Organ procurement from uncontrolled non-heart-beating donors: we save lives and we give life

Sir,

A recently published article in EMERGENCIAS has questioned the quality of cardiopulmonary resuscitation (CPR) in Spain in cases of unexpected cardiac arrest for not incorporating unconventional (uCPR) measures[1]. CPR in Spain is guided by a National Plan[2] based on current international professional standards in the matter[3,4].

It is noteworthy that not all the procedures mentioned by the authors are considered uCPR: some are conventional CPR measures while others are only applicable in special situations or in patients with recovery of spontaneous circulation. Furthermore, uCPR measures are not recognized in the current international standards on CPR, since they have not been shown to be effective and their proportionality has not been evaluated. In fact, some of these measures are far from effective, and have been linked to safety problems in multicenter clinical trials[5]. Despite these conceptual errors and the limited and contradictory evidence available, it seems acceptable that the authors raise the question of introducing uCPR measures in scientific and professional forums, as experimental procedures.

However, we do not understand why the authors limited the possible introduction of these procedures to emergency medical services that have embarked on uncontrolled non-heart-beating donation programs (called DANC in Spanish), and not all of them. By law, such organ donation is only considered after CPR applied according to professional protocols and standards[6]. The latter are under continuous evaluation, regardless of the existence of DANC programs.

The recently published series of articles by these authors, with redundant information (which contravenes international standards of scientific publication), through which they systematically attack DANC programs, as in this article, make us doubt whether the underlying interest is continuous improvement by means of calm debate and objective analysis of the facts, which are the fundamentals of bioethical deliberation[1,7,8]. DANC programs are the result of extraordinary and coordinated effort by a large number of professionals who daily save lives and also facilitate organ donation as part of very adverse and complex end-of-life circumstances. Defamation and attack on these efforts is precisely what can create suspicion and social distrust in the healthcare system and in the donation and transplantation system, and can greatly hinder progress towards self-sufficiency in this area.

References

1 Ortega Deballon I, Rodríguez-Arias Vailhen D, De la Plaza Horche E. Donación en asistolia en emergencias versus reanimación cardiopulmonar no convencional: ¿obtenemos órganos o intentamos salvar vidas? Emergencias. 2012;24:488-90.

2 Plan Nacional de RCP. (Consultado 1 Diciembre 2012). Disponible en: http://www.semicyuc.org/sites/default/files/normativa_de_funcionamiento_del20plan_nacional_de_rcp-1.pdf.

3 Nolan JP, Soar J, Zideman DA, Biarent D, Bossaert LL, Deakin C, Koster RW, Wyllie J, BöttigerB,on behalf of the ERC Guidelines Writing Group. European Resuscitation Council Guidelines for Resuscitation 2010. Section 1. Executive summary. Resuscitation. 2010;81:1219-76.

4 Field J, Hazinski MF, Sayre M, Chameides L, Stephen M. American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2010;122:S640-S656.

5 Böttiger BW, Arntz HR, Chamberlain DA, Bluhmki E, Belmans A, Danays T, Carli PA, Adgey JA, Bode C, Wenzel V, et al. TROICA Trial Investigators; European Resuscitation Council Study Group.Thrombolysis during resuscitation for out-of-hospital cardiac arrest.N Engl J Med. 2008;359:2651-62.

6 Real Decreto 2070/1999, de 30 de diciembre, por el que se regulan las actividades de obtención y utilización clínica de órganos humanos y la coordinación territorial en materia de donación y trasplante de órganos y tejidos. Página web de la Organización Nacional de Trasplantes. (Consultado 1 Diciembre 2012). Disponible en: http://www.ont.es/infesp/Legislacin/REAL_DECRETO_DONACION_Y_TRASPLANTE.pdf.

7 Rodríguez-Arias D, Ortega I. Protocols for uncontrolled donation after circulatory death. Lancet. 2012;379:1275-6.

8 Deballon IO, Vailhen DR, de la Plaza Horche E. When health care priorities are unclear: do we obtain organs or try to save lives? Am J Emerg Med. 2012;30:1001-3.

Rafael MATESANZ[1],
Tomás TORANZO[2],
José CUÑAT[3]

[1]Director Organización Nacional de Trasplantes, Spain. [2]Presidente Sociedad Española de Medicina de Urgencias y Emergencias (SEMES), Spain. [3]Presidente Sociedad Española de Medicina Intensiva y Unidades Coronarias (SEMICIUC), Spain.

Saving lives and procuring organs

Sir,

I have read with interest the point of view of Ortega et al.[1] where even the title seems to pose a dilemma between two opposing decisions: save lives or obtain organs. Nothing could be further from the truth. The objective of all physicians attending patients with cardiac arrest (CA) is and must be to bring about recovery of spontaneous circulation, and all maneuvers are carried out to that end. Once the therapeutic possibilities have been exhausted, then one can assess whether the patient can be included in an organ donation program, which may not always be possible, so raising this issue as a dilemma is somewhat risky.

The authors suggest the use of unconventional therapeutic measures in cardiopulmonary resuscitation (CPR). We do not disagree with such measures, but to date no studies have demonstrated clear benefits. Current medical researchers have found no benefit in primary percutaneous transluminal coronary angioplasty (PTCA) for CA patients, known as the bridge code, not even for in-hospital cases of CA[2]. In addition, access to catheterization laboratories, although improved, is still complicated. Unconventional in this context, ECMO therapy is currently under study, and is subject to controversy, like PTCA, but has shown better results in hospitalized patients with CA than in out-of-hospital cases[3], and the authors of one article[4] have even advocated its non-use in this con-

text. With respect to thrombolysis, the TROICA study had to be interrupted for ethical reasons on the detection of higher mortality rates in the fibrinolysis group than in the placebo group, a fact subsequently confirmed in other more modern studies[5]. Finally, inducing hypothermia in CA victims is an interesting field of research, but further studies are needed before this therapy can be recommended[6].

Given these considerations, we wish to express the idea that these therapies are still under study and experimentation. If and when they are accepted by the relevant scientific societies, donation programs will be adapted accordingly. Emergency medicine professionals are investigating these therapies, and any others that may improve survival in CA victims.

In Figure 1, the authors distinguish two options for the management of CA when, in fact, initial management is the same, and only when therapeutic possibilities in situ have been exhausted do we transfer patients to hospital, with cardiac massage and artificial respiration, to continue with other in-hospital measures or for organ donation.

The authors also state that society may have certain reservations about the donation process due to the fact that they do not promote unconventional resuscitation programs. Many surveys have shown almost universal public support for organ donation[7-9] and we must remember that the National Transplant Organization is the model referred to by many international organizations.

So, we agree with the authors that new ways to improve CPR should be investigated, but not that these new therapies represent an obstacle for the development of non-heart-beating organ donation.

References

1 Ortega Deballón I, Rodríguez Arias D, de la Plaza Horche E. Donación en asistolia en emergencias versus reanimación cardiopulmonar no convencional: ¿obtenemos organismos o intentamos salvar vidas? Emergencias. 2012;24:488-90.

2 Helton TJ, Nadig V, Subramanya SD, Menon V, Ellis SG, Shisehbor MH. Ouotcomes of cardiac catheterization and percutaneous coronary intervention for in hospital ventricular tachycardia or fibrillation cardiac arrest. Catheter Cardiovasc Interv. 2012;80:E 9-14.

3 Kagawa E, Inoue I, Kawagoe T, Ichihara M, Kurisu S, Nakam Y, Dai K, Takayuki O, Ikenaga H, Morimoto Y, Ejiri K, Oda N. Assessment of outcomes and differences between in and out hospital cardiac arrest patients treated with cardiopulmonary resuscitation using extracorporeal life support. Resuscitation. 2012;81:968-73.

4 Haneya A, Phillip A, Diez C, Schopka S, bein T, Zimmermann M, Lubnow M, Luchner A, Agha A, Hilker M, Hirt S, Schmid C, Müller T. A 5 year experience with cardiopulmonary resuscitation using extracorporeal life support in non-postcardiotomy patients with cardiac arrest.Resuscitation. 2012;83:1331-7.

5 Pistolato E, Zorzi A, El Maghawry M, Gasparetto N, Cacciavillani L, Bortulozzi A. Thrombolysis during resuscitation; Should we focus on sudden cardiac arrest after myocardial infarction? Resuscitation. 2012;9:189-90.

