

LETTERS TO THE EDITOR

Role of infiltrations in the management of acute musculoskeletal pain

Sir,

We have read with great interest the excellent review by Casal-Codesido and Vázquez-Lima¹ on the management of musculoskeletal pain in the emergency department. We would highlight the value of periarticular and peritendinous infiltration with corticosteroids and local anesthetics. This approach is useful in patients who cannot receive anti-inflammatory agents or opioids. Clinically or sonographically demonstrated periarticular pathology is required for this technique^{2,3}.

Omalgia due to subacromial entrapment, tendonitis or capsulitis responds favorably to steroid infiltration via rear, lateral or anterior subspinous access^{4,5}. This has been shown to be significantly superior to conservative management in terms of speed of action and pain reduction. However, there are studies demonstrating that the latter advantage is not maintained in the long term⁴. Another use of infiltration is for suprascapular nerve block in mechanical omalgia, which can be carried with superior access guided by ultrasound⁶. Musculoskeletal ultrasound in shoulder pathology is useful for diagnosis as well as for guiding infiltration. It is especially efficient when targeting specific injuries³.

In epicondylitis, short-term infiltration is superior to conservative treatment or rehabilitation in terms of symptom relief assessed by visual analog scales, although, as with omalgia, treatment benefit does not last very long⁷.

In the case of plantar fasciitis, infiltration by lateral access has been shown to offer significant and long-lasting symptom improvement compared with conservative management or orthopedic treatment⁸. In both epicondylitis and fasciitis, it has been shown that "fan" puncture of the enthesis is more effective than single-location infiltration^{7,9}.

Periarticular or peritendinous infiltration is an easily learned technique that can be applied rapidly, and we believe it should be part of the ED physician repertoire. Unless contraindicated, infiltration should be considered a viable alternative treatment for patients in whom anti-inflammatory agents are contraindicated or who show intolerance to opioid treatment.

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Carlos A. GUILLÉN ASTETE^{1,2},
Juan Fernando BORJA SERRATI²,
Antonio ZEA MENDOZA²

¹Servicio de Urgencias, ²Servicio de Reumatología, Hospital Universitario Ramón y Cajal, Madrid, Spain.

Musculoskeletal pain in the emergency department

Sir,

After reading the review by Casal-Codesido and Vázquez Lima et al. on managing musculoskeletal pain in the emergency department¹ and published in *Emergencias*², we would like to offer some considerations to complement it.

Firstly, in the list of drugs used in the first analgesic step, ketorolac is missing. Due to its potent analgesic effect it is intensively used in Spain, which in the past led to increased incidence of upper gastrointestinal bleeding, for several reasons: off-label use outside its clinical indications, administration for extended periods and at supra-therapeutic doses, and disregard for its side effects and risk groups. All this led to the Spanish Agency of Medicines and Health Products (AEMPS) to restrict its use in April 2007 to hospital settings and only for the following authorized indications: short-term moderate post-operative pain or severe pain due to renal colic. It is therefore a drug to be considered in the therapeutic arsenal of the emergency physician (EP), and its indications may well be expanded in future³. Information on this drug may be found on the AEMPS website⁴.

Secondly, there is an error in Figure³; one of the phenylpiperidine derivatives, pethidine or meperidine, is not included in the third analgesic step, although it does appear in Table 4 as one of the potent opioid drugs. Although much more recently introduced, useful in chronic mechanical type pain, tapentadol should also be included in this group; this centrally acting analgesic has a dual mechanism of action: an agonist effect on opioid mu receptors and inhibition of norepinephrine reuptake. Although a priori, like sustained release oxycodone, it is not used in the ED, it could be useful for some patients with chronic pain seeking relief⁵. Finally, as the authors indicate, pain scales are probably only used exceptionally in the ED, as is pain as a fifth vital constant, like

breathing rate (erroneously replaced by pulse oximetry)⁶. In addition to the analgesic elevator concept, not always remembered by doctors who care for patients with acute pain (and often useless as in the case of pain of traumatic origin), it seems important to insist on oligoanalgesia which is common in the ED in certain patients: those with language barriers, children, neuropathic pain, the elderly and patients with cognitive impairment⁷. It is precisely cognitive impairment, along with the usual work overload in the ED, which most influences this under-treatment of pain⁸. For these patients we have developed strategies to detect and treat pain, based on close observation, in the absence of clear communication⁹. If the patient frowns, looks sad, is stiff, groans or cries out on mobilization, or presents tachypnea, it is very likely that he/she is in pain and should be treated¹⁰.

