

## LETTERS TO THE EDITOR

**On D-dimer level and the Wells scale: a case of unexpected pulmonary thromboembolism**

*Reflexiones acerca del dímero D y la escala Wells: a propósito de un caso inesperado de tromboembolismo pulmonar*

**To the editor:**

Venous thromboembolic disease (VTD) is a single disease with two different clinical manifestations: deep venous thrombosis (DVT) and pulmonary embolism (PE). The annual incidence of VTD in Spain is estimated at 154/100,000 inhabitants, with a mortality close to 12%<sup>1</sup>. For its diagnosis, it is recommended to calculate the pretest clinical probability, with tools such as the Wells scale in combination with D-dimer, which allows to discern those that do not require an additional image test<sup>2</sup>. However, sometimes a low pre-test probability is still associated with VTD. In these cases, clinical ultrasound may play a relevant role<sup>3</sup>.

A 37-year-old male with a history of atrial fibrillation on treatment with acetylsalicylic acid, flecainide and bisoprolol. He went to the emergency room for dyspnea on minimal exertion and left costal pain, with pleuritic characteristics, of 3 days of evolution. He had recently made a transatlantic flight. Physical examination showed blood pressure at 120/71 mmHg and a heart rate of 96 bpm, was eupneic and baseline oxygen saturation of 98%. At auscultation, there was hypofonesis in the left pulmonary base, and in the examination of extremities there were no signs of VTD. The analysis showed  $12.4 \times 10^9/L$  leukocytes, 125 mg/L [VN: 0.0-3.0] and D-dimer of 170 ng/mL [VN < 500 ng/ml; Innovance® d-dimer]. Chest x-ray and electrocardiogram were normal. The pretest probability of PET (according to the Wells scale) was intermediate risk (3 points because there was no alternative diagnosis less likely than PE), than with a negative D-dimer, it would exclude the diagnosis of PE. In spite of this, in the initial clinical suspicion of PE, a clinical ultrasound of compression was performed in 4 points of the lower limbs, which showed VTD of the superficial femoral vein. Later, pulmonary CT angiography was performed, which revealed bilateral acute pulmonary effusion with pulmonary infarcts. We started anticoagulation with good evolution.

D-dimer is a peptide product of fibrinolysis. It rises in serum approxi-

mately 1 hour after thrombus formation and up to 7 days later. There are factors that influence plasma values, such as the time of evolution, anticoagulation, thrombus location (distal DVT is less sensitive), comorbidity (higher plasma concentrations), and age (increases with age)<sup>4</sup>. It has a high negative predictive value (95-98%) for VTD, and allows to exclude the diagnosis of VTD in case of negative values and clinical scenarios of low probability (according to the Wells scale). However, due to its high clinical and prognostic impact, failure to diagnose 1% of these patients remains an inasumable risk<sup>5</sup>. We believe that clinical ultrasound at the foot of the bed performed by the clinician responsible is a useful, simple and safe tool for the diagnosis of DVT and also increases the diagnostic performance of the Wells scale combined with the use of D-dimer<sup>3,5</sup>.

Yale Tung Chen<sup>1</sup>,  
Aránzazu Castellano Candalija<sup>2</sup>,  
Macarena Lerín<sup>1</sup>, José Camacho Siles<sup>2</sup>,  
César Carballo Cardona<sup>1</sup>

<sup>1</sup>Servicio de Urgencias, Hospital Universitario La Paz, Madrid, Spain.

<sup>2</sup>Servicio de Medicina Interna, Hospital Universitario La Paz, Madrid, Spain.

yale.tung.chen@gmail.com

**Conflicting interests**

The authors declare no conflict of interest in relation to this article.

**Authors' contributions, funding and ethical responsibilities**

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

The informed consent of the patient was obtained for the publication of his personal information in EMERGENCIAS.

**Editor in charge**

Aitor Alquézar Albé, MD, PhD.

**Article not commissioned by the Editorial Committee and with external peer review**

**References**

- 1 Guijarro Merino R, Montes Santiago J, San Roman Teran CM. Epidemiology of venous thromboembolic disease in Spain. *Med Clin (Barc)*. 2008;131(Supl 2):2-9.
- 2 Guyatt GH, Akl EA, Crowther M, Gutterman DD, Schunemann HJ. Executive summary: Antithrombotic Therapy and Prevention of Thrombosis, 9th ed: American College of Chest Physicians Evidence-Based Clinical Practice Guidelines. *Chest*. 2012;141(2 Supl):75-475.
- 3 Nazerian P, Volpicelli G, Gigli C, Becattini C, Sferazza Papa GF, Grifoni S, et al.; Ultrasound Wells study group. Diagnostic performance of Wells score combined with point-of-care lung and venous ultrasound in suspected pulmonary embolism. *Acad Emerg Med*. 2017;24:270-80.
- 4 Soto MJ, Monreal M. D-dimer levels in venous thromboembolism. *Med Clin (Barc)*. 2005;124:749-53.
- 5 Ramsey SC, Flaherty PM. The Unlikely Presence of Deep Vein Thrombosis in a Patient With Low Pretest Probability and a Negative D-Dimer: A Case Report. *J Emerg Med*. 2015;48:671-4.