6 Garret JS, Studnek JR, Balckwell T, Vandeventer S, Pearson DA, Heffner AC, Reades R. The association between intra arrest therapeutic hypothermia and return of spontaneuos circulation among individuals experiencing out of hospital cardiac arrest. Resuscitation. 2011;82:21-5.

7 Deulofeu R, et al. Actitud y conocimiento sobre la donación y el trasplante de órganos y tejidos de medicos de atención primaria, emergencias y urgencias en Spain. MedClin (Barc). 2009.

8 Martínez JM, López JS, Martín A. Percepción social de la donación en Spain tras la década de los trasplantes. Nefrología. 2001:21(Supl. 1).

9 Mateos Rodríguez AA, Sánchez BruneteIngelmo V, Navalpotro Pascual JM, Barba Alonso C, Martín Maldonado ME. Actitud de los profesionales de emergencia ante la donación de órganos tras una muerte cardiaca. Emergencias. 2011;23:207-10.

Jose María NAVALPOTRO PASCUAL,
Vanesa CARVAJAL GIL
SUMMA 112. Madrid, Spain.

Authors' response

Sir,

Bioethics attempts to avoid closing debates involving conflicting values in health science before they start. We appreciate and value the objections to our point of view, and will now proceed to discuss the disputes related to uncontrolled non-heart-beating donation (DANC in Spanish).

Emergency services (EMS) in Spain not only save lives but also serve as a vital link in organ donation. Both are extremely valuable activities. Their involvement in DANC protocols does not undermine the main task, which is to save lives. We fully agree with Navalpotro et al.[1] in that DANC is and should be dependent on the failure of available therapeutic measures, provided they are indicated. For the same reasons, we believe it would not be appropriate to offer unconventional cardiopulmonary resuscitation (uCPR) routinely to all patients with prehospital cardiac arrest (CA), but only those whose initial heart rhythms are potentially reversible, as advocated by international recommendations on resuscitation[1,2]. In other cases, where uCPR is futile or contraindicated, the DANC protocol should be started after performing conventional CPR. We therefore agree that there should be a tradeoff between uCPR measures and DANC programs. The authors of the letters state that "no studies have demonstrated clear benefits" of uCPR-NC. We disagree on this point[4-8]. The results of these studies have led to the incorporation of certain uPCR techniques in international recommendations[2,3]. Such recommendations have guided the resuscitation strategy towards the early detection of reversible causes of prehospital CA. They include minimally interrupted and high quality CPR. They consider the usefulness of mechanical compression devices or prolonged chest compression in itinere and fibrinolysis in diagnosed or suspected pulmonary thromboembolism (PTE), which means prolonging CPR some 60-90 minutes.

Similarly, they consider extracorporeal membrane oxygenation (ECMO) as a useful technique in selected patients[2,3].

The TROICA study was interrupted because it showed no greater efficacy of anti-thrombotic treatment than placebo. While it is true that the thrombolytic group showed a significantly higher incidence of intracranial bleeding[8], subsequent evidence support its use during CPR in patients with PTE[2,3]. Interventions with sufficient efficacy and safety - equivalent to that considered acceptable in conventional CPR – include: mechanical heart compression, after training[2,3], ECMO[2], thrombolysis in CPR of patients with PTE[2], and emergency echocardiography[2,6]. And lastly, hypothermia during CPR is currently under investigation[6,7].

Spanish EMS still have no protocol for uCPR, despite the findings of recent studies showing superior survival with good neurological outcomes (cerebral performance category 1 and 2) than conventional CPR in selected patients[4-6,8,10,11]. In this they differ from some French EMS, where DANC is offered as a secondary option after failure of uCPR[11,12]. Evidence on the effectiveness of uCPR is increasing, along with the need to better categorize which patients should receive uCPR[5,7,8]. However, the

high cost of uCPR makes its r proportionality debatable[13,14]. Several countries have implemented uCPR[11,12], after positive cost-benefit analysis. In Spain, various EMS have the technicians and professionals to implement uCPR, since the measures required are the same as those employed in DANC. We believe that if the cost-benefit of DANC programs is considered acceptable, it should also be so for therapeutic purposes. Especially taking into account that if uCPR fails, the measures will have contributed to preserving transplantable organs in the best possible condition[8,12].

Consequently, uCPR and DANC strategies are not only compatible, but complementary in the management of prehospital CA[10]. EMS professionals will continue to work with the same commitment to excellence shown in recent years.

Our proposal requires a predictive model that would allow EMS to identify possible beneficiaries of uCPR and DANC candidates after failure of conventional or uCPR[14-17]. Without such a model, there may be an increase of cases transferred to hospital as potential donors and then recover spontaneous circulation and even consciousness[18,19]. We would stress that the determination of death after cessation of circulatory function is currently the subject of a major scientific debate[20-23]. These discussions are Particularly relevant in the DANC context, because the individual continues to be subject to interventions that may alter the diagnosis and vital circulatory and neurological prognosis[20]. Managing this uncertainty without damaging the interests of potential organ recipients or donors is a whole ethical challenge that requires prudence and transparency.

The letter by Drs. Matesanz, Toranzo and Cuñat[20] includes major objections which, however, have been answered elsewhere[25]. In that response we requested more specific data and references to support the authors' arguments. It may well be the ideal time for this, and so advance in this dialogue. We agree with the authors about the undisputed social value of DANC programs and the need to improve donation data[10,25]. In this regard we regret that our contribution to the debate has been interpreted as an attack. That was absolutely not our intention. The Spanish model of organ donation has received well-deserved international recognition for its ability to generate transplantable organs and save lives[26]. We believe that the long-term success of this model is necessarily linked to its ability to anticipate and overcome the ethical challenges raised by organ donation in general, and after CA in particular. So we agree with Drs. Matesanz, Toranzo and Cuñat about the importance of bioethical debate on these matters, a process in which those who hold divergent opinions strive to understand the reasons for their disagreements. Therefore, we have organized the first Meeting of Experts on DANC, uCPR and Bioethics to be held at the Center for Human and Social Science in the Center for Advanced Social Research (CSIC in Spanish), and among the guest speakers invited are Dr. Matesanz and the representatives of the scientific societies whose presidents are Dr. Toranzo and Dr. Cuñat. Their vast experience and opinions will surely enrich this debate.