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Marcos EXPÓSITO RODRÍGUEZ^{1,2},
Claudia SALAZAR BONILLA²,
Jorge DURÁN QUINTERO²,
Ion IRIARTE ASEGUINOLAZA²

¹Facultad de Ciencias de la Salud, Universidad Europea de Canarias, La Orotava, Tenerife, Spain.

²Servicio de Urgencias, Hospital Universitario de Canarias, Tenerife, Spain.

Hyperbaric oxygen therapy for decompression sickness is contraindicated in some diving accidents patients

Sir,

Díaz Miguez et al.¹ presented some very instructive images of a case of pulmonary barotrauma after scuba diving. We wanted to express our interest in the subject, and contribute by clarifying certain aspects in relation to this type of disbaric accident (DBA).

While the common term lung overpressure is known and accepted, the consensus meeting held in Marseille in 1996 agreed on calling this intrathoracic hyperpressure syndrome (IHS), which better defines its pathophysiology². Although infrequent, HIS can also occur in apnea divers^{3,4}. The diver in question had a history of spontaneous pneumothorax, which is an absolute contraindication for scuba diving^{5,6}. The clinical symptoms described place this case in a group of disbaric accidents of non-embolic diving barotrauma. He had subcutaneous thoraco-pulmonary emphysema without neurological or hemodynamic involvement, nor analytical data indicating disbaric shock^{7,8}. Apart from the rapid ascent from 8 meters, further details of the dive were not supplied, so other considerations relating to decompression cannot be analyzed. Normobaric oxygen (NBO) was administered with a mask and reservoir bag. Initial treatment of disbaric accidents is with NBO at 100%. However, low flow masks with a reservoir bag do not deliver such a concentration of oxygen. Low flow closed circuit (CC) devices and those with an inspiratory demand regulator are more appropriate and specific for the treatment of such accidents⁹. The patient was transferred to a medical hyperbaric unit and recompressed in a hyperbaric chamber. In the case of non-embolic barotraumatic DBA, hy-

perbaric recompression is not only unnecessary (in the absence of embolizing bubbles, rheological or hemodynamic deterioration) but is contraindicated, as the pressure and volume variations could actually worsen pneumothorax conditions. This latter point is in our view the major consideration and what struck us most. Other more complex considerations may be generated by this case, such as the possibility of flagrant omission of decompression in a diver with risk factors¹⁰, but this cannot be inferred from the data provided by the authors.

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Joan SALA SANJAUME¹,
Ángel ALONSO CRESPO²,
Juan BATLE³

¹Servicio de Urgencias, Clínica Tres Torres, Barcelona, Spain. ²Unidad de Medicina Hiperbárica, Hospital El Ángel ASISA, Málaga, Spain. ³Institut de Recerca Hiperbárica, Clínica Jumea, Palma de Mallorca, Spain.

Authors' response

Sir,

We appreciate the interest shown in the case images published¹ and the contributions made, but would like to clarify certain aspects.

Our colleagues will clearly be aware that space limitation in the section Images in the journal EMERGENCIAS² does not allow for long description of the pathology, explanation of the origin of terminology, the circumstances of diving accidents or the pathophysiology, which the authors well describe in their letter to the Editor. For the same reason of space limitation, we could not review the absolute contraindications for the practice of scuba-diving, but we obviously agree that a history of spontaneous pneumothorax is an absolute contraindication. Our interest was to present a case of DBA without neurological or initial hemodynamic involvement showing a striking subcutaneous emphysema, with high risk embolism which fortunately did not occur. The image itself and its instructional value is the key to this section².

Two considerations regarding treatment: the first refers to the supply of 100% O₂. We share this view, but, as our readers well know, closed circuit WENOLL-type systems or open DAN type systems delivering 100% O₂ are rarely available in emergency departments, not only in regional hospitals but also at higher level hospitals. The authors will surely agree that the best applicable treatment in this case was to deliver the highest possible concentration of O₂^{3,4} with the device available. In our hospital, the device is a Monaghan⁴ type mask (which delivers O₂ at a concentration of 60-80%). We understand that in the hyperbaric medical center (located 150 km from our hospital), prior to treatment, the experts in sub-aquatic and hyperbaric medicine there previously treated both pneumothorax^{3,5}. Finally, given the depth, time and gas mix used by the diver, omission of decompression seems unlikely in the case presented.