**Stevens-Johnson syndrome successfully treated with a single dose of etanercept**

*Síndrome de Stevens-Johnson tratado con dosis única de etanercept*

**To the editor:**

Stevens-Johnson syndrome/toxic epidermal necrolysis (SJS/TEN) is a severe mucocutaneous reaction characterized by epidermal necrosis, multiple mucositis and systemic disorders. It is a potentially deadly, drug-induced in most cases, and for which there is no effective standard treatment<sup>1</sup>. The majority of the authors consider that SJS and TEN are not isolated entities, but different phases within the spectrum of the same disease, differentiating them by the percentage of cutaneous surface affected (CSA) by epidermal detachment (> 30% in the TEN). The mortality rate of SJS/TEN ranges from 5% to 30%<sup>2</sup>. It should be noted that establishing an early and effective treatment can slow the progression of SJS to TEN and therefore a fatal outcome. We describe the case of a patient who presented remission of the condition following the

administration of a single dose of etanercept 50 mg.

A 22-year-old female patient admitted to the intensive care unit on suspicion of SJS when she had a rapidly progressive, generalized skin rash with blistering and oral mucosal involvement of a week of evolution. Approximate CSA was 10%, with poor general condition. On previous days, she had been treated with ibuprofen 600 mg and loperamide 2 mg. Supporting treatment with fluid therapy, parenteral nutrition, empiric antibiotic treatment (clavulanic amoxicillin 1 g/200 mg IV every 8 h) and analgesia with morphs were initiated. Skin biopsy showed a superficial perivascular inflammatory lymphocytic infiltrate with epidermal necrosis. The general analysis showed mild leukocytosis, without other significant alterations. Blood cultures, urine cultures and virus serology were negative, supporting the pharmacological cause, probably by non-steroidal anti-inflammatory drugs (NSAIDs). After four days of hospitalization and progressive worsening, the administration of etanercept 50 mg subcutaneously in a single dose was decided. The patient's condition improved rapidly, with cessation of blistering lesions. The areas of denuded skin began to re-epithelialize, and the repitalization was complete at 7 days.

In SJS/TEN, epidermal necrosis is mediated by the death of keratinocytes through an apoptotic process in which monocytes/macrophages contribute by producing tumor necrosis factor alpha (TNF- $\alpha$ )<sup>3</sup>. In recent years, isolated cases of SJS/TEN have been reported in response to treatment with TNF- $\alpha$  antagonists, such as infliximab and, subsequently, etanercept<sup>4</sup>, which has shown the same efficacy, adding the advantage of its single-dose subcutaneous application and lower risk of secondary infections<sup>5</sup>. The mean time of re-epithelialization after treatment with etanercept 50 mg is 8.5 days<sup>4</sup>. Although these cases show encouraging results, no controlled studies have been conducted and the total number of patients as a whole is small. However, the results suggest a more favorable outcome than conventional treatments (corticoids, intravenous immunoglobulin, cyclosporine, plasmapheresis, etc.)<sup>4</sup>. In conclusion, etanercept may be considered a therapeutic alternative in the presence of suspected SJS/TEN. Randomized clinical trials are required to confirm their efficacy and safety

Paula Martín-Cuevas,  
Jorge Suárez-Pérez,  
Modesto Martín-González,



**Figure 1.** Image of the patient upon admission to the ICU (a) and after 7 days of treatment (b)

Enrique Herrera-Acosta

*Servicio de Dermatología, Hospital Vithas Xanit Internacional de Benalmádena, Málaga, Spain.*

*paulamcuevas@hotmail.com*

#### Conflicting interests

The authors declare no conflict of interest in relation to this article.

#### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

The informed consent of the patient was obtained for the publication of his personal information in EMERGENCIAS.

#### Editor in charge

Aitor Alquézar Albé, MD, PhD.

**Article not commissioned by the Editorial Committee and with external peer review**

#### References

- 1 Sánchez-Blanco B. Síndrome de Stevens-Johnson. *Emergencias*. 2010;22:470.
- 2 Schwartz RA, McDonough PH, Lee BW. Toxic epidermal necrolysis: Part II. Prognosis, sequelae, diagnosis, differential diagnosis, prevention, and treatment. *J Am Acad Dermatol*. 2013;69:187.e1-16.
- 3 Schwartz RA, McDonough PH, Lee BW. Toxic epidermal necrolysis: Part I. Introduction, history, classification, clinical features, systemic manifestations, etiology, and immunopathogenesis. *J Am Acad Dermatol*. 2013;69:173.e1-13.
- 4 Paradisi A, Abeni D, Bergamo F, Ricci F, Didona D, Didona B. Etanercept therapy for toxic epidermal necrolysis. *J Am Acad Dermatol*. 2014;71:278-83.
- 5 Atzeni F, Sarzi-Puttini P, Botsios C. Long-term anti-TNF therapy and the risk of serious infections in a cohort of patients with rheumatoid arthritis: Comparison of adalimumab, etanercept and infliximab in the GISEA registry. *Autoimmunity Reviews*. 2012;225-9.

#### Importance of triage in hospital emergency departments

#### La importancia del triaje en los servicios de urgencias

#### To the editor:

In reference to the article by Lobón and Anderson regarding innovation in Emergency Medicine<sup>1</sup>, there are some aspects that can be discussed.

