AP009

Variability in the structure and operation of out-of-hospital emergency services in Spain. Spanish Registry of out-of-hospital cardiac arrest

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Background: The difficulties of comparing results in medical attention of out-of-hospital cardiac arrest (OOHCA) patients are well known. Apart from methodological differences, the structure of out-of-hospital emergency services (EMS) can contribute to this. We describe the main features of EMS in Spain.

Methods: We used a nationwide, structured questionnaire exploring 4 areas: population and resources, coordination call centers (CCC), professional training and knowledge of results.

Results: Nineteen public EMS in Spain responded. All EMS ambulance teams include a physician. The proportion of these medicalized ambulances per 100,000 inhabitants varies between 0.394 and 1.486. All CCC have 3-digit telephone access. Twelve EMS (63.2%) share the CCC with other emergency services; the CCC is strictly health-related in seven EMS. Only 5 EMS (26.3%) register the delay that occurs when the first operator receiving the call is not health-trained and call diversion is required. Telephone resuscitation support is provided by 12 CCC (63.2%). There is no specialty of emergency medicine in Spain as yet, but continuous training of EMS team professionals is mandatory in 7 EMS (36.8%) and voluntary in the remaining 12. Thirteen EMS (68.4%) have OOHCA registries (12 with continuous and 2 with periodic case registration), 9 with defined inclusion criteria. Only 6 EMS (31.6%) perform hospital and post-discharge follow-up and record final outcomes, with survival rates at discharge between 5.7% and 21.4%.

Conclusions: Despite seemingly similar structures, there is great variability between EMS with respect to resources, CCC, training, and knowledge of results. These findings can explain partially different results and suggest the need to improve and standardize CCC procedures, EMS team training and promote a common registry focused on results, a national registry.

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AP010

Use of emergency ultrasound during cardiopulmonary resuscitation to detect pulmonary embolism

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Purpose: The diagnosis of pulmonary embolism (PE) during cardiopulmonary resuscitation (CPR) is challenging, and often is established only by autopsy. Here, we aimed to describe the clinical characteristics of PE as cause of out-of-hospital cardiac arrest (OHCA) and evaluate the diagnostic value of emergency ultrasound (E-US) during CPR.

Methods: We conducted a retrospective analysis of non-traumatic OHCA patients who were admitted to an urban emergency department and underwent autopsy between April 2010 and April 2013 in Japan.

Results: In total, 214 patients with OHCA were included (136 men [63.6%], 78 women [36.4%]; mean age, 71.4 ± 14 years). Of these, 8 patients (3.7%) were diagnosed with a PE at autopsy, and only 2 of these patients were diagnosed during CPR. Of the 8 patients, the initial cardiac arrest rhythm was pulseless electrical arrest in 6 patients (75%) and asystole in 2 (25%). The primary symptoms reported before the cardiac arrest were dyspnea (2/8, 25%), chest pain (1/8, 12.5%), and syncope (1/8, 12.5%). Two patients had predisposing factors for PE: 1 had a prior history of PE/deep vein thrombosis, whereas the other was bed-ridden. E-US was performed in 172 patients and detected PE with a sensitivity of 28.6% (95% confidence interval [CI], 10.3–28.6), specificity of 100% (95% CI, 95.2–100), and overall accuracy of 97.0% (95% CI, 95.5–97.0).

Conclusions: It is difficult to diagnose PE during CPR on the basis of only patient history and physical examination. E-US is proven to be an effective tool to diagnose PE with high accuracy, and seamless thrombolytic therapy may improve patient outcomes.

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