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Letter to the Editor

Empirical treatment prescribing improvement proposal in skin and soft tissue infection[☆]



Propuesta de mejora para la prescripción del tratamiento empírico en la infección de piel y partes blandas

To the Editor,

We have carefully read the article by Macía-Rodríguez et al.¹ in which the authors conclude that the primary independent factor associated with mortality in patients with skin and soft tissue infections (SSTI) is the unsuitability of the empirical antibiotic treatment, which also appears in more than 25% of cases. To this end, we would like to make some comments, and offer data from the research network of the infections group of the *Sociedad Española de Medicina de Urgencias y Emergencias* (INFURG-SEMES).

Firstly, an epidemiological study published by our group² shows that despite the fact that 12.8% of patients cared for in the emergency department due to an SSTI had risk factors for gram-positive resistant infections, adequate coverage was only conducted in 1.1% of them, data that is consistent with that which was reported by Macía-Rodríguez et al.¹

In order to determine the independent risk factors associated with mortality within 30 days in patients seen for SSTIs at hospital emergency departments (ED), we did a logistic regression analysis of the subgroup of patients seen for this type of infection and included in the GYM registry.^{3,4} The average age of this subgroup of patients was 83.9 (SD: 8.9) years, with 61 males (50.4%). They presented severe comorbidity (Charlson index ≥ 3) 59 (48.8%) patients, sepsis criteria 34 (28.1%) and hyperlactaemia (lactate >2 mmol/l) 17 (14.0%). Necrotising infection was diagnosed in 9 (7.4%) patients, and 15 (12.4%) died in the 30 days after the index event. Factors associated independently with mortality in our population were hyperlactaemia (OR: 6.785 [95% CI: 1.686–27.299; $p=0.007$]), presenting sepsis criteria (OR: 9.320 [95% CI: 2.195–39.580; $p=0.002$]) and having a history of heart failure (OR: 4.148 [95% CI: 0.969–17.747; $p=0.055$]).

Based on the results mentioned and with the goal of improving the empirical prescriptions in our hospital EDs for this type of infection, INFURG-SEMES prepared an action guideline that bases the antibiotic selection on the severity of the process (haemodynamic stability), the comorbidity of the patient (assessed by the Charlson index) and the determination of risk of infection due to methicillin-resistant *Staphylococcus aureus* (MRSA) or enterobacteriaceae with extended spectrum beta-lactamases.⁵

As the significant aspects of the algorithm, we highlight that comorbidity is given major importance, since it can cause excess

mortality and a higher risk of worse outcomes.⁶ Therefore, more effective diagnosis and more aggressive treatment in patients with severe comorbidity should be considered. In fact, the work by Macía-Rodríguez et al.¹ reflects that certain comorbidity is associated with an increased risk of mortality. We also highlight that the PK/PD aspects of antibiotics should be taken into account.^{7,8} Thus, if there is a risk of MRSA infection, linezolid has the advantage of its wide distribution volume and availability via the oral route, while in severe cases, daptomycin offers the advantage of its greater bactericidal potency. In this light, it is notable that 26% of the patients in the Macía-Rodríguez et al.¹ study were treated with cloxacillin. Although the administration route used or the dosage is not specified, it should be reminded that in order to achieve a sufficient MIC to reach therapeutic success, at least 1 g needs to be administered every 4 h. This can make therapeutic adherence difficult and, therefore, promote therapeutic failure in patients managed in outpatient care.⁹ For this reason, our guideline only addresses use in intravenous formulation.

Finally, regarding treatment of necrotising SSTIs, the recommendation is to empirically establish broad-spectrum treatment with adequate coverage for gram-positive and gram-negative resistant organisms, also to associate a protein synthesis inhibitor – clindamycin or linezolid – until infection due to group A streptococcus can be ruled out. Nevertheless, we should not forget that in these cases, early surgical intervention will be what fundamentally determines the patient's prognosis.¹⁰

In conclusion, we understand that there is a wide margin for improvement in the empirical prescription of antibiotics for SSTIs and we propose a therapeutic approximation based on the severity, patient comorbidities and risk factors for infection caused by resistant pathogens.

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Conflicts of interest

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