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Manuel VÁZQUEZ LIMA,
Francisco J. DÍAZ MIGUEZ,
Ignacio VÁZQUEZ LIMA

*Servicio de Urgencias. Servicio de Radiodiagnóstico.
Hospital Do Salnés. Vilagarcía de Arousa, Spain.*

Risk and medical-legal conflict in hospital emergency department practice

Sir,

We have read with interest the review recently published in your journal on Risk and medical-legal conflict in the ED, by Gimenez Perez et al¹. We cannot agree with the authors identifying hospital medical intern residents (MIR) as an element of risk in medical-legal conflict. It is easy to blame the weakest link in the chain when the lack of training they receive is well known. They consider themselves "cheap labor" according to a study performed in 2009 by the Andalusia Health Counsel². And we should not forget the impact of health budget cuts: on the one hand, MIR doctors are considered as exclusively medical workers, but on the other hand their training is neglected³. The consequences are evident for public health, since they are given initial responsibility which does not really correspond to them.

Emergency departments are a breeding ground for burnout⁴ and work stress⁵. This is especially the case when the individual lacks the communication and problem-solving skills required to resolve medical-legal conflicts because such skills are not taught at medical school⁵; and very few centers in Spain offer SOCA (structured objective clinical assessment) courses.

Although the topic of the work is well chosen, some aspects are treated superficially. We believe the prob-

lems arising from obtaining consent, including custody, medical-legal documentation and violence in the family environment should have been addressed with greater rigor and depth. No mention is made of coercive measures in non-psychiatric patients for therapeutic purposes, or the diagnosis of child maltreatment, a serious and palpable problem in EDs. The authors omit to describe the problems arising from organ transplants where the relationship with the coroner, especially in these departments, is so important. Finally, they do emphasize the importance of regulations on confidentiality and protection sensitive data in this type of attention, despite considering this an area with special connotations, along with the defense of other basic citizen rights such as privacy, dignity and public image.

Finally, we would stress the importance of medical-legal training for MIR doctors in our health care system, especially in the exercise of high risk specialties such as Accident and Emergency Medicine.

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María FERNÁNDEZ-PRADA¹,
Claudio HERNÁNDEZ CUETO²

¹Servicio de Medicina Preventiva, Hospital Universitario San Cecilio, Granada, Spain.

²Departamento de Medicina Legal, Toxicología y Antropología Física, Facultad de Medicina, Universidad de Granada, Spain.

Authors' reply

Sir,

In relation to the issues raised by Maria Fernandez-Prada pose and Claudio Hernández Cueto, we wish to offer some clarifications. First, at no time did we identify MIR doctors as an element of risk in medical-legal conflicts¹. However, references in current literature regarding medical liability, cited in our article, state that the lack of specific training in emergency medicine is a risk factor for the practicing physician, regardless of whether he/she is a resident in training or not. However, we agree with them on the lack of training in legal medicine especially during the post-graduate stage. But Legal Medicine is itself a medical specialty, and it is difficult to expect other specialists to be competent in such a broad and extensive field and sufficiently so as to resolve the conflicts that may arise. We therefore believe there should be medical-legal specialists or services available for support when needed in daily hospital care, or the possibility of access to technical advice from institutes of legal medicine, as in Catalonia, responsible for teaching and joint training of professionals from different centers. Finally, it is possible that some issues have been treated superficially, such as gender violence, the interaction with coroners regarding organ donation informed consent and everything related with minors, which are situations of great controversy that have not been fully addressed in a single article and would require additional review articles.

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Dolors GIMÉNEZ PÉREZ^{1,3},
Juan Ignasi GALTÉS VICENTE^{1,3},
María Luisa IGLESIAS LEPINE^{2,3}

¹Institut de Medicina Legal de Catalunya, Barcelona, Spain. ²Servicio de Urgencias, Hospital de Sabadell, Corporación Parc Taulí, Barcelona, Spain.

³Departamento de Psiquiatría y Medicina Legal, Universidad Autónoma de Barcelona, Spain.

