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Validation of the HEART (History, ECG, Age, Risk factors, and Troponin) scale in emergency department patients with chest pain

Validación de la escala HEART en los pacientes con dolor torácico atendidos en los servicios de urgencias

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Introduction: Non-traumatic chest pain (NTCP is one of the most common symptoms of ED consultation. The evaluation of NTCP is aimed at ruling out the causes of potential life-threatening risk, with ischemic heart disease being the most prevalent. Many tools have been developed to help stratify the risk of patients with NTCP in the ED. The HEART scale has proven to be a very good risk model for predicting adverse cardiac events, but there is no validation data in the Spanish population.

Objective: To validate the HEART scale to predict major adverse cardiac events in adult patients with NTCP treated in Spanish EDs.

Method: Secondary analysis of the COPeptin in Emergency Department (COPED) study conducted in 28 Spanish EDs. For the present study we included all patients 18 years of age or older with NTCP with an evolution of less than 12 hours, without elevation of the ST segment at the time of first medical attention or life expectancy of less than one year. We excluded those cases in which the necessary data for the calculation of the HEART scale or for follow-up at 30 days did not exist. Demographic data, personal history, anamnesis and electrocardiographic changes were collected, as well as troponin values (TnT and TnI) measured with contemporary serial methods during the first 6 hours. The study variable was the risk category of the HEART scale (low: 0 to 3 points; intermediate: 4 to 6 points; and high: > 6 points). The main outcome variable was the presence of a serious adverse cardiac event (myocardial infarction, percutaneous or surgical coronary revascularization and death from any cause) in the first 30 days after the index episode.

Results: We included 1,788 patients out of a total of 2,281 COPED participants in the study. The frequency of low, intermediate or high risk patients was 20.2%, 56.9% and 22.9%, respectively. Three hundred and three (16.9%) patients had a severe adverse cardiac event in the first 30 days (14.2% myocardial infarction, 4.6% percutaneous revascularization and 1% surgical, 1.1% death). The number of episodes was 8 (2.2%) in the low-risk group, 99 (9.7%) in the intermediate-risk group and 196 (47.9%) in the high-risk group. The area under the HEART receptor operating characteristic curve for severe cardiac adverse events at 30 days was 0.83 (95% CI 0.80-0.86). The low-risk group had a sensitivity of 97% (95% CI 95- 99%) and a negative predictive value of 98% (95% CI 96-99%) for severe cardiac adverse events at 30 days.

Conclusions: Patients at low risk (0-3 points) according to the HEART scale have a low probability of suffering a severe adverse cardiac episode in the first 30 days and could therefore be discharged directly from the ED.

Predicting emergency revisits by elderly patients after falls: factors to detect during nursing assessment

Factores detectables en la entrevista de enfermería que predicen las reconsultas por caídas en ancianos

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Introduction: Falls are a reason for frequent consultation of the elderly population in emergency departments (EDs). Some of these patients have an increased risk of suffering new falls and the fact of being able to identify them early could condition proactive interventions aimed at reducing this risk, with the consequent reduction in social-sanitary resources. The role of trained nurses is crucial for the identification of this subgroup of high-risk patients.

Objectives: To identify those factors that can be detected by the nurse during the initial assessment by the nurse and that are associated with new ED consultations due to a fall during the 12 months following the index episode.

Methods: We included patients from the FALLER registry (which includes consecutive patients over 65 years of age treated for accidental falls in 5 Spanish ED) for which we had follow-up data that allowed us to identify the revisit to the ED for a new fall in the following 12 months. In these studies, 37 variables were identified (2 demographic, 10 comorbidity, 10 chronic pharmacological treatment and 15 patient baseline), which are easily obtainable during the nursing interview. The associated risk of a new fall was quantified for each of these variables by calculating the hazard ratio (HR) using an unadjusted Cox regression model and, subsequently, for those variables that were statistically significant ($p < 0.05$), the adjusted HR (conditional forward method) was calculated for the model that included these variables. Finally, the predictive performance of a model consisting of the variables that were independently associated in the multivariate study was evaluated by calculating the area under the curve (AUC) of the receiver operating characteristic (ROC).

