Salicylate poisoning

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To the Editor,

We would like to clarify a few points with regard to the letter on salicylate poisoning published in this issue of NEFROLOGÍA.

Firstly, we would like to thank Drs Nogué and Dueñas for their recommendations, which appear to be extremely useful for the management of such cases of poisoning.

They are correct in doubting that we started urine acidification treatment because the text later goes on to state that urine alkalinisation treatment was required. The purpose of urine alkalinisation treatment is to increase urinary pH in order to decrease reabsorption of salicylates by the proximal convoluted tubule. In fact, it increases excretion of metabolites by 10 to 20 times with respect to patients who do not receive this treatment.[1]

Regarding the administration of activated charcoal and gastric lavage, both treatments have been shown to decrease absorption of the toxin, and their use depends on the time elapsed between ingestion and receiving medical care. It has been proven that combined therapy produces better results than monotherapy,[1] and therefore numerous guidelines recommend concomitant administration. Gastric lavage is a very useful technique in this type of situation, mainly in the first hour after ingestion of the toxin, although it may be indicated during the first 8 to 12 hours if the salicylate tablets have enteric coating, as was true in our case. As for activated charcoal, its action lasts for the first 2 to 4 hours after ingestion,[2,3] and it is currently a key treatment for most types of poisoning as Drs Nogué and Dueñas state. In our clinical case, gastric lavage was performed; activated charcoal was not administered since more than 4 hours had elapsed between ingestion and assessment of the patient by the emergency department, and it would not have been very effective.

After examination, the patient was prescribed urine alkalinisation, gastric lavage and saline to correct hydroelectrolytic alterations, and admitted to the intensive care unit. After 5 hours, despite receiving treatment, the patient experienced decreased cognitive state, hypotension and oliguric renal failure, and we then decided to start haemodialysis treatment. Extracorporeal therapy was indicated because of the patient's poor clinical evolution (worsening neurological state, sustained hypotension despite saline administration and acute oliguric kidney failure), and not because of the serum salicylate level.[1-3] The literature describes numerous cases in which levels below 100mg/dl have proven fatal for the patient, and many articles recommend the use of haemodialysis for rapid correction of the acid-base disorder and hydroelectrolytic imbalance in such cases.[4,5] However, it is true that there are no studies comparing conservative treatment and use of dialysis. In our opinion, a nephrologist should be consulted in cases of salicylate poisoning in order to evaluate the option of haemodialysis, particularly in cases with poor clinical evolution.

Conflicts of interest

The authors affirm that they have no conflicts of interest related to the content of this article.

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Use of estimated glomerular filtration formulas for dose adjustment

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To the Editor,

While we agree with many of the ideas expressed in the letter by Peral et al,[1] we would like to expand on the following:

1. Clinical laboratories in Spain, according to national recommendations,[2] generate analytical reports including the glomerular filtration rate (GFR) calculated by means of an equation. Unpublished data from a national

survey carried out by the Kidney Function Commission of the Spanish Society of Clinical Biochemistry and Molecular Pathology (CFR-SEQC), show that out of 281 laboratories surveyed, 88% report GFR. Of these reporting laboratories, 32% calculate GFR using the MDRD-IDMS equation, 62% use the MDRD-4 equation and 4% use the Cockcroft-Gault (CG) or Chronic Kidney Disease Epidemiology Collaboration (CKD-EPI) equations. Standardised procedures for measuring creatinine have become increasingly available in Spain, but it is true that some laboratories that introduced GFR calculated by MDRD-4 (factor 186) in past years have not yet made the necessary leap to the MDRD-IDMS method (factor 175). The CFR-SEQC is undertaking a series of actions in order to correct this situation.

2. We are grateful that the error in the description of the CKD-EPI equation in our article in *Nefrología*[3] was reported. With a view to correcting this and other errors, we sent a list of errata to the journal.

3. The recommendations by pharmaceutical companies with regard to adjusting drug doses in patients with compromised renal function follow the Food and Drug Administration (FDA) guidelines and are based on creatinine clearance intervals obtained by using the CG equation.[4] However, neither the methods for measuring creatinine nor the patient samples used to develop the equation are available, meaning that the equation cannot be reformulated for use with creatinine values obtained using current methods. Creatinine clearance values obtained using the CG equation are 10%-20% higher if standardised procedures are followed, which overestimates renal function and therefore affects drug dose adjustments.

