LETTERS TO THE EDITOR

Cognitive function and fatigue from cardiopulmonary resuscitation effort in health care professionals: a simulation test

Influencia de la fatiga producida durante la reanimación cardiopulmonar sobre la capacidad cognitiva de los profesionales sanitarios: ensayo de simulación

To the editor:

Cardiorespiratory arrest (CRA), one of the leading causes of death in Europe[1], places high stress and physical strain on health professionals during CPR, who may suffer from physical fatigue that impairs their cognitive abilities and decision-making. Therefore, the main objective was to analyse cognitive fatigue during CPR and determine the differences between CPR synchronizing 30 compressions and 2 ventilations (30:2) and CPR with continuous cardiac massage (compressions only).

An analytical-transversal simulation study has been carried out at the Catholic University of Murcia. This study was approved by the ethics committee and the participants signed a consent form. The 96 participating professionals (16 students, 7 technicians, 26 nurses, 14 doctors and 33 lifeguards) were distributed by simple randomization using Excel software (VisualBasic®) to both types of CPR. All the participants held the SVB-DEA diploma.

The subjects performed two minutes of CPR on a Laerdal Resusci Anne® mannequin. To analyse cognitive functions, before and immediately after CPR, participants underwent the Trail Making Test (TMT)[2], a test that analyses attention, motor function, and executive function. The fatigue sensation was measured with the OMNI scale[3], a visual analogue scale to measure the subjective perception of fatigue. To compare both methods of CPR, a repeated measurement ANOVA test was performed (inter-subject factor: time, inter-subject factor: type of CPR). Other variables such as age, sex, anthropometric parameters or experience were determined using a self-completed form designed for this research. The statistical significance was established for a value of $p < 0.05$.

TMT results (Figure 1) indicate that accuracy (successes/attempts) was not influenced by CPR. However, the time taken to perform the test was reduced statistically significantly. Although continuous CPR produced a greater sense of fatigue (Δ mean = 1.2; $p = 0.001$), the time and accuracy of the TMT according to the type of CPR was similar ($p > 0.05$ in all cases). Only female gender ($p = 0.002$) and professional training ($p = 0.008$) appear to be related to cognitive performance, while experience, degree of physical activity, body mass index (BMI) or age appear to have less influence.

Despite the fatigue caused by CPR, our results show that the accuracy of the cognitive test varied little after 2 minutes of CPR. These results would support the ERC[1] recommendations in the relay chest compressions every 2 minutes, since in addition to preventing physical fatigue, we have not observed any cognitive fatigue. Paradoxically, the cognitive test time decreased, demonstrating that the 2 minutes of CPR did not negatively influence decision-making and that there was a learning effect on TMT[4,5]. In conclusion, the cognitive capacity of the professionals is not affected after CPR is performed for a period of 2 min, either in the form of continuous or synchronous.

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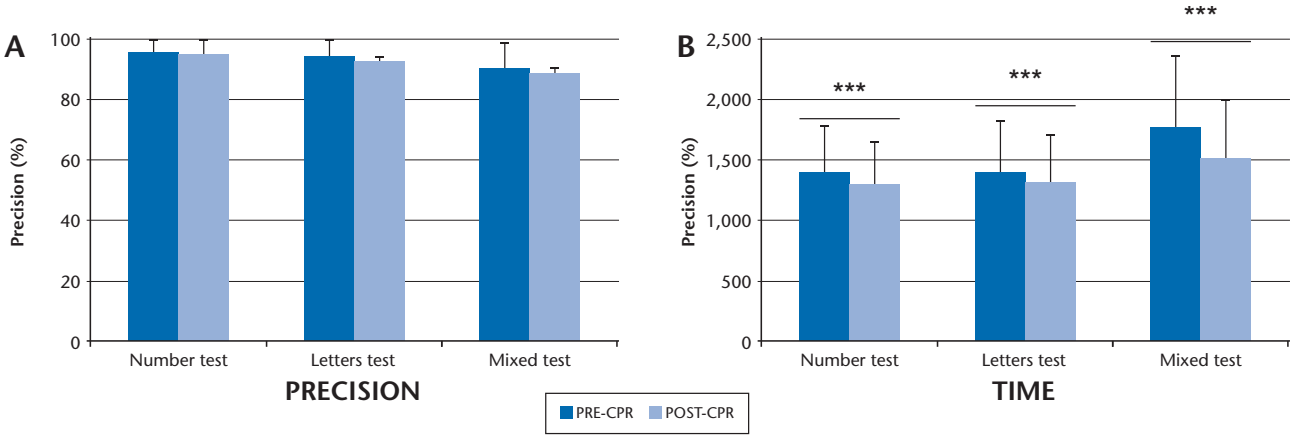