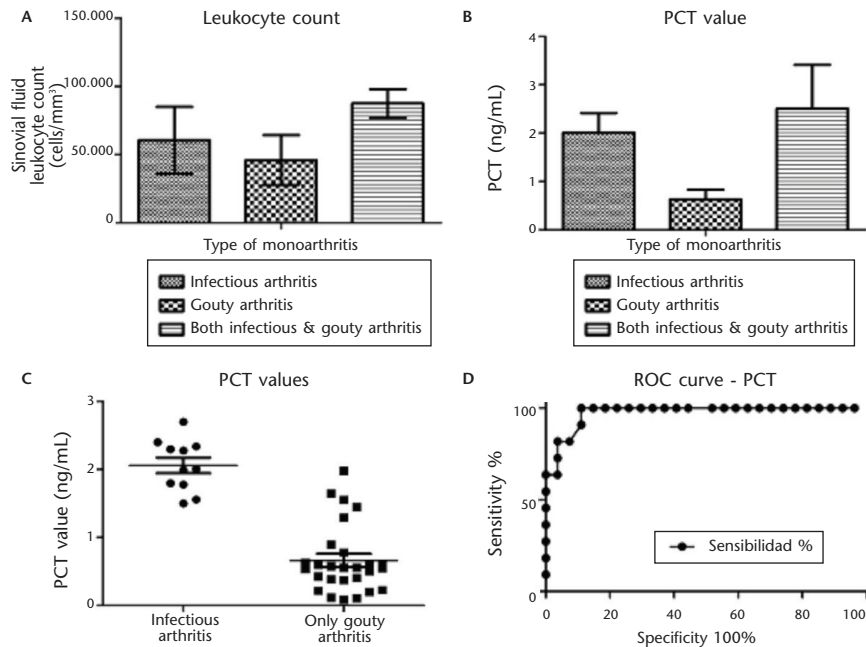


Figure 1. (A) Results of leukocyte count in synovial fluid. (B) Procalcitonin (PCT) according to type of monoarthritis. (C) Single PCT values in patients with a final diagnosis of gouty or infectious monoarthritis. (D) ROC curve analysis of PCT values and final diagnosis of infectious monoarthritis.

Value of procalcitonin in the differential diagnosis of microcrystalline and infectious monoarthritis

Sir,

We have read with interest the article by Tudela et al¹ on the predictive value of procalcitonin (PCT) for the diagnosis of bacterial infection. One of the situations where this is particularly useful is that in which the differential diagnosis conditions the decision to hospitalize or treat as an out-patient, and the need for empirical antibiotic treatment². Rheumatologic emergencies frequently include situations in which this dilemma arises. A recent review has highlighted the difficulty of distinguishing microcrystalline from infectious monoarthritis, especially in patients with a history of gout³.

To assess the usefulness of PCT in differentiating gouty from infectious monoarthritis, our research team performed a prospective study. Over a period of 6 months, PCT was determined (by immunochromatography) in 39 consecutive patients presenting at the emergency department of our hospital for monoarthritis of the knee, all with a previous diagnosis of gout (< 5 years duration). All pa-

tients underwent knee arthrocentesis for the study of microcrystals, Gram culture staining in enriched media, synovial fluid (SF) leukocyte count and peripheral blood C reactive protein (CRP), erythrocyte sedimentation rate (ESR) and leukocyte count in peripheral blood, as well as PCT values.

Mean age was 49 ± 6.9 years and 29 of the 39 patients were men. Final documented diagnoses were: 9 infectious arthritis, 28 gouty arthritis and 2 both gouty and infectious simultaneously. We identified 6 cases of infection with *Staphylococcus aureus*, 2 *Streptococcus pyogenes* and 1 *Streptococcus equi*. No significant differences between the three groups were found regarding age, sex, time from onset of symptoms and CRP, ESR and peripheral blood leukocytes. Gram stain identified pathogens in 41% of infectious arthritis, but none in any cases of gout. Leukocyte count did not allow distinguishing the two forms of arthritis (Figure 1A). Mean PCT measured in ng / ml was $2.01 (\pm SD 0.4)$, 0.63 ± 0.2 and 2.51 ± 0.9 for infectious arthritis, gouty arthritis and both simultaneously, respectively (Figure 1B). For the comparison of these means we used analysis of variance (ANOVA), which showed a statistically signifi-

cant difference in PCT values between the first two groups ($p < 0.01$). ROC curve analysis showed that PCT values >1.475 ng / ml corresponded to the diagnosis of infectious arthritis with 100% sensitivity and 88.89% specificity (likelihood ratio 9.00) (Figures 1C and 1D).