Results: We included 1,364 patients out of 1,610 in the FALL-ER Registry (mean age 79.7 years, interval 65-104; 69.6% were women). Initially, 11 of the 37 variables were related to the risk of revisiting an ED due to a new fall in the univariate study. Of these, 4 ultimately resulted in predictive variables independent of revisit: history of epilepsy (increased risk: +150%, 95% confidence interval (CI) +22 to +414%), need for help to trim toenails (increased risk: +75%, 95% CI: +20 to +154%), chronic antidiabetic treatment (increased risk +66%, 95% CI: +12 to +143%) and previous fall during the 12 months prior to the index event (increased risk +61%, 95% CI: +9 to +138%). The AUC-ROC of the model formed by these four variables was 0.65 (95% CI 0.59-0.70).

Conclusions: Four independent factors related to an increased risk of new ED visits have been identified. These are easily and quickly identifiable during the initial nursing assessment. Recommendations for the prevention of new falls should be standardized from the ED, especially in this subgroup of patients.

De novo acute heart failure: factors associated with in-hospital mortality and adverse events during the period of vulnerability after discharge

Insuficiencia cardiaca aguda de novo: factores asociados a la mortalidad intrahospitalaria y a eventos adversos durante el periodo de vulnerabilidad posthospitalización

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Introduction: Acute heart failure (AHF) is the leading cause of hospitalization in people over 65 years of age. AHF is associated with high morbidity and mortality, mainly related to hospital admissions. Patients discharged after hospital admission are not only recovering from their acute illness, but also experience a period of risk of a wide range of conditions, many of which have little in common with the initial diagnosis (period of vulnerability). The factors that allow us to identify which of the patients will have an adverse medical condition during this period of vulnerability are not clear.

Objective: To determine which factors are associated with in-hospital mortality and adverse events during

the post-hospital vulnerability period (re-admission by AHF, mortality at 90 days) of patients with de novo AHF (ICAN in Spanish).
Method: Secondary analysis of the Epidemiology of Acute Heart Failure in Emergency Departments (EAHFE) registry, which is a multi-center, multi-purpose, non-interventionist analytical registry with a prospective follow-up including AHF patients treated in Spanish hospital emergency departments (EDs). Patients from EAHFE-4 (2014) and EAHFE-5 (2016) have been included in this study. All patients with a first episode of ICAN were included. We compared demographic variables, comorbidities, baseline functional status, pharmacological treatment, trigger of the episode and data from the acute episode. The severity of decompensation was assessed using the MEESSI scale. Follow-up was carried out at 90 days (vulnerability period). For the first objective (in-hospital mortality) a logistic regression was performed and for the second objective (re-admission due to AHF or mortality at 90 days), a Cox proportional risk model. Values of $p \leq 0.05$ were considered significant.
Results: Of the 7,946 patients included in the EAHFE-4 and 5 cohorts, 3,422 patients were classified as ICAN. The mean age was 80 years (SD 11) and 1,774 (52.1%) were women. They were mildly dependent on basic activities of daily living (mean Barthel Index [BI] 83). The mean ejection fraction was 53% (SD 16). The main causes of decompensation were infection and rapid atrial fibrillation. Seventy-three percent of patients (2,501) were admitted. In-hospital mortality was 9.4% (235). Factors associated with in-hospital mortality were: dementia, with an OR of 2,390 (95% CI of 1,681-3,398), active neoplasia, with an OR of 2,154 (95% CI of 1,518-3,055), dependence (BI ≥ 90), with an OR of 1,540 (95% CI of 1,681-3,398): 1,026-2,313), functional class NYHA III-IV, with OR 1,510 (95% CI 1,059-2,153), and risk according to MEESSI intermediate scale, with OR 2,010 (95% CI 1,122-3,559), and high, with OR 6,770 (95% CI 3,412-13,435). A follow-up at 90 days (vulnerability period) was performed on 3,161 patients. 17.6% (555) re-entered for AHF and mortality was 8.1% (256). Factors associated with readmission were: arterial hypertension, with HR 2.101 (95% CI 1.370-3.222), peripheral arterial disease, with HR 1.633 (95% CI 1.085-2.457), chronic obstructive pulmonary disease, with HR 1.384 (95% CI: 1,026-1,868), functional class NYHA III-IV, with HR 1,516 (95% CI 1,069-2,150), and intermediate MEESSI risk, with HR 1,425 (95% CI 1,055-1,927), and high, with HR 1,731 (95% CI 1,144-2,618). Factors associated with mortality at 90 days were: age, with HR 1.417 (95% CI 1.047-1.919), chronic renal failure, with HR 1.396 (95% CI 1.048-1.861), dementia, with HR 1.632 (95% CI: 1,171-2,273), dependence (IB ≤ 90), with HR 1,452 (95% CI 1,029-2,049), functional class NYHA III-IV, with HR 1,589 (95% CI 1,179-2,142), and high MEESSI risk, with HR 1,967 (95% CI 1,292-2,997)
Conclusions: Patients visiting an ED by ICAN show in-hospital mortality and associated factors similar to those of previous studies. During the period of vulnerability, the factors most related to adverse events were functional class and high severity of the acute episode.