Figure 1. Trail Making Test (TMT) results in relation to accuracy (A) and time (B) in performance before and after 2 min of CPR. The graphs represent mean and standard deviation. ***p < 0,001

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Quality assessment of bystander cardiopulmonary resuscitation during telephone assistance, a potential quality indicator of emergency medical service performance

La valoración de la calidad de la resucitación cardiopulmonar con soporte telefónico realizada por testigos como elemento de evaluación del desempeño de un servicio de emergencias médicas

To the editor:

After reading the interesting article by Van Tulder et al.[1], recently published in your Journal, we would like to highlight some of the contributions of this article, mainly on the limitations that telephone assisted cardiopulmonary resuscitation (CPR) has on the quality of CPR performed by witnesses. These limitations, which, as the authors point out, would include a failure to adequately assess the quality of chest compressions in terms of frequency and depth and the gender biases of both teleoperators and rescuers, should lead us to consider the need for the former to make every effort to estimate the quality of chest compressions as accurately as possible.

For this reason, we would like to highlight the importance of having strict and uniform protocols for telephone support from emergency coordination centres (ECCs) for witness resuscitation, such as the one recently presented and published by the Scientific Committee of the Spanish Council for Cardiopulmonary Resuscitation[2], with the main objective of increasing the intervention of witnesses, given the proven influence on the improvement of mortality[3]. The unification of telephone assisted CPR protocols in all Spanish ECCs will contribute to better identification of cardiac arrest situations and increased CPR by witnesses. This will also take the necessary step to promote the training of ECC staff in telephone support for witness resuscitation. It will also facilitate the evaluation and comparison of the performance of these centres[4], which is ultimately a positive intervention in terms of public health[5]. Finally, such a measure of performance, both in detection and in support and even in assessing the quality of the CPR of witnesses, should form the following part of the quality programs of the different emergency services by setting common standards in the medical field in order to be able to value the best practice.

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Clinical spectrum of associated SUNCT (shortlasting unilateral neuralgiform headache attacks with conjunctival injection and tearing) and trigeminal neuralgia: a multidisciplinary approach in the emergency department

Espectro clínico del SUNCT y de la neuralgia trigeminal secundarios: un abordaje multidisciplinar desde urgencias

To the editor:

SUNCT (Shortlasting Unilateral Neuralgiform headache attacks with Conjunctival Injection and Tearing) is included in trigeminal-autonomic headaches. Differential diagnosis should be made with trigeminal neuralgia (TN) because of similarities in the duration and location of pain[1].

A 52-year-old woman who came to the emergency room for left periorbital pain lasting 10-15 seconds (up to 15 attacks per hour). It was accompanied by conjunctival injection, tearing and Horner's syndrome (Figure 1). In computed tomography (CT), an extraxial lesion in the left cerebellopontine angle (Figure 1) was observed, which was later classified as an

epidermoid cyst by magnetic resonance imaging (MRI). In the absence of response to nonsteroidal anti-inflammatory drugs (NSAIDs), intravenous phenytoin and methylprednisolone were prescribed. Carbamazepine 400 mg/8 h and lamotrigine 50 mg/12 h were combined orally. A week later, carbamazepine was stopped. After nine months of remission, the clinic relapsed, but the episodes were shorter in duration, in the trigeminal region and with a refractory period. Examination revealed trigeminal hypesthesia. Lamotrigine was gradually replaced by carbamazepine. It was evaluated by neurosurgery, and given the control of the symptomatology, a conservative attitude was agreed upon.