First, the trajectory of the patient does not end with the examination of the emergency doctor<sup>1</sup>, but with the final destination of the patient<sup>2</sup>, which in 9% of cases is a hospital admission, according to a study carried out in the emergency services of Catalonia [SUHCAT1]<sup>3</sup>. This fact reinforces the need to improve the flow of patients to the hospitalization areas.

Secondly, article<sup>1</sup> proposes a model of simultaneous and non-sequential care, such as that established in most hospital emergency services (HES). This change is proposed with the elimination of triage as it is currently known. The triage does not generate a bottleneck at the entrance of the HES, but it is a system of classification of patients whose purpose is to improve their safety while waiting to be attended. The purpose of triage is to manage demand in order to assist patients according to the emergency and not according to the order of arrival at the service<sup>4</sup>. The article proposes

the location of the patients in the space that they will occupy without triage and that the access to the patient is simultaneous by the professionals involved in their care. The SUHCAT2 study on the emergency services in Catalonia<sup>5</sup> states that patients are treated according to a mixed care model, that is, depending on the category of triage and the specialty of the consultation, making it difficult to locate the patient without knowing the reason for consultation. In addition, HES staff and space limitations, already described in the SUHCAT study<sup>1</sup>, would not allow all patients to be placed in care spaces at the time of their arrival, especially at times of greatest influx<sup>2</sup>.

In relation to the units of emergency observation, we agree with the opinion that they are frequently occupied by patients who should be in areas of hospitalization<sup>1</sup>. However, often patients in those areas are those who need to be there for reasons of observation or monitoring, so they probably need more staff than those in conventional areas.

Finally, the article proposes an organizational integration of HES in the health system<sup>1</sup>. Taking into account that 47.9% of patients seen in HES are classified as level 4 and 17.8% as level 5<sup>5</sup>, a reform of care could be proposed, decentralizing the urgent care of less severe processes to services of non-hospital emergencies. In this way, HES would only address the emergencies of levels 1,2 and 3, which represent 34.4% of the total number of emergencies that are treated in HES in Catalonia<sup>5</sup>.

Aurora Fontova-Almató<sup>1,2</sup>,  
Rosa Suñer-Soler<sup>2</sup>

<sup>1</sup>Servicio de Urgencias, Hospital de Figueras, Fundació Salut Empordà, Girona, Spain.

<sup>2</sup>Departamento de Enfermería, Universidad de Girona, Spain.

aurorafontova@gmail.com

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

### Editor in charge

Oscar Miró, MD, PhD.

### Article not commissioned by the Editorial Committee and with external peer review

### References

- 1 Lobón LF, Anderson P. Innovación en Medicina de Urgencias y Emergencias: cinco aspectos organizativos que podrían cambiar nuestra práctica. *Emergencias*. 2017;29:61-4.
- 2 Tejedor-Panchón F, Montero-Pérez FJ, Tejedor-Fernández M, Jiménez-Murillo L, Calderón De La Barca-Gázquez JM, Quero-Espinoza FB. Mejora del proceso de un servicio de urgencias de hospital mediante la metodología Lean. *Emergencias*. 2014;26:84-93.
- 3 Miró Ó, Escalada X, Gené E, Carme B, Jiménez Fàbrega FX, Netto C, et al. Estudio SUHCAT: Mapa físico de los servicios de urgencias hospitalarios de Cataluña. *Emergencias*. 2014;26:19-34.
- 4 Sánchez Bermejo R, Cortés Fadrique C, Rincón Fraile B, Fernández Centeno E, Peña Cueva S, de Las Heras Castro EM. El triaje en urgencias en los hospitales españoles. *Emergencias*. 2013;25:66-70.
- 5 Miró Ó, Escalada X, Boqué C, Gené E, Jiménez Fàbrega FX, Netto C, et al. Estudio SUHCAT (2): Mapa funcional de los servicios de urgencias hospitalarios de Cataluña. *Emergencias*. 2014;26:35-46.

### Author's reply

#### Respuesta del autor

#### Sr. Editor:

We thank Fontova-Almató and Suñer-Soler for their comments regarding this article. The focus of our opinion article is based, in part, but not only, on the internal improvement processes in the hospital emergency services (HES) that can optimize the flow, management and quality of care for patients.

It is from this perspective that we allow reevaluation of sequential screening systems at the entrance of HES, which undoubtedly slows the flow of patients, especially during the hours of increased demand for care. We do not question the clinical utility of triage, but its location and the fact that it is performed by a limited number of HES personnel, which does not include physicians who have to make the last decisions regarding the management of patients<sup>1</sup>.

Neither do we understand the utility of a triage at the entrance door in order to establish the specialty that the patient needs when

the staff of the HES has a specialized training in Medicine and Emergency Nursing, which allows them to attend all kinds of pathologies without age limit or clinical presentation<sup>2</sup>.

Moreover, the HES must be spaces with the technical teams adapted to the needs of patients, not the other way around. If not, we limit our operational capacity, by not opting for functional spaces, multi-purpose and transferable equipment from one space to another.

It is the users of the HES that determine the most satisfactory operating models and where and how they can be carried out<sup>3</sup>.

As for short-stay observation or hospitalization units, we agree that they need adequate resources and personnel to treat the pathologies they receive. However, these endowments should not be higher or lower, if not equivalent, to other units of hospital admission that treat similar pathologies and with the same degrees of severity<sup>4</sup>.

Concerning the integration of emergency services at all levels, hospital and out-of-hospital, there is no doubt that such functional integration could lead to the use of the necessary services in the most appropriate places with the means and sufficient personnel to attend the demand.