Barthel Index and Clinical Frailty Scale correlation in elderly patients with acute heart failure

Correlación entre el índice de Barthel y la Clinical Frailty Scale en los pacientes mayores con insuficiencia cardiaca aguda

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Introduction: The acute functional situation, quantified by Barthel's Index (BI), is one of the main predictors of short-term mortality in patients with acute heart failure (AHF). In fact, it is the variable of the MEESSI scale with the highest predictive capacity of mortality at 30 days. The main disadvantage of the BI, when assessing the functional situation in the emergency department, is time consumption, since it is calculated that between 5-10 minutes are necessary for its performance. The Clinical Frailty Scale (CFS) is a visual scale, designed for the assessment of multidimensional fragility, which allows the practitioner to classify patients into nine categories by means of a rapid assessment of the degree of disability. The degree of correlation between BI and CFS is unknown, as is whether there is a different predictive capability between the two scales regarding short-term mortality in older patients with AHF.
Objectives: To study the degree of correlation between BI and CFS for the assessment of the functional situation in the ED among elderly patients with AHF treated in EDs, and to compare the predictive capacity of both scales for mortality from any cause at 30 days.

Method: A secondary analysis of the OAK-3 registry was performed, which includes all patients ≥ 65 years treated by AHF in 16 EDs, in a period of 2 months (January-February 2016). For the present study, we selected all cases in which we had BI and CFS data in the acute phase and the mortality 30 days after the index episode. We used descriptive statistics, the Spearman correlation coefficient to measure the degree of correlation, and the receiver operating characteristic (ROC) curve and the De-Long method to compare the predictive capacity of both scales.

Results: We included 657 patients with a mean age of 86 (SD 13) years, 59.1% of them women. The mean BI in the ED was 65 (SD 27) points. The frequency of patients with CFS from 1 to 9 was 1.4% (9), 7.0% (46), 9% (59), 16.9% (111), 12.6% (83), 13.1% (86), 16.1% (106), 23.1% (152) and 0.8% (5), respectively. Mortality at 30 days was 3.7%. The mean BI was 98 (SD 3.5) for the CFS category 1, 92 (SD 9) for 2, 87 (SD 11) for 3, 85 (SD 12) for 4, 74 (SD 14) for 5, 64 (SD 17) for 6, 51 (SD 21) for 7, 38 (SD 24) for 8, and 26 (SD 27) for 9. The degree of correlation between BI and CFS was high (rho -0.758; p < 0.001). The area under the ROC curve (AUC) for mortality at 30 days of BI was 0.75 (95% CI 0.67-0.84) and the AUC-ROC of CFS was 0.72 (95% CI 0.63-0.81) (De-Long p = 0.279).

Conclusions: The CFS could be a useful, simple and quick tool when assessing the degree of disability in emergencies. There is a strong negative correlation between BI and CFS scales for the assessment of the acute functional situation, without finding differences in the ability to predict short-term mortality in older patients with AHF.

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Early tranexamic acid infusion in hemorrhagic trauma is associated with a higher survival rate

La administración precoz de ácido tranexámico en el traumatismo hemorrágico se asocia a una mayor supervivencia

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Introduction: Scientific evidence supports the use of tranexamic acid (TXA) in the haemodynamically unstable haemorrhagic trauma patient. Most of these studies were conducted in controlled spaces, administering TXA in hospitals. Our hypothesis is that the administration of this treatment at the site of the incident, due to its earliness, could provide an added value to the effect of the drug in these patients.

Objective: To analyse the survival effect of very early administration of TXA (at the site of the incident) in patients who have suffered major trauma resulting in significant haemodynamic instability.