The first clinical period was compatible with the diagnosis of SUNCT with a status-like pattern[2]. In the second phase, the spectrum evolved into an atypical TN. The similarities between SUNCT and TN are neuralgiform, brief and periorbital pain. The prominence of autonomic signs is characteristic of the SUNCT. SUNCT has been associated with epidermoid cysts[3], but differential diagnosis has to be made with other entities such as dolicomegabasilar, meningiomas, vertebral dissection, vascular malformations, cavernomas, pituitary adenomas, trunk strokes or cavernous sinus lesions. Secondary TNs are usually secondary to vascular compressions. In our case, it is probable that the epidermoid cyst produced a compression of the trigeminal fibres, thus acting on the nociceptive pathways. In TN, the stimulation of trigeminal afferences would produce the activation of the autonomic trigeminal reflex, explaining dysautonomia[4]. In the event of a headache associated with an altered neurological examination, an etiological study should always be carried out.

The treatment of SUNCT and TN is complex; both have a poor response to NSAIDs in the acute phase and the use of morphics is discouraged because of their rebound effect. Intravenous infusion of methylprednisolone, phenytoin, valproic acid, or lacosamide may be helpful. Current guidelines on SUNCT recommend lamotrigine as a first line of prevention. Regarding TN, the first therapeutic step is carbamazepine[5]. The overlap between SUNCT and TN has been previously described[3], although this is the first case of overlap secondary to an epidermoid cyst.

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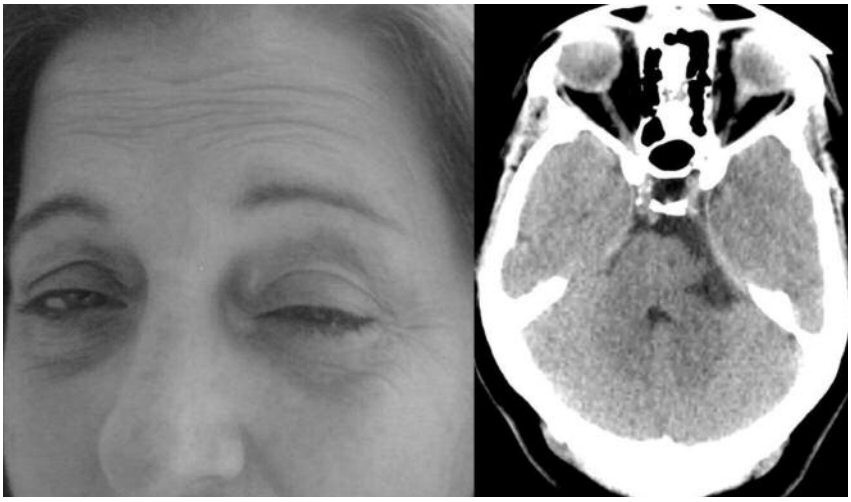

Figure 1. Left: image of the patient during the SUNCT episode, showing autonomic signs (ptosis, myosis, conjunctival injection and tearing). Right: Sagittal section of the simple cranial CT scan showing a cystic extraaxial hypodense lesion in the left cerebellopontine angle.

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Drug reaction with eosinophilia and systemic symptoms: DRESS syndrome

Síndrome de DRESS (drug reaction with eosinophilia and systemic symptoms)

To the editor:

DRESS syndrome is a serious adverse drug reaction characterised by fever, skin rash, adenopathies, haematological disorders and visceral disease, where the liver is the most commonly affected organ[1]. There are several mechanisms involved in its etiopathogenesis: production of reactive metabolites by certain drugs, alteration of the metabolic pathway of pharmacological detoxification, immunological mechanisms and certain viruses (VHH6, VHH7)[2]. The most commonly implicated drugs are: aromatic anticonvulsants, allopurinol and sulfonamides.