This functional change requires not only such integration and appropriate administrative support, but also an important cultural change of the population in general that, today, does not seem to be accepted by the majority of patients.

Luis F. Lobón<sup>1</sup>,  
Philip Anderson<sup>2</sup>

<sup>1</sup>Vice Chair Community Emergency Medicine, Brigham and Women's Hospital. Instructor Emergency Medicine, Harvard Medical School. Director, Continuing Executive Education Course International Emergency Department Leadership Institute | Brigham Emergency Medicine International. Boston, USA.

<sup>2</sup>Attending Physician Department of Emergency Medicine Brigham and Women's Hospital, Assistant Professor Emergency Medicine, Harvard Medical School, Director, Emergency Department Design Course, International Emergency Department Leadership Institute Director, Brigham Emergency Medicine International.

llobon@bwh.harvard.edu

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

## Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

## Editor in charge

Oscar Miró, MD, PhD.

## Article not commissioned by the Editorial Committee and with external peer review

## References

- 1 Sayah A, Rogers L, Devarajan K, Kingsley-Rocker L, Lobón LF. Minimizing ED Waiting Times and Improving Patient Flow and Experience of Care. *Emerg Med Int.* 2014;98:1472.
- 2 Williams AL, Blomkalns AL, Gibler WB. Residency training in emergency medicine: the challenges of the 21st century. *Keio J Med.* 2004;53:203-9.
- 3 Sayah A, Lai-Becker M, Kingsley-Rocker L, Scott-Long T, O'Connor K, Lobón LF. Emergency Department Expansion versus Patient Flow Improvement: Impact on Patient Experience of Care. *J Emerg Med.* 2016;50:339-48.
- 4 [https://www.mcep.org/imis15/mcepdocs/Obs/14\\_OBS/Setting%20up%20an%20obs%20unit%20-%20Ross%20-%20NEW.pdf](https://www.mcep.org/imis15/mcepdocs/Obs/14_OBS/Setting%20up%20an%20obs%20unit%20-%20Ross%20-%20NEW.pdf)

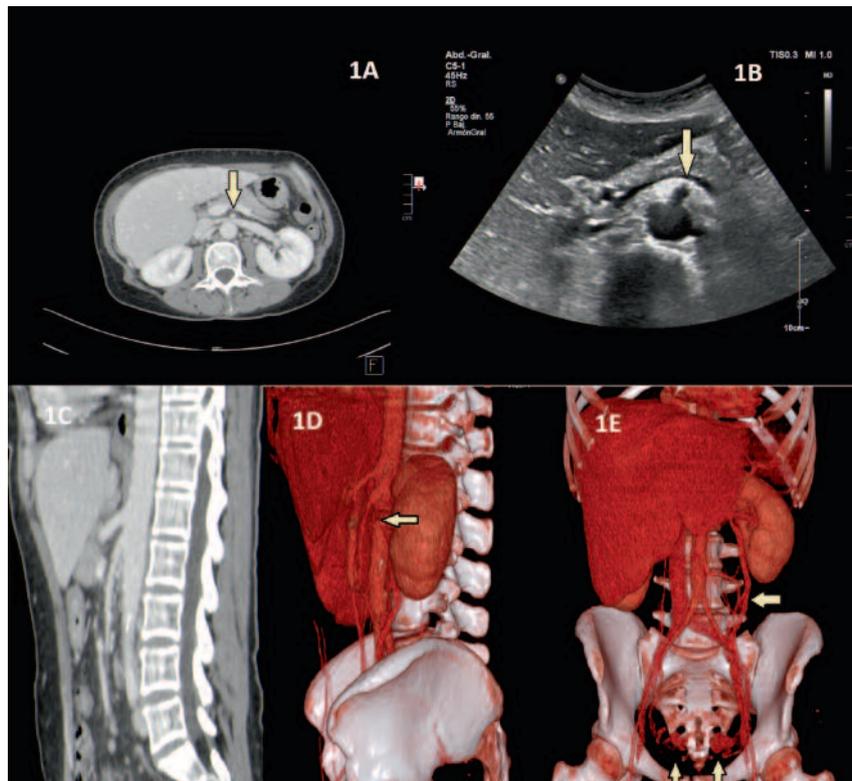
## Nutcracker syndrome: a rare cause of abdominal pain

### *Síndrome del cascanueces (nutcracker): una causa rara de dolor abdominal*

#### To the editor:

Originally described by De Schepper in 1972 as "Left Renal Trap Syndrome"<sup>1</sup>, nutcracker syndrome occurs by compression of the vessel through the vascular fork formed between the aorta and the superior mesenteric artery<sup>2</sup> as a consequence of a decrease of the normal angle between both. Clinically it is possible that it remains silent or manifests as episodes of macro or microscopic hematuria, which may be accompanied by pain in the left renal fossa and abdominal pain<sup>2</sup>.