We consider that PCT determination is a useful test for the study of acute monoarthritis in a patient with gout, to rule out infectious arthritis. Our results are consistent with those of other studies^{4,5} and with those which affirm that a PCT value of 0.5 ng / ml cannot be used to distinguish between infectious and non-infectious arthritis⁶. The high sensitivity and specificity for the diagnosis of articular infection found in our work allow us to propose it as a possibly routine test in these situations, although our results require validation in larger series of patients.

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Carlos Antonio GUILLÉN ASTETE,
Carmen MEDINA QUIÑONES,
Javier BACHILLER CORRAL

Servicio de Reumatología, Hospital Universitario Ramón y Cajal, Madrid, Spain.

Thrombophlebitis of the breast, another cause of noncardiac chest pain: Mondor disease

Sir,

Chest pain is one of the main reasons for ED visits and causes con-

cern and anxiety in patients. Diagnosis is based on a thorough medical history, physical examination and imaging tests among others.

A 45 year-old woman, with a history of asthma on daily budesonide /formoterol, attended the emergency department with oppressive two-day pain in the left hemithorax which increased on mobilization of the left shoulder. She reported having lifted heavy weight objects. On examination, cardiopulmonary auscultation was normal and she presented selective pain of the left inframammary area. On palpation, a very painful, non-visible indurated cord about 4-5 cm in length was noted. Electrocardiography, chest radiography and coagulation test were normal. She was referred to the breast pathology unit with suspected Mondor's disease, where she underwent a mammogram and echography (Figure 1). The ultrasound showed a hypoechoic image on the wall without flow, suggestive of breast thrombophlebitis (Mondor's disease). Symptomatic treatment was administered with dexketoprofen 25 mg every 8 hours for pain and relative rest. The picture improved in one month.

Mondor's disease is a rare, predominantly female disease occurring in middle age, characterized by superficial thrombophlebitis of the thoracoepigastric veins and their confluents. It has also been described as occurring in the armpit, groin, posterior cervical region, stomach, antecubital fossa and penis, and is only rarely bilateral. The symptoms are a sensation of oppression in the lateral region of the thorax, with pain and increased sensitivity, and a subcutaneous cord (not always visible), which corresponds to the vessel affected. The skin may be erythematous, with edema or retraction. Etiology is idiopathic, but has sometimes been associated with muscle effort (as in our case), with local trauma, and previous febrile processes. Cases have also been reported associated

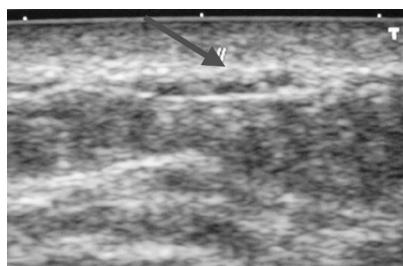


Figure 1. Ultrasound image showing the breast thrombophlebitis (arrow).

with pregnancy and postpartum, and some systemic diseases (protein S deficiency, protein C deficiency and phospholipid syndrome). It may also appear after breast surgery. The relationship with breast cancer is estimated at 12% but it is not related with vascular anomalies or with hypercoagulable states. The diagnosis is clinical. Complementary tests include coagulation study, to rule out other entities, and mammography and / or ultrasound due to the rare association with breast cancer. Most cases are benign. Treatment is symptomatic and symptoms disappear in 2-16 weeks. Prognosis is favorable, if not associated with other conditions, and it tends to resolve spontaneously within months.

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Marta BAZTÁN ROMEO¹,
Carmen MERINO DÍAZ DE CERIO¹,
Asier GOICOECHEA MATEO²

¹Centro de Salud Rodríguez Paterna, Logroño, La Rioja, Spain. ²Servicio de Urgencias, Hospital San Pedro, Logroño, La Rioja, Spain.

Bowel obstruction secondary to spontaneous intramural jejunal hematoma

Sir,

We report the case of a 74 year-old patient who attended the ED for pain,

abdominal distension and vomiting. Medical history included atrial fibrillation treated with acenocoumarol and lung emphysema receiving home oxygen treatment, with no history of trauma. Physical examination showed abdominal distension and dullness, aperistalsis and signs of peritonitis, with symptoms of systemic inflammatory response. Lab tests showed INR 10.57, activated partial thromboplastin time 3.01 seconds, and C-reactive protein 67 mg / dl. X-ray showed distended bowel loops. Computed tomography (CT) scan showed wall thickening with marked jejunum uptake and density and target sign associated with increased mesenteric density and mild hemoperitoneum. CT angiography ruled out filling defects, extravasation of contrast and mass images. After anticoagulation reversal with vitamin K, parenteral nutrition was started and intestinal decompression measures using a nasogastric probe with good results, and the patient was discharged asymptomatic after 12 days.