References

1 Navalpotro Pascual JM, Carvajal Gie V. Salvar vidas y obtener órganos. Emergencias. 2013;25:00-00.
2 Nolan JP, Soar J, Zideman DA, Biarent D, Bossaert LL, Deakin C, et al. European Resuscitation Council Guidelines for Resuscitation 2010 Section 1. Executive summary. Resuscitation. 2010;81:1219-76.
3 Vanden Hoek TL, Morrison LJ, Shuster M, Donnino M, Sinz E, Lavonas EJ, et al. Part 12: cardiac arrest in special situations: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. Circulation. 2010;122(Supl. 3):S829-61.
4 Morimura N, Sakamoto T, Nagao K, Asai Y, Yokota H, Tahara Y, et al. Extracorporeal cardiopulmonary resuscitation for out-of-hospital cardiac arrest: A review of the Japanese literature. Resuscitation. 2011;82:10-4.
5 Sunde K. All you need is flow! Resuscitation. 2010;81:371-2.
6 Kagawa E, Dote K, Kato M, Sasaki S, Nakano Y, Kajikawa M, et al. Should we emergently revascularize occluded coronaries for cardiac arrest?: rapid-response extracorporeal membrane oxygenation and intra-arrest percutaneous coronary intervention. Circulation. 2012;126:1605-13.
7 Cardarelli MG, Young AJ, Griffith B. Use of extracorporeal membrane oxygenation for adults in cardiac arrest (E-CPR): a meta-analysis of observational studies. ASAIO J. 2009;55:581-6.
8 Serrano A, Nogal F, Alfonso F. [Revascularización coronaria durante la resucitación cardiopulmonar. Código Puente]. Med Intens. 2013;37:33-43.
9 Bottiger BW, Arntz HR, Chamberlain DA, Bluhmki E, Belmans A, Danays T, et al. Thrombolysis during resuscitation for out-of-hospital cardiac arrest. N Engl J Med. 2008; 359:2651-62.
10 Rodríguez-Arias D, Ortega I. Protocols for uncontrolled donation after circulatory death. Lancet. 2012;379:1275-6.
11 Carli P. [Prehospital cardiac arrest and ECMO: state of art]. E-memories de l'Académie Nationale de Chirurgie; 2010. p. 10-3.
12 Agostinucci JM, Ruscev M, Galinski M, Gravelo S, Petrovic T, Carmeaux C, et al. Out-of-hospital use of an automated chest compression device: facilitating access to extracorporeal life support or non-heart-beating organ procurement. Am J Emerg Med. 2011;29:1169-72.
13 Peek GJ. Community extracorporeal life support for cardiac arrest - when should it be used? Resuscitation. 2011;82:1117.
14 Lyon RM. Extra-corporeal cardiopulmonary resuscitation--miracle cure or expensive futility? Resuscitation. 2012;83:1311-2.
15 Breitkreutz R, Walcher F, Seeger FH. Focused echocardiographic evaluation in resuscitation management: concept of an advanced life support-conformed algorithm. Critical Care Medicine. 2007;35(5 Supl.):S150-61.
16 Scolletta S, Taccone FS, Nordberg P, Donadello K, Vincent JL, Castren M. Intra-arrest hypothermia during cardiac arrest: a systematic review. Crit Care. 2012;16:R41.
17 Bellezzo JM, Shinar Z, Davis DP, Jaski BE, Chillcott S, Stahovich M, et al. Emergency physician-initiated extracorporeal cardiopulmonary resuscitation. Resuscitation. 2012;83:966-70.
18 Mateos-Rodriguez A, Pardillos-Ferrer L, Navalpotro-Pascual JM, Barba-Alonso C, Martin-Maldonado ME, Andres-Belmonte A. Kidney transplant function using organs from non-heart-beating donors maintained by mechanical chest compressions. Resuscitation. 2010;81:904-7.
19 Perez-Villares JM, Lara-Rosales R, Pino-Sanchez F, Fuentes-Garcia P, Gil-Pinero E, Osuna Ortega A, et al. Alpha code. The start of a new non-heart beating donor program. Medicina intensiva/Sociedad Espanola de Medicina Intensiva y Unidades Coronarias. 2012.
20 Bernat JL. Determining Death in Uncontrolled DCDD Organ Donors. The Hastings Center Report. 2013;43:30-3.
21 Bernat JL, Capron AM, Bleck TP, Blosser S, Bratton SL, Childress JF, et al. The circulatory-respiratory determination of death in organ donation. Crit Care Med. 2010;38:963-70.
22 Dhanani S, Ward R, Hornby L, Barrowman NJ, Hornby K, Shemie SD. Survey of determination of death after cardiac arrest by intensive care physicians. Crit Care Med. 2012;40:1449-55.
23 Harrington MM. The thin flat line: redefining who is legally dead in organ donation after cardiac death. Issues in Law & Medicine. 2009;25:95-143.
24 Matesanz R, Toranzo T, Cuñat J. Donación en asistolia no controlada: salvamos vidas y donamos vida. Emergencias. 2013;25:00-00.
25 Deballon IO, Vailhen DR, Horche ED. Uncontrolled donation after circulatory determination of death? Yes, following the patient's best interest. Am J Emerg Med. 2012. doi:10.1016/j
26 Matesanz R. El milagro de los trasplantes. Madrid: La esfera de los libros; 2006.

Iván ORTEGA DEBALLÓN[1],
David RODRÍGUEZ-ARIAS[2],
Edurne DE LA PLAZA HORCHE[3]

[1]*Facultad de Medicina y Ciencias de la Salud de la Universidad de Alcalá de Henares, Madrid, Spain.*
[2]*Instituto de Filosofía del Centro de Ciencias Humanas y Sociales. Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain.*
[3]*Servicio de Urgencias Médicas de Madrid, Spain.*

Editor's reply

Sir,

Toranzo T et al. comment that the article by Ortega Deballón et al. published in the "Viewpoints" section of EMERGENCIAS[1] has the same orientation as other articles by these authors[2,3] and contains redundant information, and that its publication in EMERGENCIAS contravenes international norms of scientific publications because of the redundancy. I appreciate their comments and intention of safeguarding the quality and editorial commitment of our journal. Evidently, the publication of articles redundantly presenting the results of research must be eradicated and this is especially relevant for the editors of biomedical journals.

However, articles that do not contain or even purport to contain material from original research, such as reviews, may use such material from original research by other authors, citing the work, without that being considered as redundant publication. The same applies to articles of opinion, espousing different points of view in different forums, for which the authors may repeatedly refer to certain research or clinical experience that has been previously published. Such is the case at hand. This editor was fully aware that the issues discussed in the article by Ortega Deballón et al. had already been presented in other forums (inter alia because the authors themselves had said so), but did not believe this represented redundant publication, or even redundant debate, since it was the first time these ideas were posited in Spain via a biomedical journal. Without going into an evaluation of the opinions expressed in the article, concerning a topic of great interest to readers of EMERGENCIAS, I considered that its publication at this time would generate constructive debate and thereby help advance some key aspects of accident and Emergency medicine.

References

1 Ortega Deballon I, Rodríguez-Arias Vailhen D, De la Plaza Horche E. Donación en asistolia en emergencias versus reanimación cardiopulmonar no convencional: ¿obtenemos órganos o intentamos salvar vidas? Emergencias. 2012;24:488-90.

2 Rodríguez-Arias D, Ortega I. Protocols for uncontrolled donation after circulatory death. Lancet. 2012;379:1275-6.

3 Deballon IO, Vailhen DR, de la Plaza Horche E. When health care priorities are unclear: do we obtain organs or try to save lives? Am J Emerg Med. 2012;30:1001-3.

Òscar MIRÓ

Editor EMERGENCIAS, Spain.

Cocaine adulterated with levamisol: an illicit drug combination

Sir,

Levamisol is an anthelmintic drug, sometimes used to adulterate cocaine. It can produce various adverse effects, including agranulocytosis and vasculitic skin lesions. Both are dose dependent, and reversible with discontinuation. No specific treatment is available and adverse effects reappear on re-use of the drug[1-3]. We report the case of a woman who consulted the emergency department for necrotic skin lesions during 48 hours.

The patient was a 50 year-old woman, a habitual consumer of 0.5 g cocaine per day with a history of ischemic stroke secondary to cocaine use. Other causes of stroke such as coagulopathy or vasculitis were ruled out. She consulted the emergency department for necrotic skin lesions during 48 hours after inhaling cocaine. Physical examination showed necrotic lesions in the malar region, trunk and upper and lower extremities (Figure 1). The remaining parameters of the examination were normal. Laboratory tests showed CBC 340 x 10^9/l leucocytes and 0 x 10^9/l neutrophils, hematocrit 23%, platelets 123 x 10^9, creatinine 1.7 mg/dl, activated partial thromboplastin time 67 seconds, elevation of acute phase reactants and positive urine test for cocaine. The serological tests for HIV, HBV and HCV were negative. The result of immunological tests were: positive lupus anticoagulant, negative antinuclear antibodies, anticardiolipin antibodies and anti β2-glycoprotein antibodies, positive antineutrophil cytoplasmic (ANCA) antibodies, positive antielastase antibodies and negative cryoglobulin antibodies. The echocardiogram showed no vegetations. Skin biopsy was compatible with leukocytoclastic vasculitis with thrombosis associated with the use of cocaine/levamisole. Anticoagulation was started with low molecular weight heparin, glucocorticoids at 0.5 mg/kg/day and antibiotic coverage, resulting in resolution of the lesions. Bone marrow aspirate was compatible with agranulocytosis secondary to the use of cocaine/levamisole. Granulocyte stimulating factor was administered and the symptoms improved, so the patient was discharged. She is currently abstaining from cocaine and remains asymptomatic.

The biomedical literature contains a total of 55 levamisole-related cases of vasculitis and 196 cases of agranulocytosis[3-5]. Only 31 cases combine both conditions in the same patient[6,7]. It also contains levamisole-related cases with joint involvement, pulmonary, renal, cardiovascular and neurological symptoms[7]. The average half-life of levamisole (5-6 hours) limits its detection, but in regular consumers of cocaine, detection of levamisole is not considered essential for diagnosis. From the immunological point of view, ANCA with a perinuclear pattern is observed in 88%

Figure 1. Vasculitic lesions observed on the face, extremities and buttocks of the patient on arrival at the Emergency department.

of cases, although the cytoplasmic pattern is also described. Other characteristic findings are positive antiphospholipid and elastase antibodies. In our case the patient presented positive perinuclear ANCA, elastase antibodies and antiphospholipid antibodies, which subsequently became negative[4,7].