A 44-year-old woman, who came to the emergency room for episodes of mild left abdominal pain for several months without mentioning another accompanying symptomatology. Physical examination showed diffuse pain on the abdomi-



**Figure 1.** A-D Left renal vein partially collapsed due to decreased angle between superior mesenteric artery and aorta. Left E Ovarian vein dilated and tortuousa.

nal palpation without peritonism, in the hemogram showed leukocytosis with neutrophilia and 250 red cells/ul in the urine analysis. An ultrasound scan and abdominal computed tomography (CT) showed a decrease in the distance between the aorta and the superior mesenteric artery (4 mm), with left renal vein stenosis and a decreased aortomesenteric angle ( $15.8^\circ$ ), with a dilation of the left ovarian vein up to 1.1 cm, compatible with Nutcracker Syndrome (Figure 1). Given the intermittent symptoms and the low interference in the daily activity of the patient, a conservative management with periodic analgesics and controls was decided, which has been satisfactory.

Nutcracker syndrome is a pathology with a low incidence, with less than 200 cases published in the literature, mainly due to its difficulty to suspect it of habitual findings such as abdominal pain or hematuria<sup>2</sup>. The latter is the symptom that appears most frequently in this entity, and is attributed to the rupture of varicose veins of thin walls in the collecting system by elevation of the venous pressure<sup>3</sup>. This syndrome is relatively more frequent in women<sup>5</sup> between the third and fourth decades of life<sup>4</sup>. The first tool for diagnosis should be the physical

examination paying special attention to symptoms of pelvic congestion, hematuria, left flank pain or pelvic discomfort<sup>5</sup>. In our case, the initial clinical data was intermittent chronic abdominal pain, since it did not refer to macroscopic hematuria although later microhematuria was evidenced in the analysis. The diagnosis is difficult and usually late; this is mainly due to the fact that the symptoms that characterize it are relatively common to other clinical situations such as nephrolithiasis<sup>6</sup>. On the other hand it is interesting to discern between nutcracker phenomenon and nutcracker syndrome. In the nutcrack phenomenon, there is an entrapment of the left renal vein due to a decrease in the angle between the aorta and the superior mesenteric artery. When there is an increase in pressure that conditions the appearance of venous varicosities around the renal pelvis, ureter and gonadal vein and cause symptomatology, it is called nutcracker syndrome<sup>3</sup>. Different authors state that phlebography, which has traditionally been considered the imaging technique of choice due to the possibility of calculating vascular

pressure gradients<sup>4</sup>, is not essential for the diagnosis of this pathology, since CT or angioCT provide adequate and sufficient information to establish such diagnosis<sup>2</sup>. The normal angle between the aorta and superior mesenteric artery varies in healthy individuals, which can reach 90°; however, it is less than 45° in nutcracker syndrome<sup>2</sup>. In our case the angle was less than 20°, although the patient did not present severe symptoms. Management of this pathology continues to be a challenge<sup>5,6</sup>, treatment depends on the severity of symptoms<sup>2</sup>. Current therapeutic options include surveillance, open surgery (medial nephropexy, left renal vein shunt/transposition, left kidney autotransplantation), endovascular treatments with intra-pelvic chemical cauterization<sup>5</sup>.

Nuria Martínez Sanz<sup>1</sup>

Emilio Peña Ros<sup>1</sup>

María Jesús Fernández Ferrando<sup>2</sup>

Antonio Albarraçín Marín-Blázquez<sup>1</sup>

<sup>1</sup>Servicio de Cirugía General y Aparato Digestivo, Hospital General Universitario Reina Sofía de Murcia, Spain.

<sup>2</sup>Servicio de Radiodiagnóstico, Hospital General Universitario Reina Sofía de Murcia, Spain.

nsanz369@hotmail.com

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

The informed consent of the patient was obtained for the publication of his personal information in EMERGENCIAS.

### Editor in charge

Manuel José Vázquez Lima, MD, PhD.

### Article not commissioned by the Editorial Committee and with external peer review

### References

- De Schepper A. "Nutcracker" phenomenon of the renal vein and venous pathology of the left kidney. *J Belge Radiol.* 1972;55:507-11.
- Alcocer MA, Martínez JA, Alcántara M, Eid G, Lugo LM, García E, et al. Tratamiento endovascular exitoso del síndrome de casca-

nueces con stent autoexpandible. *Arch Cardiol Mex.* 2012;82:303-7.

3 Yun SJ, Lee JM, Nam DH, Ryu JK, Lee SH. Discriminating renal nutcracker syndrome from asymptomatic nutcracker phenomenon using multidetector computed tomography. *Abdom Radiol (NY).* 2016;4:1580-8.

4 Ahmed K, Sampath R, Khan MS. Current trends in the diagnosis and management of renal nutcracker syndrome: a review. *Eur J Vasc Endovasc Surg.* 2006;31:410-6.

5 El Harrech Y, Jira H, Chafiki J, Ghadouane M, Ameer A, Abbar M. Actitud expectante en el Síndrome el Cascanueces. *Actas Urol Esp.* 2009;33:93-6.

6 Marques GL, Carvalho JG, Nacimiento MM, Marks SG, Olbertz LG. Nutcracker syndrome as a cause of recurrent hematuria in a young woman: a case report. *J Bras Nefrol.* 2012;34:195-8.