Despite increasing incidence due to the increasing number of anticoagulated patients, spontaneous intramural intestinal bleeding is infrequent: only one in 2,500 patients treated. In its pathophysiology, it seems that the hyperosmotic effect of hematoma causes wall thickening and, secondarily, obstruction. The most frequent locations are the jejunum, ileum and duodenum, usually more extensive than when due to trauma. It usually manifests as a marked coagulation disorder associated to occlusive syndrome and anemia which, depending on evolution time and the degree of involvement of the affected bowel segment, can be associated with an inflammatory response or systemic sepsis. It also requires a high index of suspicion and ruling out processes such as ischemia or inflammatory bowel disease. As in the case presented, the diagnosis requires CT scan in almost 100% of cases, which shows wall thickening of short segments. In the case presented, we would highlight the involvement of a long section of the jejunum. In addition to anticoagulant therapy, the following are also causes of spontaneous intestinal hematoma: hemophilia, thrombocytopenic purpura, idiopathic leukemia, lymphoma, myeloma, vasculitis or chemotherapy. Management is often medical, with rest and gastrointestinal decompression, restoration of electrolyte balance, correcting INR with vitamin K and

sometimes with fresh plasma, and blood transfusion in cases of anemia. Surgery is indicated in case of diagnostic doubt, perforation, active bleeding or ischemia, and usually consists of resection of the affected section if bowel viability is compromised.

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Jordi MELÉ OLIVÉ,
Fernando HERRERÍAS,
Antonio FERMIÑÁN,
Jorge OLSINA

Servicio de Cirugía General y del Aparato Digestivo, Hospital Universitario Arnau de Vilanova, Lleida, Spain.

Atrial fibrillation after administration flumazenil in a patient with acute poisoning

Sir,

In Spain it is common to use of flumazenil as an antidote in acute poisoning (AP) with benzodiazepines¹. It is indicated only if the Glasgow Coma Score (GCS) is below 12. Contraindications include poisoning by tricyclic antidepressants, carbamazepine, cocaine, a history of epilepsy and / or seizures, prolonged QRS or QT, and chronic use of benzodiazepines because of the risk of seizures and arrhythmias involved². In the reference articles consulted, we found two cases of ventricular tachycardia after flumazenil administration in cases of AP^{3,4}, but no cases of atrial fibrillation (AF).

A 36 year-old man with mood disorder treated with bromazepam 3 mg / day and zolpidem 10 mg / day consulted the ED after voluntary intake of an undetermined amount of diazepam, dipotassium clorazepate and bromazepam, associated with alcohol, 2-3 hours before. He was somnolent and bradypsychic (GCS:13). The electrocardiogram showed a sinus rate of 80 bpm. Suspecting AP by benzodiazepines and intending to reverse the sleepiness, an intravenous bolus of 0.5 mg flumazenil was administered. Immediately, the patient referred restlessness,



Figure 1. CT scan showing intestinal occlusion.

palpitations and chest pain. We recorded AF at 160 bpm and blood pressure of 126/92 mmHg. Amiodarone treatment was started, 300 mg intravenously, which controlled the heart rate; sinus rhythm was restored after 12 hours. The patient was then discharged.

Due to contraindications of flumazenil in poisoned patients, some authors^{5,6} disapprove of its use. Lewis R. Goldfrank⁷ has even asked whether it is ethical to place a patient at risk when the overdose of benzodiazepine has far less toxic potential. Other authors commend the role of this antidote to reverse coma and respiratory failure caused by benzodiazepines, although most highlight the need for caution and checking for any associated contraindications^{8,9}.

The patient's history of chronic benzodiazepine use and the initial GCS were inappropriately weighed in this patient. Furthermore, it remains

questionable whether the AF was due to alcohol intake, although the immediacy of its appearance after flumazenil administration suggests a previously undescribed complication, in connection with abrupt reversal of the vagolytic effect of benzodiazepines on the heart¹⁰.

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Beatriz MARTÍN PÉREZ¹,
Antonio DUEÑAS LAITA²,
Miguel Ángel CASTRO VILLAMOR³

¹Servicio de Urgencias, ²Unidad Regional de Toxicología Clínica, Hospital Universitario Río Hortega, Valladolid, Spain. ³Atención Primaria del Centro de Salud Delicias I, Valladolid, Spain.