Agranulocytosis has been described as an idiosyncratic reaction in patients medicated with levamisole for breast cancer. However, the percentage of consumers of cocaine adulterated with levamisole that develop agranulocytosis is unknown[5]. Cutaneous vasculitis typically affects the ears and lower extremities. The time interval between cocaine consumption and onset of symptoms is approximately 24 hours[2,4]. On histology, vasculitis can be observed without thrombosis or thrombotic vasculitis[8,9], as in our case. Treatment is symptomatic. Abstinence results in resolution of the clinical symptoms, and subsequent negative results for antibody testing. However, cases have been reported with extensive cutaneous necrosis that require glucocorticoid and/or methotrexate treatment, and even skin grafting in some[3,7,10]. In conclusion, increasing use of illicit drugs means we should consider cocaine adulteration with levamisole in the differential diagnosis of vasculitic lesions or agranulocytosis in younger patients.

References

1 Ventura M, Caudevilla F, Vidal C. Cocaína adulterada con levamisol: posibles implicaciones clínicas. Med Clin (Barc). 2011;136:367-8.
2 Bradford M, Rosenberg B, Moreno J, Dumyati G. Bilateral necrosis of earlobes and cheeks: another complication of cocaine contaminated with levamisole. Ann Intern Med. 2010;152:758-9.
3 Larocque A, Hoffman RS. Levamisole in cocaine: unexpected news from an old acquaintance. Clin Toxicol (Phila). 2012;50:231-41.
4 Pearson T, Bremmer M, Cohen J, Driscoll M. Vasculopathy related to cocaine adulterated with levamisole: A review of the literature. Dermatol Online J. 2012;18:1.
5 Centers for Disease Control and Prevention (CDC). Agranulocytosis associated with cocaine use - four States, March 2008-November 2009. MMWR Morb Mortal Wkly Rep. 2009;58:1381-5.
6 Khan TA, Cuchacovich R, Espinoza LR, Lata S, Patel NJ, García-Valladares I, et al. Vasculopathy, hematological, and immune abnormalities associated with levamisole-contaminated cocaine use. Semin Arthritis Rheum. 2011;41:445-54.
7 Espinoza L, Pérez R. Cocaine-Induced vasculitis: clinical and immunological spectrum. Curr Rheumatol Rep 2012;14:532-8.
8 Morris GW Jr, Mason BC, Harris Sprunger R, Hake Harris H, White LA, Patterson DA. Levamisole-adulterated cocaine: a case series. J Am Board Fam Med. 2012;25:531-5.
9 Ullrich K, Koval R, Koval E, Bapoje S, Hirsh J. Five consecutive cases of a cutaneous vasculopathy in users of levamisole-adulterated cocaine. J Clin Rheum. 2011;17:193-6.
10 Ching JA, Smith DJ Jr. Levamisole-induced necrosis of skin, soft tissue, and bone: case report and review of literature. J Burn Care Res. 2012;33:1-5.

Anne RIVEROS FRUTOS,
Melania MARTÍNEZ-MORILLO,
Beatriz TEJERA SEGURA,
Alejandro OLIVÉ MARQUÉS

Servicio de Reumatología, Hospital Universitario Germans Trias i Pujol, Badalona, Barcelona, Spain.

Methamphetamine sold as 3,4-methylenedioxy-N-methamphetamine (MDMA), or ecstasy

Sir,

Methamphetamine is a phenylethylamine stimulant of the central nervous system. It induces the release of dopamine, serotonin and noradrenaline, inhibits postsynaptic reuptake and activates the mesocorticolimbic system. It is susceptible to abuse and dependence, has few therapeutic indications and is audited internationally[1,2].

Methamphetamine abuse has increased in recent years. In 2007 the drug was the most seized synthetic drug in the world. In Asia this generated more hospital admissions for treatment than cocaine. Methamphetamine abuse in the United States is a growing health problem with over 10 million regular users. In Europe, its availability has also grown, mainly in the northern and central Europe. In Spain, however, the most widely consumed amphetamine is speed or amphetamine sulphate, with a lower potency and duration of action than methamphetamine, and MDMA (3,4-methylenedioxymethamphetamine, Ecstasy), an amphetamine derivative which has emotional effects related to the culture of electronic music[1,3-5].

The Energy Control laboratory service has detected sporadic cases of methamphetamine use in recreational settings. Intentional use seems an uncommon phenomenon compared to other so-called recreational drugs[6].

In 2011 we received 22 crystalline powder samples and one tablet obtained from the recreational market, sold as MDMA and not containing this substance but rather methamphetamine hydrochloride with a purity of 43.5 ± 10.6% (range 12-66%). The samples came from 11 different Spanish provinces (Barcelona, Tarragona, Madrid, Jaén, Almería, Huesca, Soria, Sevilla, León, Santander and Pontevedra).They were identified using thin layer chromatography and UV spectrophotometry (TLC/UV) and GC/MS analysis. In 2011, 483 samples of supposedly crystallized MDMA, confirming its presence in 83.4%.

Since 2008, more control over MDMA precursors has resulted in a shortage on the European market. Furthermore, adulterants have been identified such as dextromethorphan or m-CPP (meta-chlorophenylpiperazine). But this is the first time our service has detected the sale of methamphetamine as MDMA. The lower price of methamphetamine and availability of precursors (it can be synthesized from ephedrine or pseudoephedrine) suggest that this may be an increasing and dangerous phenomenon. The two substances may be similar in presentation but have important differences in toxicological effects[1] (Table 1). The use of methamphetamine thinking it is MDMA may have severe adverse effects. Although this seems to be an isolated phenomenon, the changing nature of the illegal drug market requires constant monitoring[4].

References

1 Kish SJ. Pharmacologic mechanisms of crystal meth. CMAJ. 2008;178:1679-82.
2 Baicy K, London ED. Corticolimbic dysregulation and chronic methamphetamine abuse. Addiction. 2007;102(Supl. 1):5-15.
3 World Drug Report 2008. United Nations Office on Drugs and Crime. New York, 2009. United Nations. (Consultado 1 Marzo 2099). Disponible en: http://www.unodc.org/documents/wdr/WDR_2008/WDR_2008_eng_web.pdf
4 Observatorio Europeo de las Drogas y la Toxicomanía. Informe Anual 2011. (Consultado 1 Marzo 2012). Disponible en: http://www.emcdda.europa.eu/attachements.cfm/att_143743_ES_EMCDDA_AR2011_ES.pdf
5 Caudevilla Galigo F. El éxtasis, una revisión de la references científica sobre la MDMA Med Clin (Barc.). 2003;120:505-15.
6 Ventura Vilamala M, Caudevilla Gálligo F, Vidal Giné C; Grupo Investigadores SELECTO.Cocaina adulterada con levamisol: posibles implicaciones clínicas. Med Clin (Barc.). 2011;136:367-8.

Table 1. Differences between methamphetamine and 3,4-methylenedioxymethamphetamine (MDMA)

Chemical	Methamphetamine	3,4-methylenedioxy-methamphetamine
Form of presentation	Crystalline powder	Crystalline powder pills
Colloquial name in Spain	Meth, crystal, ice, cranck, meta	M, cristal cristal, Pastis, pirulas
Normal route of administration	Nasal inhalation, smoked, injected	Oral
Duration of effect	8-12 hours	4-6 hours
Active dose	30-50 mg	60-150 mg
Dependence potential	High	Low
Effects	Stimulant	Emotional
Most frequent pattern of use	Intensive, related with delinquency, ostracism and social dysfunction	Occasional, recreational
Marquis test* reaction	Orange	Black

*The test is a reactive chemical compound of sulfuric acid and formaldehyde to detect and discriminate the presence of phenylethylamine in a given sample.

Fernando CAUDEVILLA GALLIGO[1,3],
Pol QUINTANA MATHÉ[2],
Iván FORNÍS ESPINOSA[3],
Mireia VENTURA VILAMALA[3]

[1]Médico de Familia, Grupo de Intervención en Drogas de la Sociedad Española de Medicina Familiar y Comunitaria (semFYC), Spain. [2]Facultad de Medicina (Hospital Clínic), Universidad de Barcelona, Spain. [3]Energy Control, Spain.

Bowel obstruction by bags of liquid cocaine

Sir,

Cocaine is highly soluble and this facilitates its mixture with other substances, which has led traffickers to develop new ways to hide and transport it undetected by the authorities. Liquid cocaine is one of the new forms, used for internal concealment by body-packers (known in Spanish slang as mulos, correos or culeros)[1].