## Is it important to remove clothing for external chest compressions? A cardiopulmonary resuscitation simulation study in mannequin

### ¿Es importante retirar la ropa para realizar compresiones cardíacas externas? Un estudio de simulación de reanimación cardiopulmonar en maniquí

#### To the editor:

Sudden cardiac arrest is one of the leading causes of death in Europe<sup>1</sup>. Early cardiopulmonary resuscitation (CPR) maneuvers are an essential step, allowing double or quadruple survival<sup>2</sup>. 30% of out-of-hospital cardiorespiratory events occur in public places<sup>3</sup>, in which, depending on the climate and temperature, victims may carry different amounts of clothing, which because of their elasticity may affect the quality of cardiac compressions

in CPR. The current guidelines of CPR of the European Resuscitation Society (ERC)<sup>1</sup> in the Basic Life Support (BLS) chapter do not make recommendations. The only available is visual, in the vignette of the sequence the patient who goes from wearing a shirt to being without it in the compressions. Obviously there is a recommendation to undress the patient in defibrillation for public use within the BLS. There are no conclusive studies as to whether there are differences in quality in CPR with and without clothing<sup>4</sup> guided by telephone between untrained staff and CPR specialists<sup>5</sup>.

We performed an observational cross-sectional study of an accidental non-probabilistic sample whose objective was to compare the differences in the quality parameters of the cardiac compressions in a manikin, in a simulation of 2 minutes of continuous cardiac compressions to a manikin with and without clothes. For this, verbal consent was requested to the participants respecting the Declaration of Helsinki of 1964 and later updates. A total of 39 volunteers (23 university students and 16 primary care clinics who had undergone a CPR course of one year, ranging from 21 to 61 years (mean 33, SD = 13), 41% men. All patients underwent 2-minute CPR of continuous cardiac compressions on a dummy without clothing and with 3 layers of clothing (coat, shirt, T-shirt). To record the quality of the compressions, a manikin was used with Laerdal Skill Reporter<sup>®</sup> software version 2.4 and the IBM SPSS statistical package. There were no significant differences between the various quality parameters collected in compressions with or without clothing in personnel trained in non-recent courses (Table 1), as in other studies simulation studies in CPR guided by telephone<sup>4</sup> or by medical personnel<sup>5</sup>.

We consider that the removal of clothing could even result in a loss of the number of total compressions due to the time it takes to undress the victim, which can vary between

**Table 1.** Descriptive data of the differences (with clothes and without clothes) between the analyzed variables

Variable	Total (n = 39)			Men (n = 16)		Women (n = 23)		
	MD	SD	P	MD	SD	MD	SD	P
MCD (mm)	-0.76	5.96	0.426	-1.43	4.70	-0.30	6.77	0.567
CPM (c-m-1)	-0.48	8.71	0.729	1.00	10.64	-1.52	7.14	0.381
PRC (%)	-0.17	27.38	0.968	-0.31	26.78	-0.08	28.38	0.980
TCo (2 min)	1.46	25.98	0.727	2.31	21.45	0.86	29.18	0.867
CHP (%)	2.43	31.65	0.634	3.75	34.57	1.52	30.23	0.832
PCCo (%)	-0.87	34.12	0.874	1.81	39.99	-2.73	30.18	0.688

MD: mean difference; SD: standard deviation; MCD: mean compression depth; CPM: average frequency of compressions per minute; PRC: percentage of correct reexpansion (decompression); TCo: total compressions in 2 minutes; CHP: correct hand placement; PCCo: percentage of correct compressions according to parameters.

20 and 30 seconds<sup>4,5</sup>, so it would not be necessary to undress the patient to perform cardiac compressions in controls with knowledge of CPR. The main limitation of our study is that it is a simulation in mannequin and we do not know how the respondents would respond in real situation. We consider it interesting to evaluate these quality parameters in real situations, in order to evaluate if there can actually be differences in the removal or not of the clothes.

Miguel Freire-Tellado<sup>1</sup>,  
Rubén Navarro-Patón<sup>2</sup>,  
María del Pilar Pavón-Prieto<sup>1</sup>,  
Iván López-Fórneas<sup>1</sup>

<sup>1</sup>Fundación Pública Urgencias Sanitarias de Galicia-061, Base de Lugo, Spain.

<sup>2</sup>Facultad de Formación de Profesorado, Universidade de Santiago de Compostela, Lugo, Spain.

ruben.navarro.paton@usc.es

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

### Editor in charge

Manuel José Vázquez Lima, MD, PhD.

### Article not commissioned by the Editorial Committee and with external peer review

### References

- 1 Bossaert L, Greif R, Maconochie I, Monsieurs KG, Nikolaou N, Nolan JP, et al. European Resuscitation Council. Summary of the main changes in the Resuscitation Guidelines. *Resuscitation*. 2015;95:201-21.
- 2 Berdowski J, Berg RA, Tijssen JG, Koster RW. Global incidences of out-of-hospital cardiac arrest and survival rates: systematic review of 67 prospective studies. *Resuscitation*. 2010;81:1479-87.
- 3 Berdowski J, Blom MT, Bardai A, Tan HL, Tijssen JGP, Koster RW. Impact of onsite or dispatched automated external defibrillator use on survival after Out-of-Hospital Cardiac Arrest. *Circulation*. 2011;124:2225-32.
- 4 Eisenberg-Chavez D, Meischke H, Painter I, Rea TD. Should dispatchers instruct lay bystanders to undress patients before performing CPR? A randomized simulation study. *Resuscitation*. 2013;84:979-81.
- 5 Mortensen RB, Hoyer CB, Pedersen MK, Brindley PG, Nielsen JC. Comparison of the quality of chest compressions on a dressed versus an undressed manikin: A controlled, randomized, cross over simulation study. *Scandinavian Journal of Trauma, Resuscitation and Emergency Medicine*. 2010;18:16.