Method: Case studies and controls. All patients with hemorrhagic trauma susceptible to TXA treatment were included consecutively: haemodynamically unstable (with systolic blood pressure [SBP] < 90 mmHg, heart rate (HR) > 110 bpm) or with evidence of analytical or ultrasound bleeding treated by an out-of-hospital emergency department between 2015 and 2018. Cases: TXA was administered at the scene. Controls: they were treated at the hospital. All received TXA, albeit with a time difference. Epidemiological variables (age, sex, injury mechanism) and severity scales were collected: Trauma and Injury Severity Score (TRISS), Revised Trauma Score (RTS) and Injury Severity Score (ISS). The variable of exposure was the administration of 15 mg/kg of TXA early. On the other hand, the variable dependent was the survival at 7 days, consulting the respective critical units. For the descriptive analysis, central and dispersion measurements were used, and for the inferential statistical analysis, the relationship between categorical variables by means of the chi-square test, the comparative analysis by means of Student's t test and the multivariate binary logistic regression.

Results: 171 patients were included, of whom 124 (72.5%) were male: 68 cases and 103 controls. The mean age was 42 years (SD 20), 41.5 years (SD 19.7) in the case-group versus 42.8 years (SD 21.5) in the control group (p = 0.688). Regarding the injury mechanism, 51 cases (29.8%) were reported as precipitations, 38 (22.2%) as run overs, 32 (18.7%) as motorcycle accidents, 19 (11.1%) as stab wounds, 10 (5.8%) as train crashes, 9 (5.2%) as car accidents and 12 (7.1%) as other mechanisms. Of these, 72 (42.1%) died within 7 days. The mean values of the severity scales at the beginning of the assistance were: ISS 45.28 (DE 15.61), RTS 4.69 (SD1.86) and TRISS 61.84 (SD 34.08). Comparing the severity scales between cases and controls, the following results were obtained: ISS 47.5 (SD 16.2) vs 41.8 (SD 13.9), p = 0.015; RTS 4.66 (SD 2.06) vs 4.73 (SD 1.53), p = 0.808; and TRISS: 63.09 (SD 35.4) vs 60.14 (SD 31.5), p = 0.572. Considering the two groups to be homogeneous in terms of severity scales (even with greater severity, statistically significant, of the group of cases in ISS), the

difference in survival at 7 days of both groups was assessed. Survival of patients in the group given TXA at the site of the incident was 66.0% compared to 45.6% in the control group (not given) (p = 0.006, adjusted odds ratio 2.32, 95% CI 1.24-4.34). When a patient receives TXA early, he or she has a 2.3 greater chance of survival. There is an absolute increase in survival of 20.4% of Patients Treated with TXA at the scene. Age (p = 0.089), sex (p = 0.329) and injury mechanism (p = 0.148) are not associated with survival.

Conclusions: In the most critical patients, early administration of TXA at the site of the incident is associated with less hemodynamic deterioration, which leads to a significant decrease in early mortality. The administration of TXA at the site of the incident should be an essential new tool in patients with significant blood loss.

Mortality at 30 days in patients with acute heart failure: the predictive value of the Quick Sepsis Related Organ Failure Assessment score

Capacidad predictiva del qSOFA para la mortalidad a los 30 días en pacientes con insuficiencia cardiaca aguda

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Introduction: Acute heart failure (AHF) is one of the main reasons for consultation in hospital emergency departments (EDs) and is associated with significant morbidity and mortality. The stratification of the patient upon arrival in the ED is based on the level of triage and clinical profile, depending on the presence of congestion and/or hypoperfusion of the AHF. The quick Sequential Organ Failure Assessment (qSOFA) scale has been validated to predict mortality in patients with suspected sepsis in the ED. At present, the predictive ability of the Qsofa scale to predict short-term mortality in patients with AHF treated in the ED is unknown, nor has it been compared with triage levels or clinical profiles.

Objectives: To study the predictive capacity of the qSOFA scale in patients with AHF treated in EDs and compare it with the triage level and clinical profile when predicting mortality from any cause at 30 days.

Method: A secondary analysis of the Epidemiology of Acute Heart Failure in Emergency Departments (EAHFE)-VI registry was performed, which includes all patients ≥18 years treated by AHF in 34 EDs in a period of 2 months (January-February 2016). For the present study, all cases in which data were available for the calculation of the qSOFA scale and mortality at 30 days of the index episode were selected. Descriptive statistics, chi-square test and analysis of the area under the curve (AUC) of the receptor operating characteristic (ROC) were used.