This case report involves a 29 year-old man with no relevant medical history who consulted the emergency department for constipation during 3 days, despite the use of laxatives and usual daily bowel habit, with postprandial vomiting during two days and a sensation of decreased diuresis. On physical examination the abdomen was distended and palpation produced diffuse pain, without peritoneal irritation. No masses or megalias were detected. Decreased bowel sounds on auscultation were noted. Digital rectal examination (DRE) ruled out the presence of fecaloma. Laboratory tests showed leukocytosis 15.000/mm^3 and elevated urea (60 mg/dl) and creatinine (1.7 mg/dl). Plain abdominal X-ray showed significant distention of bowel loops with rounded filling defects in both splenic and lower areas (Figure 1). The radiological study was completed with abdominal computed tomography (CT) scan which showed multiple hyperdense rounded filling defects occupying the entire lumen, one of which was located in the distal ileum and impacted in the ileocecal valve, which presumably caused the obstruction. On interrogation, the patient admitted having ingested nine condoms containing liquid cocaine. Urgent laparotomy was performed (Figure 2), and five of these ball-shaped condoms were extracted (Figure 3). No adverse incidents occurred during anesthesia or the immediate postoperative period.

As in solid cocaine body packing, cases of package (condom) rupture leading to death have been reported[2]. However, intestinal obstruction a priori seems to be less frequent in liquid cocaine than in solid cocaine body packers, with shorter package excretion time after hospital treatment[2,3]. DRE should be limited on suspicion of body packing due to the possibility of package rupture and severe cocaine poisoning[4-6].

The radiographic density of liquid cocaine and malleable packaging allowing adaptation to the contours of bowel anatomy all hinder X-ray detection and increase the possibility of false negatives. For the purpose of liquid cocaine detection, the diagnostic sensitivity of different imaging techniques has not been established[6], so CT scan still seems necessary in cases of high diagnostic suspicion or doubt.

Figure 1. Plain abdominal X-ray showing significant distention of bowel loops with rounded filling defects in both splenic and lower areas.

Figure 2. Intra-operative manual extraction of condoms containing liquid cocaine.

Figure 3. Ball-shaped condoms containing liquid cocaine.

References

1 De Bakker JK, Nanayakkara PW, Geeraedts LM Jr, de Lange ES, Mackintosh MO, Bonjer HJ. Body packers: a plea for conservative treatment. Langenbecks Arch Surg. 2012;397:125-30.

2 Burillo-Putze G, Becker LT, Rodríguez MG, Torres JS, Nogué S. Liquid cocaine body packers. Clin Toxicol (Phila). 2012;50:522-4.

3 Dueñas A, Nogué S, BurilloG. Body packing. N Engl J Med. 2004;350:1260-1.

4 Burillo-Putze G, Nogué-Xarau S, Dueñas-Laita A. Body packer: revisión y experiencia en un hospital de referencia. Cir Esp. 2008;83:160.

5 Madrazo Z, Silvio-Estaba L, Secanella L, García-Barrasa A, Aranda H, Golda T, et al. Body

packer: revisión y experiencia en un hospital de referencia. Cir Esp. 2007;82:139-45.
6 Traub SJ, Hoffman RS, Nelson L. Body packing-The internal concealment of Illicit Drugs. N Engl J Med. 2003;349:2519-26.

Rosa María LÓPEZ RINCÓN,
Fernando MARTÍNEZ,
Delia PARREÑO,
Miguel PLAZA LLORET,
Mario ALADRÉN,
Manuel Gerónimo PARDO

Servicio de Anestesiología y Reanimación, Hospital General de Albacete, Albacete, Spain.

Figure 1. Partial exposure of foreign bodies implanted by sub-mammary incisions.

Implants in a body packer: a new means for transporting drugs inside the body

Sir,

Intracorporal transport of foreign bodies by body packers (known in Spanish slang as mulos, correos or culeros) is a known form of illegal drug smuggling from Latin America and Africa for distribution in Spain and, because of our particular geographical location, as the gateway to the rest of Europe[1-3]. New forms of illicit drugs (in liquid) and the use of diverse transport methods significantly hinders detection[4-6].

This case report concerns a 23 year-old woman referred to our ED by airport National Police on suspicion of intra-corporal transport of drugs. The patient had had recent surgery with bilateral prosthetic breast implantation in her country (Panama). Physical examination showed bilateral breast swelling and bruises with incomplete sub-mammary dehiscence of surgical scars, and partial exposure of the implanted material (Figure 1). Chest X-ray showed bilateral breast implants with hydro-aerial levels (Figure 2). Cocaine metabolite analysis confirmed the presence of cocaine in urine. Under sedation in the operating room, the two implants were surgically removed; they consisted of plastic material with paste-like content (approximately 700 g each), later identified by the Police Force as cocaine paste (Figure 3). The patient presented postoperative hematoma as the only notable incident, and was discharged from the hospital on day five of admission.

To our knowledge, this is the first description of surgically implanted intra-corporeal drug transport in the medical literature, and we propose the term implanted body packer to designate this mode of illicit drug transport. Official Civil Guard sources have confirmed to the authors the existence of previous cases of sub-cutaneous implantation of packages in animals for the purpose of drug smuggling.

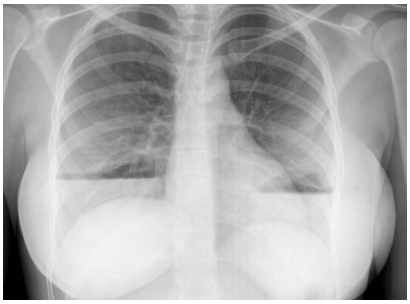

Figure 2. Chest X-ray showing bilateral breast implants with hydro-aerial level s.

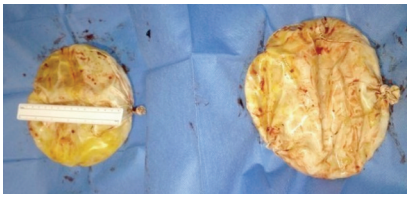

Figure 3. Surgically extracted foreign bodies, made of plastic and containing a paste-like substance.

References

1 Traub SJ, Hoffman RS, Nelson LS. Body packing-the internal concealment of illicit drugs. N Engl J Med. 2003;349:2519-26.
2 Madrazo Z, Silvio-Estaba L, Secanella L, García-Barrasa A, Aranda H, Golda T, et al. Body packer: revisión y experiencia en un hospital de referencia. Cir Esp. 2007;82:139-45.
3 Booker RJ, Smith JE, Rodger MP. Packers, pushers and stuffers-managing patients with concealed drugs in UK emergency departments: a clinical and medicolegal review. Emerg Med J. 2009;26:316-20.
4 Burillo-Putze G, Becker LT, Rodríguez MG, Torres JS, Nogué S. Liquid cocaine body packers. Clin Toxicol (Phila). 2012;50:522-4.
5 Khalil PN, Huber-Wagner S, Regauer M, Thun H, Kanz KG, Mutschler W. Identification and removal of subcutaneous foreign bodies. MMW Fortschr Med. 2010;152:38-40.
6 López Rincón RM, Martínez F, Parreño D, Plaza Lloret M, Aladrén M, et al. Obstrucción intestinal por bolas de cocaína líquida. Emergencias. 2013:25:155-6.

Zoilo MADRAZO GONZÁLEZ[1],
Anna MUÑOZ CAMPAÑA[1],
Cristian CARRASCO LÓPEZ[2],
Félix Ángel CHAVARRÍA MARÍN[2],
Javier JACOB RODRÍGUEZ[3],
Ignasi BARDÉS ROBLES[3]

[1]Servicio de Cirugía General y Digestiva-Urgencias Quirúrgicas, [2]Servicio de Cirugía Plástica y Reparadora, [3]Servicioi de Urgencias, Hospital Universitario de Bellvitge, IDIBELL, L'Hospitalet de Llobregat, Barcelona, Spain.

Pericardial angiosarcoma, a frequent cause of cardiac tamponade

Sir,

Pericardial angiosarcoma is rare and often difficult to diagnose because it presents with non-specific signs and symptoms, but confirmation with mediastinal invasion and metastasis is achieved by computed tomography (CT) and magnetic resonance imaging (MRI). Despite advances in surgical techniques, it is still associated with poor prognosis. Pericardial tumors constitute a relatively frequent cause of cardiac tamponade[1]. Most are of metastatic origin from primary tumors in other organs. Primary pericardial tumors are rare and most are mesothelioma or the highly malignant angiosarcoma.