## Advanced life support nursing: what is the current situation?

### *Soprote vital avanzado enfermero: ¿una realidad?*

#### To the editor:

The approval of Royal Decree (RD) 836/2012 of May 25, which regulates the minimum endowment in ambulances class C (advanced life support-ALS-), composed of a Emergency Medical Care Technician (ECT) and a nurse and, if it is necessary, a doctor; together with Law 44/2003 of 21 November on Health Professions, which gives nurses a legal framework to develop their professional skills, have promoted the development of advanced life support nursing (ALSN), implemented in other European countries. In relation to the aforementioned, we present a study that we have carried out after a bibliographical review, excluding units that are not suitable for transportation, secondary transfers or with punctually shaped endowments. The objectives of our work were to analyze the implantation of units of ALSN in Spain, to know the role of nursing in these units and to enhance nurse visibility in the outpatient setting.

As the most relevant results, we find that, officially, in Spain there are 59 ALSN units that perform primary services, distributed by autonomous communities as follows: a) in Catalonia (since 1990, pioneering implantation)<sup>1</sup> there are 27 units, one of them pediatric; b) in the Canary Islands (2003) there are 11 units called sanitary ambulances<sup>2</sup>; c) in Andalusia there are 5 units called advanced coordination teams (ACT); 3 in Málaga (1999) and 2 in Seville (2007)<sup>3</sup>; d) in the Basque Country (2006) there are 10 units; 8 in Vizcaya, 1 in Gipuzkoa and 1 in Álava<sup>4</sup>; e) in Castilla La Mancha (2009) there are 4 ambulances called life support with nursing (SVE)<sup>5</sup>; and f) in the Community of Madrid (2014) there are 2 units of SUMMA 112 called intermediate life support.

ALSN units have proven to be highly effective and efficient. They are able to solve life-threatening situations, home hospitalization, dignified death at home and carry out secondary transfers. If the assistance requires the administration of pharmacological treatment, it will be prescribed by the doctor of the coordinating center. In a situation of vital risk, this requirement will be autonomous, protected by guides or protocols of action (existing in some autonomous communities<sup>1</sup>), created within the conceptual framework of the nursing profession, providing a holistic approach and using a language of its own: taxonomy of the North American Nursing Diagnosis Association (NANDA), which allows to advance in research and facilitates the publication of own results.

ALSN nurses provide patients with comprehensive care; increasing the relevance of nursing in the out-of-hospital setting. The specific characteristics of this area, together with the creation of these units, make nurses acquire new competencies; currently not reflected in any official national document. The ALSN complements and improves the out-of-hospital emergency system. Therefore, the training must be adapted, creating the Emergency Specialty and regulating the nurse prescription. This increases the resolving capacity of these units, and improves their efficiency, effectiveness and citizen satisfaction. Its implementation in Spain, which depends on the autonomous communities, is a reality that has been increasing in recent years. ALSN units are, by law, an ALS capable of performing emergency care services, including critical patients. There is scarce published bibliography and great difficulty to find updated information on ALSN resources in official registries.

As conclusions, we can say that the ALSN complements and improves the out-of-hospital emergency system, allows the health response to be adapted to the demand, and thus optimizes resources. It is necessary to rethink the current training, including the development of the Specialty Nursing of Emergencies, and to have guides of action based on the evidence.

Cristina Calle Domínguez<sup>1</sup>,  
Antonio Borrella Romero<sup>2</sup>,  
Alberto Eduardo Durán Parra<sup>3</sup>,  
Ismael Bravo Tejedor<sup>4</sup>,

Marta Parrón Parra<sup>1</sup>

<sup>1</sup>Servicio Madrileño de Salud (SERMAS), Madrid, España. <sup>2</sup>Vitalia 24 h Servicios Sanitarios, Madrid, España. <sup>3</sup>Servicio Extremeño de Salud, Spain. <sup>4</sup>Servicio Navarro de Salud, Pamplona, Spain.

ismael.bravo.tejedor@navarra.es

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

### Editor in charge

Agustín Julián-Jiménez, MD, PhD.

### Acknowledgements

To the ALSN working group of SEMES, especially Daniel Martínez Millán and Esther Gorjón Peramato.

### References

- 1 Castro E, Figueras I, Jiménez X, Olivé M, Sánchez P. Coordinadores. Guía d'actuació infermera d'urgències i emergències prehospitalàries. 1ª ed. Catalunya. Barcelona: Generalitat de Catalunya. Barcelona. Departament de Salut; 2015.
- 2 Gestión de servicios para la salud y seguridad en Canarias sede Web. Gobierno de Canarias 2008. (Consultado 19 Agosto 2016). Disponible en: [http://www.gccanarias.com/laempresa\\_suc\\_recursos\\_moviles.php](http://www.gccanarias.com/laempresa_suc_recursos_moviles.php)
- 3 Albergo-Gea I, Martínez-Gracia MC. Situación actual de las unidades de Soporte Vital con Enfermería en España. Civer Revista [revista electrónica] 2015; 44.
- 4 Osakidetza sede Web. [actualizada el 22 de diciembre de 2008]. (Consultado 01 Septiembre 2016). Disponible en: [http://www.osakidetza.euskadi.eus/r85-gkemer04/es/contenido\\_s/informacion/emmer\\_infografias/es\\_emer/r01h\\_RedirectCont/contenidos/informacion/emmer\\_info\\_emergencia/es\\_emer/emergencias\\_emergencia.html](http://www.osakidetza.euskadi.eus/r85-gkemer04/es/contenido_s/informacion/emmer_infografias/es_emer/r01h_RedirectCont/contenidos/informacion/emmer_info_emergencia/es_emer/emergencias_emergencia.html)
- 5 Sanidad Castilla La Mancha sede Web. [Actualización 2 de marzo de 2015]. (Consultado 15 Septiembre 2016). Disponible en: <http://sescam.castillalamancha.es/saladeprensa/notas-de-prensa/la-junta-dotara-dai-miel-y-campo-de-montiel-con-ambulancias-de-soporte>