A 79-year-old woman with a history of high blood pressure, chronic obstructive

pulmonary disease, dilated cardiomyopathy and hyperuricemia, who had been suffering from general malaise, asthenia and musculoskeletal pain for three weeks. Last week she had been suffering from fever, nausea and vomiting. In the emergency department, fever, papulo-erythematous lesions isolated in lower limbs and urinary sediment with bacteriuria and leukocyturia were reported. She was diagnosed with a urinary tract infection and cefditorene was indicated. Dermal lesions were considered secondary to the infectious process. Two days later, the patient returned due to the persistence of the symptoms and extent of the dermal lesions. She had a fever of 38.5ºC, a blood pressure of 90/60 mmHg, facial oedema (Figure 1A) and morbid exanthema with generalised papulo-erythematous lesions (Figures 1B, 1C). Cardiopulmonary and neurological examination was normal. The analysis showed creatinine 1.33 mg/dL, ALT 186 UI/L, AST 64 UI/L, LDH 1,317 UI/L, PCR 104 mg/L and lactate 3.4 mmol. Blood count showed leukocytes 10.4 x 109/L, with eosinophilia of 1.20 x 10^9/L without lymphocytosis (1.0 x 10^9/L). Chest and abdominal x-rays were normal. Fluid therapy and broad-spectrum antibiotics were initiated. In 24 hours, haemodynamic stabilization was achieved, but transaminases increased (ALT 216 IU/L, AST 186 IU/L) with hepatotrope virus serologies, urine culture and negative blood cultures. The patient commented that she had been diagnosed with hyperuricemia a month earlier and that her symptoms had appeared within a week of starting treatment with allopurinol. She was diagnosed with DRESS syndrome (met RegiSCAR criteria) secondary to allopurinol. Antibiotic therapy and allopurinol were stopped and steroid treatment with methylprednisolone was started. The patient evolved favourably, the fever disappeared and the dermal lesions improved, moving on to a scaly phase until its resolution (Figure 1D).

The clinical picture usually develops between the second and eighth week after starting the meication[3]. Initially, the patient presents with a pseudo flu-like picture with generalised and painful adenopathies. Later, he develops facial oedema, a morbidly pruritic exanthema, which develops into exfoliative dermatitis. The RegiSCAR group has established a series of diagnostic criteria based on clinical manifestations, analytical and histological alterations, exclusion of other diagnoses and evolution[2,3]. It is essential to discontinue the medication responsible. In severe cases involving internal organs, including liver involvement, general support measures and systemic corticosteroids are indicated[1,2,4]. The second line is immunoglobulins or plasmapheresis. Mortality, mainly secondary to liver failure, is 10% and increases with delayed diagnosis[4].