Results: Out of a total of 4,480, 3,783 patients were included, with a mean age of 81 (SD 12) years. 55.6% were women. The frequencies for qSOFA scores were: 59.8% (2,261 patients) for 0 points, 34.9% (1,321) for 1 point, 4.9% (187) for 2 points and 0.4% (14) for 3 points. The frequencies for the triage categories were: 1.8% (50) for level 1, 30.2% (818) for level 2, 58.5% (1,584) for level 3, 8.9% (242) for level 4 and 0.6% (15) for level 5. The frequencies for the clinical profiles were 15.2% (573) for wet-cold, 0.9% (33) for dry-cold, 6.6% (250) for dry-hot, 77.3% (2,913) for wet-hot. Mortality at 30 days was 2.9%. The probability of death at 30 days increased statistically significantly as the qSOFA score increased (2.0, 4.1, 5.3 and 14.3%, linear trend p < 0.001). The AUC-ROC for 30-day mortality on the Qsofa scale was 0.62 (95% CI 0.55-0.68), for triage level was 0.56 (95% CI 0.49-0.62), and for clinical profile was 0.56 (95% CI 0.51-0.62).

Conclusions: The qSOFA scale has a limited ability to predict 30-day mortality in patients with AHF treated in the ED, although higher than the currently recommended strategies (triage level and clinical profile) to stratify the risk of patients upon arrival in the ED.

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Early revisits by patients with atrial fibrillation according to effectiveness of cardioversion

Reconsulta precoz en pacientes con fibrilación auricular en función de la efectividad de la cardioversión

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Introduction: In patients with atrial fibrillation (AF) rhythm control has been shown to improve the patient's hemodynamic state and symptom control and prevent hospitalization, although it does not improve survival. However, there is little data regarding 30-day reconsultation of patients undergoing rhythm control by electrical or pharmacological cardioversion (CV) in hospital emergency departments (EDs).

Objectives: To compare 30-day ED re-visits of patients with AF depending on the effectiveness of the rhythm control strategy.

Methods: Multi-centre, observational, non-interventionist cohort study from the URGFAICS registry, which included patients over 18 years of age who visited the ED for an episode of AF, with a follow-up of 30 days. The registration was carried out during a period of 6 months in five hospitals of the Institut Català de la Salut. Demographic, clinical, therapeutic and reconsultation-related data were collected. A uni and multivariate study was carried out depending on the effectiveness of the CV and the crude (cOR) and adjusted (aOR) odds ratios with their 95% confidence interval (95% CI) were calculated, as well as the survival curves for 30-day reconsultation, with their adjusted hazard ratio (aHR). The study was approved by the ethics committee of the reference hospital.

Results: 1,199 patients with AF were included in the URGFAICS cohort. CV (pharmacological or electrical) was performed on 372 (31%). Patients requiring hospitalization (36 cases) were excluded from the study, and 336 episodes were finally analyzed. CV was effective in 254 (68.3%). 52.4% of the patients were women, with a mean age of 68 years, 136 (36.6%) over 75 years. Most patients, 245 cases (65.9%), were hypertensive, 74 (19.9%) diabetic, 82 (22%) had known valvular disease, and 144 (38.7%) already had known AF. In 230 (61.8%) the duration of AF was less than 48 hours. Pharmacological CV was performed in 258 (69.4%) patients, being amiodarone the most used drug (225; 60.5%), electric CV in 59 (15.9%) and both types of CV in 57 (15.3%). Patients with AF lasting less than 48 hours reverted to sinus rhythm more effectively ($p < 0.001$), as well as those who consulted for palpitations ($p = 0.008$), unlike those who consulted for dyspnea ($p < 0.001$). After multivariate analysis, AF lasting less than 48 hours was associated with a successful CV (ORa 1.73, 95% CI 1.01-2.96, P = 0.048), while the use of digoxin (ORa 0.30, 95% CI 0.16-0.58, P < 0.001) and amiodarone (ORa 0.45, 95% CI 0.26-0.79, P = 0.005) was associated with a failed CV. Reconsultation at 30 days was 7.4% and most patients consulted for palpitations (17 cases: 68%). There was no difference in 30-day reconsultation regarding the effectiveness of CV, with aHR of 0.87 (95% CI 0.31-2.43, P = 0.786).