## Torticollis due to infection

### Torticollis infecciosa

#### Sr. Editor:

Vertebral osteomyelitis or spondylodiscitis has increased its incidence in the last years, due to the aging of the population and the increase of the risk factors of this entity as the immunosuppression, the hemodialysis, the surgical procedures, the nosocomial bacteremia and the use of intravenous drugs<sup>1</sup>.

Male, 47 year old without toxic habits or pathological antecedents. He visited the HES for a two-week clinical course of non-irradiated continuous cervical pain. In the last four days he got a fever of 38.5°C. The pain did not respond to anti-inflammatory treatment. Physical examination was afebrile, hemodynamically stable, had an analgesic lateralization of the neck, with limited passive mobility, and right paravertebral discomfort, without apophysialgia, external lesions, or neurological deficit. In the analysis, the leukocytes were 8,900/mm<sup>3</sup>; Hemoglobin of 12.60 g/dl; lactate of 2.60 mmol/l; CRP of 28.30 mg / dl; and ESR of 57 mm. The cervical spine radiograph showed a cervical rectification and decreased disc space. At 24 hours after admission to the blood cultures, *Staphylococcus aureus* sensitive to oxacillin was isolated. The study was completed by cervical MRI that showed spondylodiscitis in the C5-C6 vertebrae with formation of a small epidural abscess. Transthoracic echocardiography was normal. Conservative treatment with cloxacillin and a rigid cervical collar was decided. The patient presented a correct clinical and analytical evolution, and the blood cultures of control were negative. She was discharged with oral levofloxacin and clindamycin with good outpatient control.

The pyogenic involvement of the cervical spine accounts for 3 to 20% of all columnar infections<sup>2</sup>. In 37-53% of cases it is not possible to detect the primary origin of spondylodiscitis<sup>3</sup>. *S. aureus* is the most common bacterium in all series and accounts for 40-65% of cases. Tuberculosis and brucellosis are common in Spain, with frequencies of 15-25% and 20-30%, respectively<sup>3</sup>. The diagnosis of spondylodiscitis is difficult, since the symptoms are nonspecific and it is usual to delay the diagnosis until 4 months from the beginning of the clinic<sup>1,4</sup>. Plain radiography is normal in the early stages, magnetic resonance imaging and bone scintigraphy are useful for early

diagnosis<sup>4</sup>. Prolonged antimicrobial treatment or surgery is essential to control infection and prevent sequelae<sup>1</sup>. The emergency department must include spondylodiscitis in the differential diagnosis of cervical pain, which should be suspected in cases where there is no response to conventional analgesic treatment or fever or other signs suggestive of infection.

María Esther Renilla Sánchez,  
Elizabeth Hernández González

<sup>1</sup>Servicio de Urgencias, Hospital Universitario Fundación Alcorcón, Madrid, Spain.

estherrenilla@hotmail.com

### Conflicting interests

The authors declare no conflict of interest in relation to this article.

### Authors' contributions, funding and ethical responsibilities

The authors have confirmed their authorship, the non-existence of funding and the maintenance of confidentiality and respect of patients' rights in the author's responsibilities document, publication agreement and transfer of rights to EMERGENCIAS.

The informed consent of the patient was obtained for the publication of his personal information in EMERGENCIAS.

### Editor in charge

Aitor Arquézar Arbé, MD, PhD.

### Acknowledgements

To the ALSN working group of SEMES, especially to Daniel Martínez Millán and Esther Gorjón Peramato..

### References

- 1 Berbari EF, Kanj SS, Kowalski TJ, Darouiche RO, Widmer AF, Schmitt SK, et al. 2015 Infectious Diseases Society of America (IDSA) Clinical Practice Guidelines for the Diagnosis and Treatment of Native Vertebral Osteomyelitis in Adults. Clin Infect Dis. 2015;61:e26-46.
- 2 Butler JS, Shelly MJ, Timlin M, Powderly WG, O'Byrne JM. Nontuberculous pyogenic spinal infection in adults: a 12-year experience from a tertiary referral center. Spine (Phila Pa 1976). 2006;31:2695-700.
- 3 Pintado-García V. Infectious spondylitis. Enferm Infecc Microbiol Clin. 2008;26:510-7.
- 4 Gasbarrini AL, Bertoldi E, Mazzetti M, Fini L, Terzi S, Gonella F, et al. Clinical features, diagnostic and therapeutic approaches to haematogenous vertebral osteomyelitis. Eur Rev Med Pharmacol Sci. 2005;9:53-66.