause.

It is in this context that we conducted this study with the aim of evaluating the performance of the EGSYS score in the diagnosis of syncope of cardiac origin.

In this study, the diagnostic performance of the EGSYS score was satisfactory with an AUC = 0.769, CI95% [0.73 – 0.81] and p < 0.001. The threshold value was 3. The sensitivity, specificity, positive predictive value and negative predictive value were 79, 80, 76 and 83% respectively with a Youden index of 0.6.

Population characteristics

We found that the average age was higher in the SC+ group, estimated at 58 years and a cardiac cause of syncope was found in 70% of all syncope in subjects aged over 65 years, compared with 35% in subjects aged under 65 years.

This is in line with the data in the literature, with a clear variation in mean age depending on the etiology of the syncope.

Alboni and al. (6) reported, in a prospective study of 341 patients, a significantly higher mean age in patients with cardiac syncope.

Our study showed a male predominance in the different groups, with an estimated gender ratio of 1.48.

We found a wide range of conclusions in the various studies in the literature.

In fact, several studies concluded that there was a predominance of males, in particular the multicenter study by Dell Rosso and al. (7), which showed a predominance of males in the group of patients aged over 65 years, and the study by Alboni and al. (8), which included 341 patients and estimated a gender ratio of 1.2.

Other studies have noted a female predominance, as shown in a review of the literature by Colman and al. (2), with a cumulative incidence twice as high in young women.

The results of our study show that comorbidities were dominated by arterial hypertension (27.2%), followed by diabetes (21.7%) and a history of heart disease (8.9%).

In an international meta-analysis including 11 studies and 43315 patients, the rate of hypertension was estimated at 39%, diabetes at 12% and cardiovascular disease at 30%(9) .

The cardiac syncope group had more comorbidities, particularly a history of heart disease, than the non-cardiac syncope group. This is in line with the conclusions of the literature.

A systematic review of the literature including 11 clinical studies on cardiac syncope showed that patients with a history of atrial fibrillation or flutter and underlying structural heart disease have a higher risk of cardiac syncope with Odds ratios of 7.3 and 4.8 respectively (10).

Determining the circumstances in which the syncope occurred is an important step in identifying the etiology of the syncope.

Syncope following exertion was more often of cardiac origin. Syncope of non-cardiac origin was more frequent after prolonged standing, a confined space or a change of position.

Our results are comparable to those of Albolni and al. (6) who found in a prospective study including 341 patients, by comparing the characteristics of syncope of cardiac origin with those of non-cardiac origin, that lying down and exertion were significantly more associated with syncope of cardiac origin whereas confined space and prolonged standing were circumstances associated with reflex syncope.

Palpitations were the most frequently associated sign in the cardiac syncope group.

Prodromal symptoms such as headache, vertigo and visual blur were more common in the non-cardiac syncope group (30.2%).

This is consistent with the data in the literature.

Indeed, the multicenter study by Del Rosso and al.(11) analyzing the predictive factors of syncope of cardiac origin concluded that dysautonomia disorders such as nausea and vomiting were significantly more associated with reflex syncope, whereas palpitations were significantly more associated with syncope of cardiac origin.

Electrocardiographic abnormalities were observed in 74% of cases in the cardiac syncope group and in 32% of cases in the non-cardiac syncope group.

The presence of bradycardia, atrio-ventricular block, left or right bundle branch block and repolarization disorders were significantly associated with cardiac syncope.

This is consistent with the literature.
In a cohort study of 684 patients by Quinn and al. (12), the rate of ECG abnormalities was 33.8% and a pathological ECG predicted the cardiac origin of syncope with a sensitivity of 86%, a specificity of 70% and a negative predictive value of 99%.