Conclusions: The effectiveness of CV (either electrical or pharmacological) does not lead to less than 30-day reconsultation for any reason related to AF. Amiodarone and digoxin were associated with less success in CV and AF of less than 48 hours duration with greater success in CV

Pulmonary ultrasound B-line variation and N-terminal prohormone of brain natriuretic peptide blood levels during episodes of acute heart failure

Análisis de la variación de líneas B en la ecografía pulmonar y del NT-proBNP en sangre durante un episodio de insuficiencia cardiaca aguda

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Introduction: A high serum NT-proBNP concentration and the appearance of B lines in pulmonary ultrasound are useful findings to confirm the diagnosis of an episode of acute heart failure (AHF) in patients with a compatible symptomatology. However, the usefulness of the variation of both parameters in the discharge decision making process has not yet been defined.

Objectives: To analyze the variation in blood concen-

trations of NT-proBNP and B lines in pulmonary ultrasound in patients with an episode of AHF depending on whether they require hospital admission or are discharged from the emergency department (ED). Secondarily, to describe the epidemiological and clinical characteristics of the acute episode, as well as the allocation of patients from the ED.

Method: The Epidemiology of Acute Heart Failure in Emergency Departments (EAHFE) registry is a multicenter, cohort, prospective, consecutive inclusion study of patients with an episode of AHF. Patients included in a level II hospital study for 2016 (EAHFE VI) were selected. The demographic, clinical and laboratory data were analyzed using median and interquartile range (IQR) or mean and standard deviation (SD) for quantitative variables and absolute and relative frequency for qualitative variables. A pulmonary ultrasound was performed at admission and another at discharge for some patients (selection by opportunity), either directly from the ED or after hospitalization. Variation of NTproBNP and B lines was also analyzed using Student and Wilcoxon t-tests. In addition, the existence or not of correlation between the variation of the B lines and the NT-proBNP was analyzed using Spearman's rho test.

Results: We analyzed the 60 patients included in the EAHFE VI registry, whose age was 82.2 (SD 9.7) years; 25 (41.7%) were women. Of these, 41 (68.3%) required hospitalization and 22 (36.7%) went through the ED observation area. The allocation of admitted patients was: internal medicine (18; 43.9%), cardiology (10; 24.4%), geriatrics (9; 22.0%), pneumology (3; 7.3%), nephrology (3; 7.3%) and the coronary or intensive care unit (1; 2.4%). On arrival at the ED, patients had systolic blood pressure of 140 (SD 9) mmHg, diastolic blood pressure of 77 (SD 16) mmHg, heart rate of 87 (SD 22) bpm, respiratory rate of 23 (SD 7) bpm and oxygen saturation of 95% (SD 5%). Most patients, 41 (68.3%), came to the ED by their own means, while 15 (25%) came in a conventional ambulance and 4 (6.7%) in a medical ambulance. The most frequent comorbidities were: arterial hypertension (46; 76.7%), atrial fibrillation (33; 55%), diabetes mellitus (29; 48.3%), chronic renal insufficiency (18; 30%) and valvular disease (14; 23.3%). Although a large proportion had had a previous episode of AHF (36; 60%), only 45 (75%) had echocardiography. Of the latter, 64.7% had a preserved ejection fraction (EF), 8.8% an intermediate EF and 20.6% a reduced EF. On the other hand, the most frequent findings in chest radiography were: cardiomegaly (60; 100%), vascular redistribution (39; 65%), interstitial edema (41; 68%), alveolar edema (4; 6.7%) and pleural effusion (36; 60%). Ultrasensitive troponin T (hsTnT) had a mean value of 43.9 (SD 27.8) µg/l. The number of patients with 30-day reconsultation in the ED was 24 (40%), of which 10 (41.6%) required hospitalization. Mortality at 30 days was 8.3% (5 patients) and mortality at one year was 10% (6 patients). In 30 (50%) patients, pulmonary ultrasound could be performed on admission and another on discharge, either directly from the ED or from the hospital ward. In 20 (66.7%) patients, a B pattern was observed at admission, while at discharge only 3 (20%) were present, with a significant decrease in the number of B lines at admission compared to discharge (7.9 [SD 6.3] vs 14.9 [SD 7.5]; $p < 0.001$). No significant differences were observed in the NT-proBNP values (pg/ml) at discharge regarding admission, nor in patients requiring hospitalization (3,966 [SD 13,366] vs 3,469 [SD 6,876]; $p = 0.286$] nor in those discharged directly from the ED (4,210 [SD 7,133] vs 2,402 [SD 5,612]; $p = 0.588$]. There was also no correlation between line variation (discharge) and NT-proBNP variation overall ($p = 0.838$), or in subgroups discharged from the ED ($p = 0.128$) or from hospitalization ($p = 0.970$).