This case concerns a 64 year-old man who consulted for progressive dyspnea on effort and orthopnea during the previous month. Physical examination revealed clinical signs of cardiac tamponade. Chest X-ray showed cardiomegaly with associated bilateral pleural effusion, and transthoracic echocardiography indicated an infiltrative process occupying the entire pericardial sac, without pericardial fluid. CT scan (Figure 1) confirmed the presence of a heterogeneous mass containing necrotic tissue of probable tumor origin occupying all the pericardial space and compromising both ventricles, the right atrium and superior and inferior cava veins. After thoracotomy, parietal pericardium thickening and vascularization was observed. During surgery the patient developed severe bleeding with hemodynamic instability that caused his death. Definitive histologic diagnosis was primary pericardial angiosarcoma.

Any type of pericarditis can cause cardiac tamponade. Neoplasms are the most frequently diagnosed etiology, followed by uremia, idiopathic

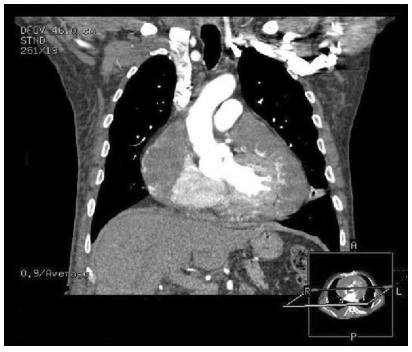

Figure 1. Computed tomography confirmed the presence of a heterogeneous mass containing necrotic tissue occupying the pericardial space and compromising both ventricles, the right atrium and superior and inferior cava veins.

pericarditis, infectious disease, anticoagulation, connective tissue diseases and Dressler syndrome or postcardiotomy syndrome[2]. Of primary tumors of the pericardium, angiosarcoma is the most common. When symptomatic, there are usually highly evolved tumor masses with significant hemodynamic compromise. The presence of metastatic disease is also common (66-89%)[3,4]. As in our case, it usually presents as cardiac tamponade, caused by pericardial bleeding[7]. It may strike at any age, although the highest incidence occurs between the third and fifth decades of life[5,6].

The initial diagnostic approach involves echocardiography, but this is limited to demonstrating tumor infiltration and extra-cardiac involvement, and CT or MRI are necessary[7,8].

Despite advances in surgical techniques, this tumor is still associated with poor prognosis. No optimal treatment exists and only exceptionally do victims survive more than one year after diagnosis. It shows little response to chemotherapy and median survival is 6 to 11 months[2,6,7]. Heart transplantation in some cases has not improved the prognosis[7].

References

1 El Allaf D, Burette R, Pierard L, Limet R. Cardiac tamponade as the first manifestation of cardiothoracic malignancy: a study of 10 cases. Eur Heart J. 1986;7:247-25.

2 Parvez N, Carpenter JL. Cardiac tamponade in Still disease: a review of the literature. South Med J. 2009;102:832-7.

3 Qingy M, Lai H, Lima J, Tong W, Qian Y, Lai S. Echocardiographic and pathological characteristics of primary cardiac tumors: a study of 149 patients. Int J Card. 2002;84:69-75.

4 Herrman MA, Shankermann RA, Edwards WD. Primary cardiac angiosarcoma: a clinicpathological study of six cases. J Thorac Cardiovasc Surg. 1992;103:655-4.

5 Kurian K, Weisshaar D, Parekh H, Berry G, Reitz B. Primary angiosarcoma: case report and review of the literature. Cardiovascular Pathology. 2006;15:110-2.

6 Park SM, Kang WC, Park CH, Shin MS, Chung WJ, Ahn TH, et al. Rapidly growing angiosarcoma of the pericardium presenting as hemorrhagic pericardial effusion. Int J Cardiol. 2008;130:109-12.

7 Timoteo AT, Branco LM, Bravio I, Pinto E, Timoteo T, Matos P, et al. Primary angiosarcoma of the pericardium: case report and review of the literature. Kardiol Pol. 2010;68:802-5.

8 Romero-Farina G, Candell-Riera J, Beltran-Ror A, González-Moreno JB, Bigalli D, Stratta A. Angiosarcomas cardíacos primarios: utilidad de la tomografía computarizada y la resonancia magnética cardíaca en su diagnóstico. Rev Esp Cardiol. 2004;57:1234-7.

María TASIAS PITARCH,
Fernanda CHEDA,
Enric PEDROL CLOTET

Servicio de Medicina Interna, Hospital Sant Pau y Santa Tecla, Tarragona, Spain.

Authors' reply

Sir,

We have read with great interest the letter by Hermoso et al.[1] in which they describe the case of a patient on corticosteroids and chemotherapy who developed multiorgan dysfunction. The patient evolved favorably although with persistent diarrhea. Strongyloides stercoralis larvae were found in stools and treated with ivermectin, with resolution of the diarrhea[1].

We agree with the affirmation that strongyloidiasis is an emerging global infection mainly affecting populations in endemic areas, but it also affects travelers, immigrants and refugees[2,3]. In Spain there have also been reports of this in local cases and in patients with eosinophilia[4].

We believe the case reported by Hermosa et al. is not in fact one of hyperinfection with dissemination. Severe cases are associated with dissemination of the parasite outside the gastrointestinal tract and filariform larvae can be detected in sputum, bronchoalveolar lavage, pleural fluid, peritoneal or surgical drains. Enterobacteriaceae or polymicrobial infection occurs due to contamination as the parasite migrates, and this can prove fatal if early anti-parasitic treatment is not administered[5,6].

We agree with the authors that the treatment of choice for patients with estrongiloidosis is ivermectin. In published clinical trials, ivermectin has shown greater effectiveness than benzimidazole in treating chronic estrongiloidosis[7]. However, no trials have studied immunosuppressed patients with hyperinfection. The dose used to date has been 200 mg/kg/day oral ivermectin for 2 days and repeated at 2 and 4 weeks[7].

We also agree that it is essential to perform screening for strongyloidiasis in patients at risk of infection (place of origin, travel, immunodeficiency, hematological malignancies, transplanted), who are scheduled to receive immunosuppressive treatment and present eosinophilia; that screening should be done in non-endemic areas using ELISA and polymerase chain reaction in stools, because these tests show higher sensitivity than direct studies in stools, and are also useful in the immunosuppressed[8].

In endemic areas there may be false positive ELISA results. Eosinophilia has a sensitivity of 93.5%[9] but not enough for proof of positive result, especially in travelers and in patients with hyperinfection and dissemination syndrome[10].

Finally, in the ED, epidemiological background, the state of immunosuppression, eosinophilia and poor patient outcome should lead to suspicion of opportunistic disease agents such as hyperinfection syndrome and *Strongyloides stercoralis* dissemination.

References

1 Hermosa C, Enciso V, Rodríguez D, Sanz P. Disfunción multiorgánica en el contexto de una enteritis por *Strongyloides stercoralis*. Emergencias. 2012;24:419.

2 Montes M, Sawhney C, Barros N. *Strongyloides stercoralis:* there but not seen. Curr Opin Infect Dis. 2010;23:500-4.

3 Buonfrate D, Angheben A, Gobbi F, Muñoz J, Requena-Mández A, Gotuzzo E, et al. Imported strongyloidiasis: epidemiology, presentations, and treatment. Curr Infect Dis Rep. 2012;14:256-62.

4 Fernández C, Enríquez A, Sánchez M, Mielgo R, Jukic K, Valdez M, Almonte P, et al. Strongyloides stercoralis infection: a series of cases diagnosed in an allergy department in Spain. J Investig Allergol Clin Immunol. 2012;22:455-7.

5 Mejia R, Nutman T. Screening, prevention, and treatment for hyperinfection síndrome and disseminated infections caused by Strongyloides stercoralis. Curr Opin Infect Dis. 2012;25:458-63.