Clinical scores in syncope management

Risk stratification during the initial ED assessment of patients presenting with syncope can be facilitated by clinical scores, which are available and easy tools for assessing the clinical probability of cardiac origin. These scores are also useful for prognostic assessment.
Several scores have been developed to meet this objective.
The score of Martin and al. (13), one of the first published syncope assessment scores, comprises four items: ECG abnormalities, history of ventricular arrhythmia, history of heart failure and age > 65 years. These factors were independently associated with a higher risk of rhythm disorder and death at one year, with an OR of 3.2, 4.8, 3.1 and 3.2 respectively. The PPV and NPV of this score were 57.6 and 95.4% respectively. This score is therefore used to screen patients at risk of an unfavorable outcome.
The OESIL score is also made up of 4 criteria: abnormal ECG, history of cardiovascular disease, absence of prodromal symptoms and age > 65. This score, developed by Colivicchi and al. (14), is used for triage and prognostic evaluation. Mortality increased significantly with this score at 12 months (0% for a score of 0, 0.8% for 1 point; 19.6% for 2 points; 34.7% for 3 points; 57.1% for 4 points with p<0.0001).
The EGSYS score is a validated, simple score adapted to our practice for deciding on patient referral.
It was developed by Del Rosso and al. (11) and includes 5 anamnestic criteria and one electrocardiographic criterion. A score ≥3 is considered to be the best discriminator for linking syncope to a cardiac cause, with a sensitivity of 95%, a specificity of 61%, a PPV of 33% and a significant NPV of 99%.
A higher threshold value (score >4) had a lower sensitivity and NPV:32 and 88% respectively.
Furthermore, over a 2-year follow-up, patients with a score ≥3 had a significantly higher mortality of 21%.
This score is made up of purely clinical criteria whose prognostic performance has been demonstrated in the recommendations of learned societies.
Consequently, the use of the EGSYS score to predict the cardiac origin of syncope in everyday practice is being considered.
The EGSYS score has also been shown to be effective in pediatric patients. In a retrospective study by Li and al.(15), including 332 children, the EGSYS score appeared to be sensitive in predicting a cardiac cause of syncope with a sensitivity and specificity of 84.3 and 87.9%, respectively.
In our study, the sensitivity, specificity, positive predictive value and negative predictive value of the EGSYS score were 79, 80, 76 and 83% respectively. Our results are consistent with the literature.
An EGSYS score at a threshold ≥3 shows acceptable sensitivity for detecting the cardiac origin of syncope.
In the study by Del Rosso and al. (11), the probability of a cardiac cause is 77% for an EGSYS score >4 whereas 2-year mortality is higher for a threshold ≥3 .
Comparing the two groups of patients with an EGSYS score ≥3 and those with an EGSYS score <3, it was noted that the following factors were significantly more marked in the EGSYS ≥3 group: age ≥ 65 years, history of hypertension, diabetes, cardiac rhythm disorders, valvulopathy, heart disease and mortality rate.
The cardiac origin of the syncope was observed in 76.5% of patients with an EGSYS score ≥3 compared with 17.3% in the EGSYS <3 group.
The new edition of the European recommendations for the management of syncope (ESC 2018) (16) emphasized the importance of management based on risk stratification to rationalize hospitalizations while ensuring patient safety.
An exhaustive list of high-risk criteria has been drawn up on the basis of the various clinical studies and expert opinion. It groups together factors that have been significantly associated with an increased risk of cardiac syncope and sudden death.
In our study, these high-risk criteria were present in 59.3% of patients with an EGSYS score ≥3 compared with 24.4% of cases presenting with an EGSYS score <3.
In the SC+ group, high-risk criteria and an EGSYS score ≥3 were present with rates of 58.7% and 79% respectively. The rate increased to 90% when high-risk criteria were combined with the EGSYS score.
Our results are comparable to those in the literature.
Indeed, a study by Bispo and al. (17) on 224 patients showed an EGSYS score ≥3 in 20% of patients with a non-cardiac etiology and in 48% of cases with cardiac syncope. A positive score had a sensitivity of 48.2% and a specificity of 77.9% with a PPV of 30.2% and a NPV of 88.3%.
The overall hospitalization rate was 23.6%, with 15.4% of patients admitted to a cardiology department and the remainder kept in ED.
For hospitalized patients, an EGSYS score ≥3 was noted in 68.5% of cases.
In the literature, the rate of hospitalization varies between different countries.
A US study over an eight-year period of patients presenting to the ED with syncope showed a hospitalization rate of 32%. For patients whose syncope was of cardiac origin, the hospitalization rate was 66% (18).
However, the rate of hospitalization was found to be significantly lower in Canada. In a prospective Canadian cohort study carried out over a 55-month period in six university ED, the hospitalization rate was 9.4%. The patients hospitalized were older and had more comorbidities and a higher prevalence of cardiac syncope (19).
In our study, we found a one-year mortality rate of 4.8% for all causes of syncope combined. Among the patients who died, the syncope was of cardiac origin in 80% of cases and the EGSYS score was greater than or equal to 3 in 76% of cases.
In the literature, the mortality rate varies according to

the etiology of the syncope and varies from one country to another.

Several studies have concluded that the cardiac syncope is a poor prognostic factor.

In the cohort study by Soteriades and al. (20), the authors concluded that over 17 years of follow-up, the group of patients with cardiac syncope had twice the risk of mortality.

The one-year recurrence rate in our study was 18.3%. A cardiac cause was found in 51% of cases and the EGSYS score was greater than or equal to 3 in 41.7% of cases.

According to the HAS 2008 (21), over a 3-year follow-up period, one third of patients suffer recurrences of syncope, which can impair quality of life and requires prompt, appropriate treatment.

Our study highlighted the demographic characteristics, clinical profile and prognosis of patients presenting with syncope in emergency department, while emphasizing the satisfactory performance of the EGSYS score. It is a validated score that is simple, easy and quick to calculate for each patient presenting with syncope. It is also applicable in all ED in our country and facilitates the diagnostic and therapeutic management strategy for syncope.

Conclusion

Our study aims to facilitate the clinician's initial assessment and management of syncope by ensuring a safe and well-adapted strategy.

The EGSYS score performs well in meeting this objective while referring to the new recommendations of the ESC in 2018. Raising the awareness of emergency physicians and integrating these two tools together into a well-defined algorithm can provide a useful guide to help refer patients and improve the appropriateness of syncope management in ED.

In conjunction with this algorithm, the concept of syncope units provides an alternative to over-hospitalization in ED by ensuring targeted, multidisciplinary outpatient management and also improving the rate at which the etiology of syncope is determined. This could be a way of reducing overcrowding and the time patients spend in the ED, thereby reducing the overall costs of this facility.

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