Conclusions: The profile and clinical presentation of the patients included in the study were similar to those of the EAHFE registry. A significant decrease was observed in the B lines of pulmonary ultrasound between the number at discharge and admission, but this was not the case for the NT-proBNP variation. No correlation was observed between the two variations in the overall analysis and also according to whether discharge was direct from the ED or after hospitalization.

Does geriatric–emergency physician consultation during emergency visits improve prognosis in frail elderly patients? The FRAILCLINIC (Clinical Intervention in Frail Older People) study

¿Mejora el pronóstico de los pacientes mayores frágiles la intervención conjunta urgencias-geriatría? Estudio FRAILCLINIC

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Introduction: Frailty is defined as the state in which there is an increase in vulnerability to stressors produced by an alteration in multiple and interrelated systems, which leads to a decrease in the homeostatic reserve and the capacity of adaptation of the organism, a situation that predisposes to adverse health episodes.

Different studies have shown that prevalence of frailty in people over 65 years of age is between 7-16%, increasing with age and in hospital clinical settings. Frailty is the main risk factor for the development of disability in the elderly, hence the importance of developing programs for the comprehensive management of fragile patients in clinical situations with high risk of originating it, such as visits to the emergency department (ED).

Objective: To assess the impact of a combined ED and geriatric intervention programme on the one-year prognosis of frail elderly patients following a visit to the ED.

Method: FRAILCLINIC is a multicentre, randomised, phase III clinical trial involving 3 countries (Spain, Italy and the United Kingdom) and 5 hospitals. For this substudy, cases from the ED of the University Hospital of Getafe were included. Patients were randomized 1:1. The effect of the combined intervention of an emergency physician and a geriatrician (intervention group) versus the usual clinical practice of the emergency physician (control group) was analyzed in relation to the development of unfavorable episodes at 90 days and one year: death,re-visits to the emergency department, hospitalization and variation in functional deterioration (Barthel index) and fragility (FRAIL scale). The intervention consisted of recommendations made by a geriatrician, which were individualized according to the needs of each patient. Two statistical analyses were performed: one by intention to treat (ITT) and another by protocol (PP) through the odds ratio (OR) of logistic regression adjusted for age, sex and Charlson index.

Results: 123 patients were included: 63 were randomized in the control group and 60 in the intervention group. Since the sample size was relatively small, the tendency of the different episodes was analyzed. In the intervention group, PP analysis reduced mortality by 40% (OR 0.6 (95% CI 0.1-2.5); P = 0.4) at 90 days and by 58% at one year, with no significant difference, and also in analysis by ITT at 90 day-years (OR 0.8 (95% CI 0.2-2.9); P = 0.7) and at one year (OR 0.5 (95% CI 0.1-1.5); P = 0.2). In terms of hospitalisation, none of the analyses showed significant differences, although there was a downward tendency at one year, especially in the PP analysis, to both 90 days (OR 1.16 (95% CI: 0.4-2.8]; P = 0.7) and at one year (OR 0.5 (95% CI 0.1-1.6); P = 0.3); in the ITT analysis at 90 days (OR 1.5 (95% CI 0.6-3.6); P = 0.3) and at one year (OR 0.8 (95% CI 0.3-2.2); P = 0.7). Functionality at 90 days worsened in the intervention group when a PP 55% analysis was performed (OR 1.55 (95% CI 0.5-4.2); P = 0.3), while at one year an improvement of 11% was observed (OR 0.8 (95% CI 0.2-3); P = 0.8). In the ITT analysis: at 90 days (OR 1.3 (95% CI 0.4-3.3); P = 0.5) and at one year (OR 0.6 (95% CI 0.1-2); P = 0.4). The PP analysis showed an increase in ED revisits at 90 days in the intervention group of 46% (OR 1.4 (95% CI 0.5-4); P = 0.4), while at one year they decreased by 93% (OR 0.07 (95% CI: 0-0.6] P = 0.02); similar results were seen in the analysis for ITT at 90 days (OR 2 (95% CI 0.7-5.4); P = 0.17) and one year (OR 0.1 (95% CI 0.01-0.6); P = 0.01). No statistically significant differences in frailty variation between the two groups were observed in either analysis at 90 days or one year.