6 Lam CS, Tong MK, Chan KM, Siu YP. Disseminated strongyloidiasis: a retrospective

study of clinical course and outcome. Eur J Clin Microbiol Infect Dis. 2006;25:14-8.
7 Marcos L, Terashima A, Canales M, Gotuzzo E. Update on strongyloidiasis in the immunocompromised host. Curr Infect Dis Rep. 2011;13:35-46.
8 De Paula F, De Castro E, Goncalves-Pires M, Marcal M, Campos D, Costa-Cruz J. Parasitological and immunological diagnoses of strongyloidiasis in immunocompromised and non-immunocompromised children at Uberlandia, State of Minas Gerais, Brazil. Rev Inst Med Trop Sao Paulo. 2000;42:51-5.
9 Roman-Sánchez P, Pastor-Guzmán A, Moreno-Guillén, Igual-Adell R, Suner-Generoso S, Tornero-Estébanez C. High prevalence of Strongyloides stercoralis among farm workers on the Mediaterranean coast of Spain: analysis of the predictive factors of infection in developed countries. Am J Trop Med Hyg. 2003;69:336-40.
10 Keiser P, Nutman T. *Strongyloides stercoralis* in the Immunocompromised Population. Clin Microbiol Rev. 2004;17:208-17.

César HENRÍQUEZ CAMACHO[1],
José A. PÉREZ MOLÍNA[2],
Eduardo GOTUZZO HERENCIA[3]

[1]Servicio de Urgencias, Hospital Universitario Fundación Alcorcón, Madrid, Spain. [2]Medicina Tropical, Servicio de Enfermedades Infecciosas, Hospital Ramón y Cajal, Madrid, Spain. [3]Servicio de Enfermedades Infecciosas. Instituto de Medicina Tropical Alexander von Humboldt, Lima, Perú.

Emergency pubic osteomyelitis: a little-know condition

Sir,

Osteomyelitis pubis is uncommon and difficult to diagnose. Clinical presentation is pubic pain radiating to the groin, thigh or buttocks, and may present with antalgic gait and fever[1-3]. There are multiple differential diagnoses, illustrated in the following case report.

A 35 year-old male athlete with no relevant history or toxic habits consulted the ED for bilateral inguinal region pain and difficulty walking, of 24 hours evolution, after athletic training. Physical examination showed a temperature of 38.5ºC, pain on palpation in the suprapubic region and abduction of the hips. Laboratory tests showed leukocytes/mm^3 13,000 (73% neutrophilia), CK 980, ESR 33 mm. Plain X-ray of the pelvis (Figure 1) showed discrete subchondral sclerosis. He was admitted to the observation area with suspected arthritis requiring study for anti-inflammatory therapy with intravenous NSAIDs. In two blood cultures Staphylococcus hominis was isolated, with sensitivity to oxacillin, amoxicillin/clavulanate, gentamicin, levofloxacin and vancomycin. He was treated with intravenous vancomycin and transferred to the infectious diseases department with suspected osteomyelitis pubis. The patient was interrogated about wounds or previous trauma and could only suggest shaving and intramuscular analgesic injection as potential gateways. The study was completed with technetium and gallium scintigraphy scan (Figure 1), which confirmed the diagnosis. The patient showed good recovery, and was discharged home with oral antibiotic therapy (amoxicillin/clavulanate) during four weeks.

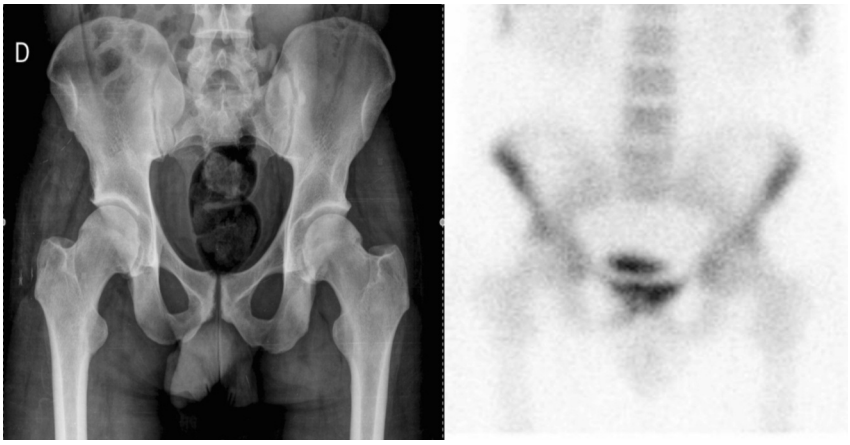

Figure 1. Plain X-ray of the pelvis (left) showing discrete subchondral sclerosis; and technetium and gallium scintigraphy scan (right) showing hypercapture in the pubic symphysis.

The symphysis pubis is a joint located at the confluence of the two pubic bones. It is innervated by branches of the pudendal and genitofemoral nerves, supplied with blood by branches of the pudendal, inferior epigastric and circumflex arteries[1-3].

Osteitis pubis is characterized by pelvic pain and negative cultures. Etiologically it is associated with trauma, postpartum period, athletics and surgical procedures of the digestive, urological and genital systems. Treatment is based on NSAIDs or corticosteroids, with good prognosis[3-6]. Pelvic osteomyelitis accounts for less than 10% all cases of osteomyelitis[4]. The most frequently identified bacteria involved are *Staphylococcus aureus,* followed by *Pseudomona aeruginosa* and lastly, polymicrobial infections[6]. Osteomyelitis pubic and septic arthritis of the pubic symphysis require hospitalization for IV antibiotic treatment and delay may result in sequelae: pelvic instability, urinary bladder perforation or chronic pelvic pain, with associated mortality around 2%[6].

References

1 Pauli S, Willemsen P, Declerck K, Chappel R, Vanderveken M. Osteomyelitis pubis versus osteitis pubis: a case presentation and review of the literature. Br J Sports Med. 2002;36;71-3.
2 Lentz SS. Osteitis pubis: a review. Obstet Gynecol Surv. 1995;50:310-5.
3 Henderson D, St Clair L. Osteitis pubis with five case reports. Br J Urol. 1950;22:30-51.
4 Mader R, Yeromenco E. Pseudomonas osteomyelitis of the symphysis pubis after inguinal hernia repair. Clin Rheumatol. 1999;18:167-9.
5 González González JC, Payán Martín L. Osteomielitis en un cuadro de osteopatía púbica. Archivos de Medicina del Deporte. 2003;95:259-62.
6 Ross J, Hu L. Septic arthritis of the pubic symphysis. Medicine. 2003;82:340-5.

Sandra RODRÍGUEZ JUSTO,
Eva GARCÍA VILLAR,
Jesús SANTAMARÍA VALLADOLID

Servicio de Urgencias, Complejo Hospitalario de Pontevedra, Spain.

Primary sternal osteomyelitis and retrosternal abscess: as an infrecuente cause of atypical chest pain

Sir,

Primary sternal osteomyelitis (PSO) is a rare entity, with few reports in the literature.

A 59 year-old man with a history of colon adenocarcinoma, treated with chemotherapy, consulted for chest pain with atypical features. He reported no fever, no respiratory symptoms or previous trauma. On arrival he was normotensive, feverish (38°C), tachycardic and tachypneac and baseline oxygen saturation was 92%. Physical examination showed tenderness in the sternal region. Laboratory tests showed CRP 13 mg/dL, WBC/L 12.3 x10^9, and D dimer 2,330 ng/mL. Gasometry revealed the presence of hypocapnia. The electrocardiogram

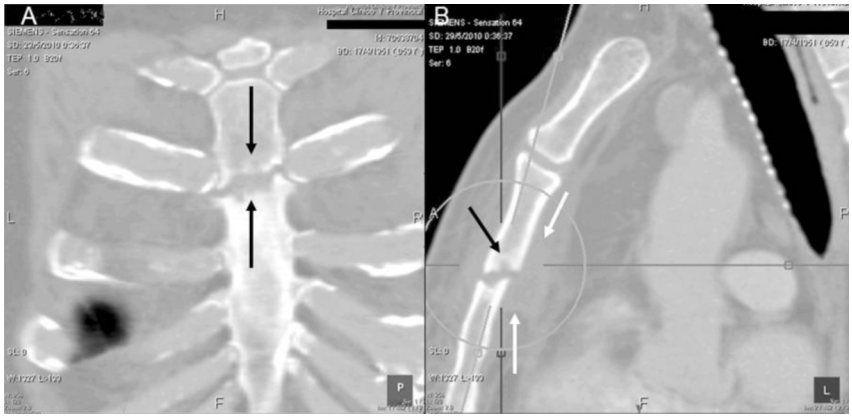

Figure 1. Computed tomography (CT) of the chest showing the sternum fracture line (black arrows). B) Sagittal section CT of the chest showing non-displaced fracture (black arrow) and a retrosternal collection 5.8 x 2.2 cm (white arrows).

showed sinus tachycardia, and chest X-ray showed an endovascular port-a-cath. Lung angiography showed no clots, but the presence of retrosternal collection with a sternal fracture line (Figure 1). Suspecting sternal osteomyelitis complicated by retrosternal sternal abscess and considering that he was immunosuppressed, we decided to initiate empirical antibiotic therapy, before blood cultures and hospital admission. After admission, scintigraphy bone scan (99m-Tc) only showed uptake in a third of the manubrium, supporting the idea of fracture. Serial bone X-ray and the myelogram were normal. CT scan with fine needle aspiration (FNA) of the collection did not show malignant cells, and cultures revealed no bacterial growth. No bacteria were isolated in initial blood cultures. Antiobiotic treatment started in the ED was maintained during 4 weeks. The patient presented clinical and laboratory improvement, with disappearance of the retrosternal collection on CT one month after admission. The patient was discharged without complications.