GFR values obtained by using the CG and MDRD methods are not interchangeable. Different studies that compare dosage adjustments based on the CG and MDRD methods report differences in between 10% and 40% of cases.[5] Comparing these studies is difficult due to the variability of the creatinine measurement methods used when calculating the equations and the type of patients studied. In addition, their interpretation is complex, since they do not assess the clinical consequences of discrepancies between doses that result from using one equation or another. Only one study compares concordance between the assignment to an FDA-listed category, based on GFR measurement (iothalamate clearance), and 3 equations (MDRD-IDMS, CG using real weight, and CG using the ideal weight value), in addition to differences in recommended doses between the 3 equations with respect to 15 drugs that are excreted renally.[6] Results from the comparison show that concordance with the recommended doses of the 15 drugs, based on the GFR measurement, was greater for MDRD-IDMS (88%) than for CG with ideal weight (82%) or CG with real weight (85%). Concordance between recommended doses was 89% between MDRD-IDMS and CG with ideal weight.

The American College of Clinical Pharmacy Nephrology Practice and Research Network recommends that neither CG nor MDRD be used as the only measurement to determine dosage-adjustment decisions. Other factors should also be considered, such as the way equations work in specific population groups, the therapeutic index, drug indication and toxicity profile, availability of other treatment agents, the possibility of monitoring drug concentrations in blood and more precise means of measuring creatinine clearance or glomerular filtration rate.[5] The National Kidney Foundation Education Program recommends that both CG and MDRD-IDMS be used when estimating renal function in order to adjust drug doses.[7] Likewise, the FDA recently proposed that MDRD-IDMS be used along with CG in future pharmacokinetic studies in patients with kidney disease.[8]

We believe that the value of GFR calculated based on the MDRD-IDMS equation is a valid tool for assessing renal function for purposes of adjusting drug doses for several reasons: 1) it is based on creatinine measurement procedures that have been standardised against the reference method; 2) it correlates better with measured GFR than the CG method for GFR values <60ml/min/1.73m^2, which are the most susceptible to dosage adjustments; and 3) it is available in most clinical laboratory reports, unlike CG.

We agree with Peral et al that while the GFR value obtained by MDRD-IDMS is expressed in ml/min/1.73m^2, absolute values (ml/min) should be used for this purpose in patients whose body surface area varies considerably from the standard area of 1.73m^2

Conflicts of interest

The authors affirm that they have no conflicts of interest related to the content of this article.

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B) BRIEF CASE REPORTS

Endogenous endophthalmitis as a complication of sepsis related to a tunnelled haemodialysis catheter

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To the Editor,

Complications may arise from use of haemodialysis catheters in the form of infections at the exit site, tunnel infections, bacteraemia and systemic infections. We present 2 cases of endogenous endophthalmitis secondary to sepsis in patients fitted with tunnelled catheters for haemodialysis.

Case study 1: Male patient 51 years of age with a history of type 2 diabetes mellitus and chronic kidney disease due to membranoproliferative glomerulonephritis associated with osteomyelitis. He was included in a haemodialysis programme in 2009, with a tunnelled catheter in the right brachiocephalic vein. The patient was hospitalised due to general decline, fever and dyspnoea. As a respiratory infection was suspected, systemic empirical antibiotic coverage was provided with ceftriaxone. The patient experienced pain in the right knee with signs of effusion and arthrocentesis was performed. The patient later presented with ptosis of the left eyelid, severe conjunctival chemosis, decrease in visual acuity upon light perception, preseptal cellulitis, almost complete ophthalmoplegia, ocular hypertension and anterior chamber fibrin. Ocular ultrasound revealed vitreous infiltration especially in the anterior area and retinal detachment (Figure 1).

The patient was diagnosed with panophthalmitis of the left eye, and blood and joint fluid cultures tested positive for *Staphylococcus aureus* resistant to methicillin. Given the poor anatomical and functional state, the treatment regime was vitrectomy and intravitreal injection of vancomycin and ceftazidime, with eye drops containing vancomycin, ceftazidime, cycloplegic agents, timolol and dexamethasone, and systemic antibiotic coverage with vancomycin and gentamicin in dialysate. Vitreous humour cultures tested positive for *Staphylococcus aureus*, which confirmed the diagnosis. Treatment was maintained during 1 month and the ophthalmological outcome was poor, with formation of fibrin in front of the pupillary axis and phthisis bulbi.

Case study 2: 78 years old female patient undergoing haemodialysis since 2009 due to diabetic nephropathy with a tunnelled catheter in the right brachiocephalic vein. She was

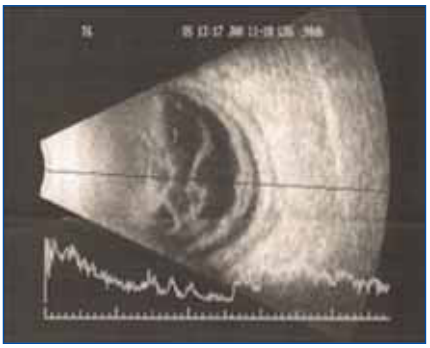

Figure 1. Ocular ultrasound.
Vitreous infiltration in anterior area with detached choroid and retina.