Conclusions: Combined emergency physician-geriatric intervention in fragile patients attending the ED reduced the risk of ED revisits per year. There was a tendency to decrease the risk of adverse events (death and worsening of the degree and frailty) with combined intervention.

Anemia as a predictor of short-term mortality in patients treated for acute heart failure in hospital emergency departments

Evaluación de la anemia como factor pronóstico de mortalidad a corto plazo en pacientes atendidos en servicios de urgencias hospitalarios por insuficiencia cardiaca aguda

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Introduction: Multiple observational studies have shown that the presence of anaemia leads to a worse prognosis in patients with acute heart failure (AHF) in terms of mortality (from any cause or cardiovascular), as well as readmissions due to decompensation of the AHF itself. Data on the influence of anaemia on mortality in patients with AHF are scarce, and those available are from retrospective studies and with patients usually admitted to conventional hospital wards.

Objective: To assess the role of anaemia in 30-day mortality in patients treated in hospital emergency departments (EDs) for an episode of AHF.

Method: Observational, cohort, prospective, multicenter, non-intervention study of patients admitted to the ED for an episode of AHF from the Epidemiology of Acute Heart Failure in Emergency Departments (EAHFE I-V) registry. Variables: anaemia defined as haemoglobin < 12 g/dL in women and < 13 g/dL in men, mortality at 30 days after care, age and sex, classic risk factors (high blood pressure, diabetes mellitus and dyslipemia),

established cardiovascular disease (ischemic heart disease, previous heart failure, stroke), chronic obstructive pulmonary disease, degree of functional impairment as measured by the Barthel scale, baseline functional degree for dyspnea NYHA III-IV, systolic blood pressure numbers, arterial oxygen saturation at the time of arrival at the ED, sodium and estimated glomerular filtrate. Statistical analysis: a bivariate analysis was performed using chi-square test to compare proportions, Student t for means and a survival analysis using Cox regression.

Results: We included 13,454 patients with a mean age of 80 (SD 10) years old, of which 55.5% were women. 7,662 (56.9%) had anaemia. The group with anemia was older (80.6 [SD 9.5] vs 79.2 [SD 9.5] years, p < 0.001) and had a lower percentage of women (52.5 vs 59.6%, p < 0.001), and had a higher prevalence of risk factors and cardiovascular comorbidity, except in the case of atrial fibrillation (p = 0.33). Regarding the baseline situation, patients with anemia had a higher percentage of functional class for dyspnea NYHA III-IV (26.7 vs 22.2%, p < 0.001) and Barthel index < 60 points (20.7 vs 16.3, p < 0.001). And in relation to chronic treatment, they receive more loop diuretics, potassium-sparing diuretics, beta-blockers, antiaggregation, digoxin, nitrates and statins. Of the complementary tests, the anaemia group had a greater deterioration of renal function, with a higher percentage of patients with FGe < 60 ml/min (70.9 vs 53.8%, p < 0.001) and a higher percentage of hyponatremia (20.3 vs 16.1%, p < 0.001). Of the biomarkers, patients with anemia have higher NT-proBNP values than those in the non-anemic group (8,472 [SD 13,676] vs. 6,812 [SD 13,093] pg/ml, p < 0.001) and a higher percentage of them have positive troponins (58.4 vs. 51.1%, p < 0.001). Mortality is higher in patients with anemia (10.7 vs 7.5%, p < 0.001). The crude hazard ratio of anemia for mortality at 30 days is 1.46 (95% CI 1.30-1.64; p < 0.001) and the adjusted for all confounding factors is 1.20 (95% CI 1.05-1.38; p = 0.009).

Conclusions: Anaemia is an independent predictor of early mortality in patients with AHF treated in EDs. A study of the aetiology of this pathology may be important in these patients, as administering adequate treatment would lead to a decrease in mortality rate from AHF.