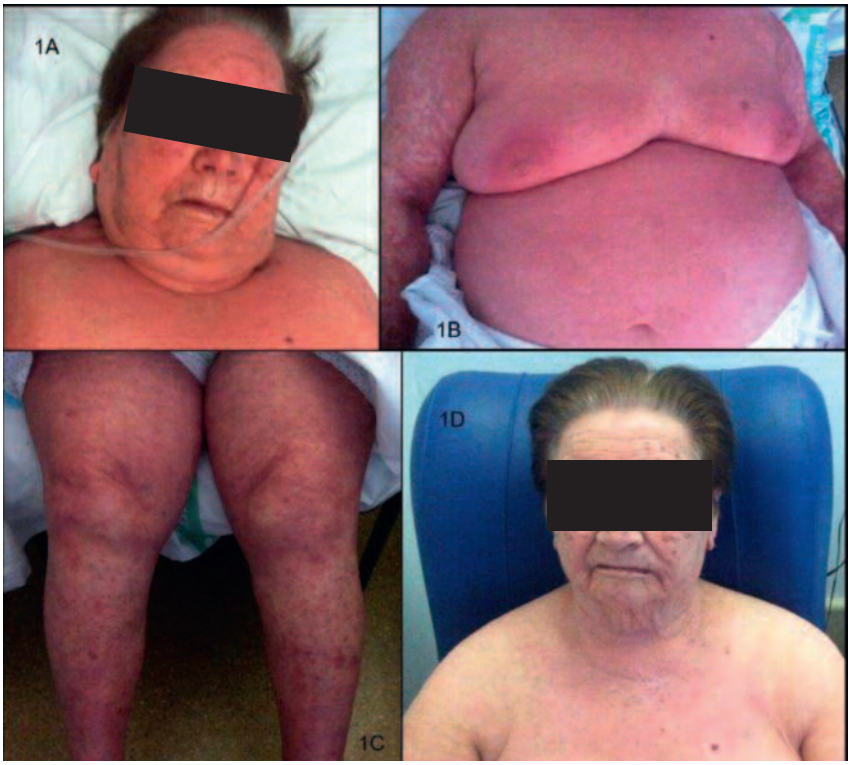

Figure 1. A) Facial oedema. B) Generalised erythematous morbiliform exanthema. C) Papulo-erythematous lesions of the lower limbs. D) After treatment: resolution of oedema and rash erythematosus, which progressed to the scaly phase.

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Adoption of measures to prevent contagion from influenza in health care centres should be mandated by law

La adopción de medidas preventivas contra el contagio de gripe en las instalaciones de las administraciones sanitarias debería ser una obligación jurídica exigible

To the editor:

The article "Risk of transmission of influenza in a hospital emergency department (ED) during periods of maximum epidemic incidence"[1], together with the editorial "Transmission of influenza in emergency departments"[2] recently published in your journal"[2], highlight a public health problem that occurs annually in hospital emergency departments (EDs): the considerable increase in the risk of contracting influenza among citizens who come to an ED during periods of maximum epidemic incidence. These lines are intended to complement its valuable recommendations from the law perspective.

In our opinion, the question to be asked is whether the risk of flu transmission in the ED is avoidable (without resorting to disproportionate measures or unreasonable costs). Moreover, if this is the case, administrations are under a legal duty to act accordingly. In this regard, it can be concluded that adopting recommendations such as those described in the published articles, i.e., implementing "rapid diagnostic methods" of the virus in the first screening, or having EDs in "adequate conditions of safety, comfort and privacy, designed in such a way as to minimise or reduce the risk of transmission", would be sufficient to considerably reduce this risk.

The second question, which should also be answered affirmatively, must therefore be addressed if we are to comply with the rules in force. According to its wording, public administrations have the duty to protect public health thanks, among other things, to preventive measures, in accordance with the provisions of Article 43 of the Spanish Constitution, a provision developed by General Public Health Law 33/2011, of 4 October, which in its first article states that this includes the adoption of initiatives to "prevent the disease as well as to protect, promote and recover the health of people, both individually and collectively". It can therefore be concluded that administrations have a legal obligation to do their utmost to prevent the spread of a potentially lethal disease, especially when it may occur on their own premises.

Obviously, this does not mean that it is easy to hold them legally accountable if they fail to comply with this mandate. Our jurisprudence[3] indicates that the determination of whether or not preventive measures to avoid nosocomial infections in medical care have been implemented depends on the test carried out in each case. This makes it almost impossible in practice to establish a certain relationship between exposure to the disease and its manifestation in a given patient. But this immunity of the Administration should not in any case defend the perpetuation of practices contrary to our public health regulations. In short, we advocate an extension of the scope of the Administration's duties in this area, which would result in the implementation of measures such as those suggested in the aforementioned articles becoming an enforceable legal obligation.

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The health care system as a means of contagion during the 2016-2017 flu season

El sistema sanitario como vector contagioso durante la campaña gripal 2016-2017

To the editor:

We have read with great interest the article published in your journal written by Esteve-Esteve et al.[1] in which it is observed that a visit to a hospital emergency department (ED) in the week of maximum incidence of influenza increases the risk of contracting this disease. During the last flu season, an attack rate of 17.8% was detected in health institutions, and the health system (NHS) could effectively represent a place of risk for contracting influenza virus infection (IVI)[2,3].