The PSO is extremely rare and accounts for only 0.3% of all cases of osteomyelitis[1,2]. It is more common in adults, with only 18 cases described in the pediatric population[3]. There is a small series of 57 adult cases up to 1989[4] and only isolated cases thereafter. PSO is defined as primary when there is no infectious focus or adjacent gateway, and hematogenous spread is the main pathophysiological mechanism[5,6]. The main risk factors for PSO in adults are immunosuppression (HIV infection, transplantation, or chemotherapy), and intravenous drug addiction (IVDA)[2,7]. The germ most frequently involved is Staphylococcus aureus[1,2,8] but in IVDA it is Pseudomonas aureginosa[1,2,4,5,8]. The agent responsible is only isolated in less than 20% of cases[3,4]. The reasons for this include early antibiotic treatment, low sensitivity of blood cultures and delay in performing complementary examinations. In our case, the diagnostic procedure results were only available 12 days after the first dose of antibiotics. Intravenous antibiotic therapy should be maintained during 4 weeks. If there is no response, surgery is indicated (debridement of the affected area, resection of the anterior periosteum and infected bone)[4,8]. PSO is a rare entity which could be included in the differential diagnosis of non-coronary chest pain with fever, especially in immunosuppressed patients and IVDA. In general, diagnostic suspicion is confirmed late and complementary tests allow ruling out other entities that finally lead to the definitive diagnosis.

References

1 Baraboutis IG, Argyropoulou A, Papastamopoulos V, Psaroudaki Z, Paniara O, Skoutelis AT. Primary sternal osteomyelitis caused by Nocardia nova: case report and literature review. Braz J Infect Dis. 2008;12:257-9.

2 Kara A, Tezer H, Devrim I, Caglar M, Cengiz AB, Gür D. Primary sternal osteomyelitis in a healthy child due to community-acquired methicillin-resistant Staphylococcus aureus and literature review. Scand J Infect Dis. 2007;39:469-72.

3 Matta RF, El Hajje MJ, Safadieh L, Salen G, Hmaimess G, Korkomay R, et al. Primary sternal osteomyelitis: A report of two cases with literature review. Pediatr Infect Dis J. 2010;29:976-8.

4 Gill EA, Stevens DL. Primary sternal osteomyelitis. West J Med. 1989;151:199-203.

5 Pinilla I, Martín-Hervás C, Gil-Garay E. Primary sternal osteomyelitis caused by *Actinomyces israelii*. South Med J. 2006;99:96-7.

6 Tordecilla Y, Salamanca MP, Arias JL, Guisado E, Ortega M, Pérez R. Osteomielitis esternal hematógena y neumonía de la comunidad secundarias a una sepsis por *Staphylococcus aureus* sensible a meticilina. An Med Interna. 2005;22:191-3.

7 Mofredj A, Guerin JM, Leibinger F, Masmoudi R. Primary Sternal Osteomyelitis and Septicemia due to *Staphylococcus aureus*. Scand J Infect Dis. 1999;31:98-100.

8 Edelman D, Losanoff J, Richman B, Jones J. Sternal osteomyelitis after minor trauma. South Med J. 2009;102:982-4.

Emmanuel COLOMA BAZÁN[1],
Sònia JIMÉNEZ HERNÁNDEZ[2]

[1]Servicio de Medicina Interna, [2]Área de Urgencias, Hospital Clínic, Barcelona, Spain.

Peripartum myocardiopathy during a scheduled cesarean use of bromocriptine

Sir,

Peripartum cardiomyopathy is a rare entity worldwide (1 in every 2-4000 births[1,2]), without total recovery of cardiac contractile function in most cases (70%)[3,4] and with variable mortality rates (2-80%)[4]. The diagnostic criteria are left ventricular ejection fraction (LVEF) < 50%, Framingham criteria for congestive heart failure (HF), symptoms appearing from the month before to 5 months after delivery and absence of other known causes of HF[5]. Sliwa et al.[6] showed greater recovery of LV contractile function at 6 months after prolactin inhibition with bromocriptine, as well as a decrease in combined outcome mortality. Bromocriptine is only recommended for severe cases[7].

This case involved a 30 year old Caucasian woman, with a history of active smoking. She was scheduled to undergo cesarean section, indicated for prolonged pregnancy over 42 weeks. Soon after spinal anesthesia, the patient presented coughing and breathlessness, and severe hypotension (65/35 mmHg) which resolved on receiving ephedrine. During the cesarean section procedure and extraction of the baby, she presented desaturation and pink expectoration. On admission to the intensive care unit (ICU), she had tachypnea, arterial oxygen saturation 91% and FiO_2 50%, Auscultation and chest X-ray was compatible with acute pulmonary edema. Diuretic therapy was initiated and transthoracic echocardiography showed severe systolic dysfunction and moderate mitral regurgitation. Due to rapid deterioration, she received endotracheal intubation and mechanical ventilation. After respiratory stabilization (FiO_2 100%), intravenous infusion with dobutamine and furosemide was started, and a Swan-Ganz catheter was placed in the pulmonary artery. The initial values (central venous

pressure 5mmHg, cardiac output: 7.94 L/min, pulmonary wedge pressure: 24 mm Hg) suggested the possibility of peripartum cardiomyopathy. She began empirical treatment with bromocriptine: 2.5 mg/12 hours. In the following 72 hours her condition improved, allowing extubation and progressive removal of vasoactive drugs; she was discharged from the ICU six days later. One month later, gradual functional improvement allowed monotherapy with carvedilol.

In the references reviewed in relation to this case, there is no report of such an acute form of PSO manifesting during the performance of a cesarean section.

References

1 Brar S, Kahn S, Shandu G, Jorgensen M, Hsu JW, Hen A. Incidente, Mortatly, and Racial Differences in Peripartum Cardiomyopathy. Am J Card. 2007;100:302-4.

2 Mielniczuk LM, Williams K, Davis DR, Tang A, Lemery R, Green MS, et al. Frequency of Peripartum Cardiomyopathy. Am J Cardiol. 2006;97:1765-8.

3 Fett JD, Christie LG, Carraway RD, Murphy JG. Five-year prospective study of the incidence and prognosis of peripartum cariomyopathy at a single institution. Mayo Clin Proc. 2005;80:1602-6.

4 Sliwa K, Förster O, Libhaber E, Fett JD, Sundstrom JB, Hilfiker-Kleiner D, et al. Peripartum cardiomyopathy: inflammatory markers as a predictor of outcome in a 100 prospectively studied patients. Eur Heart J. 2006; 27:441-6.

5 Pearson GD, Veille JC, Rahimtoola S, Hsia J, Oakley CM, Hosenpud JD, et al. Peripartum cardiomyopathy: National Heart, Lung, and Blood Institute and Office of Rare Disease (National Institutes of Health) workshop recommendations and review. JAMA. 2000;283:1183-8.

6 Sliwa K, Blauwet L, Tibazarwa K, Libhaber E, Smedema JP, Becker A, et al. Evaluation of bromocriptine in the treatment of acute severe peripartum cardiomyopathy: a Prof.-of-concept pilot study. Circulation. 2010;121:1465-73.

7 Elkayam U, Goland S. Bromocriptine for the treatment of Peripartum Cariomyopathy. Circulation. 2010;121:1463-4.

Miriam CHANA GARCÍA

Servicio de Medicina Intensiva, Hospital del Tajo, Aranjuez, Madrid, Spain.