Our working group designed a retrospective descriptive observational study of the 2016-2017 flu season, conducted in a regional hospital serving a population of 104,852. Confirmation of IVI was made by rapid immunochromatographic diagnosis or by genomic amplification techniques using polymerase chain reaction (PCR) methods. We defined exposed patients as patients without respiratory infectious semiology who attended the ED, outpatient hospital consultations, primary care (PC) or had been admitted to hospital. We consider "case" patients with confirmed IVI who had contact with the SS in the 10 days prior to being diagnosed.

151 patients were identified, 51 (33.8%, 95% CI 26.3-42.0) had previous contact with NHS. 74.5% went to PCv and 25.5% to the hospital (Figure 1). During the week of maximum incidence in Cantabria, between the first and second week of 2017, 35 cases out of 151 (23.2%) were confirmed in our hospital. Of these, 8 (22.9%, 95% CI 10.4-40.1) had previous contact with NHS, 7 (87.5%) with PC and 1 (12.5%) with the hospital. We found no statistically significant differences when comparing the patients who contacted the NHS in the week of maximum influenza incidence vs. the patients who contacted during the rest of the season (p = 0.119), with a higher percentage of the seconds (22.9 vs. 37.1%), perhaps because of the universal circulation of the infectious agent specifically in that week.

The results of our series show that the approach to NHS carries the risk of contagion, not only during the week of maximum incidence, but also during the entire flu season. We agree with Esteve-Esteve et al. in estimating that approximately 2% of flu cases could be avoi-

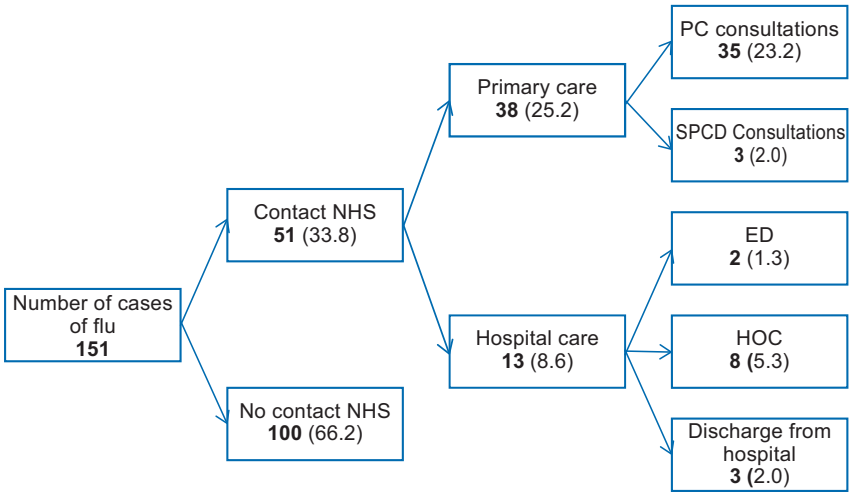

Figure 1. Distribution of flu cases attended in the emergency department of the Laredo Hospital (Cantabria) during the 66 days that there were confirmed cases (5- 12-2016/8-2-2017), according to the existence of previous contact with the Health System (NHS). All percentages, in brackets, refer to the total number of confirmed cases of influenza (n = 151). PC: primary care. HOC: hospital outpatient consultations. SPCD: service of primary care emergency departments. ED: hospital emergency department.

ded if the infection among those who go to the ED were completely suppressed. According to our estimates, between 0.2 and 4.7% would be avoidable cases. However, the measures should also be applied at other levels of health care. For example, in PC they contacted 25.2% previously, while in specialised care they contacted 8.6%. In this sense, it would be important to estimate the risk of contagion in PC since, even though it is a lower risk than that described in the ED, it could have a higher population attributable risk, and consequently a greater impact on the health of the population. The same reflection applies to all other situations of contact with other NHS structures. In this context, we could apply what Geoffrey Rose coined as "Prevention paradox": it can bring more benefits to act on weak risk factors if they are very prevalent, than on strong risk factors if they are these are not very prevalent[4].

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