

Impact of the MIC of piperacillin/tazobactam on the outcome for patients with bacteraemia due to Enterobacteriaceae: the Bacteraemia-MIC project.

[Delgado-Valverde M](#)¹, [Torres E](#)¹, [Valiente-Mendez A](#)¹, [Almirante B](#)², [Gómez-Zorrilla S](#)³, [Borrell N](#)⁴, [Corzo JE](#)⁵, [Gurqui M](#)⁶, [Almela M](#)⁷, [García-Álvarez L](#)⁸, [Fontecoba-Sánchez MC](#)⁹, [Martínez-Martínez L](#)¹⁰, [Cantón R](#)¹¹, [Praena J](#)¹², [Causse M](#)¹³, [Gutiérrez-Gutiérrez B](#)¹, [Roberts JA](#)¹⁴, [Farkas A](#)¹⁵, [Pascual A](#)¹⁶, [Rodríguez-Baño J](#)¹⁷; REIPI/GEIH-SEIMC BACTERAEEMIA-MIC Group.

Collaborators (11)

[de Cueto M](#), [Planes Reig AM](#), [Quintano FT](#), [Peña C](#), [Otalora ME](#), [de Alegría CR](#), [Morosini MI](#), [Lepe JA](#), [Cisneros JM](#), [Morey S](#), [Abdul-Aziz MH](#).

Author information

- ¹Unidad Clínica Intercentros de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospitales Universitarios Virgen Macarena y Virgen del Rocío, Seville, Spain.
- ²Departamento de Enfermedades Infecciosas, Hospital Universitari Vall d'Hebron, Barcelona, Spain.
- ³Servicio de Enfermedades Infecciosas, Hospital Universitari de Bellvitge-IDIBELL, Barcelona, Spain.
- ⁴Servicio de Microbiología, Hospital Son Espases, Palma de Mallorca, Spain.
- ⁵Unidad Clínica de Enfermedades Infecciosas y Microbiología, Hospital Universitario de Valme, Sevilla, Spain.
- ⁶Servicio de Enfermedades Infecciosas, Hospital de la Santa Creu i Sant Pau, Barcelona, Spain Facultad de Medicina, Universitat Autònoma de Barcelona, Barcelona, Spain.
- ⁷Servicio de Microbiología, Hospital Clínic, Barcelona, Spain.
- ⁸Servicio de Enfermedades Infecciosas, Hospital San Pedro-CIBIR, Logroño, Spain.
- ⁹Servicio de Microbiología, Complejo Hospitalario Universitario A Coruña, A Coruña, Spain.
- ¹⁰Servicio de Microbiología, Hospital Universitario Marqués de Valdecilla-IDIVAL, Santander, Spain Departamento de Biología Molecular, Universidad de Cantabria, Santander, Spain.
- ¹¹Servicio de Microbiología, Hospital Universitario Ramón y Cajal and Instituto Ramón y Cajal de Investigación Sanitaria (IRYCIS), Madrid, Spain.
- ¹²Unidad Clínica Intercentros de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospitales Universitarios Virgen Macarena y Virgen del Rocío, Seville, Spain Instituto de Biomedicina de Sevilla (IBIS), Seville, Spain.
- ¹³Unidad Clínica de Enfermedades Infecciosas, Hospital Universitario Reina Sofía, Córdoba, Spain.
- ¹⁴Burns Trauma and Critical Care Research Centre, University of Queensland, Brisbane, Australia.
- ¹⁵Department of Pharmacy, Vassar Brothers Medical Center, Poughkeepsie, NY, USA Optimum Dosing Strategies, Bloomington, NJ, USA.
- ¹⁶Unidad Clínica Intercentros de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospitales Universitarios Virgen Macarena y Virgen del Rocío, Seville, Spain Departamento de Microbiología, Universidad de Sevilla, Seville, Spain.
- ¹⁷Unidad Clínica Intercentros de Enfermedades Infecciosas, Microbiología y Medicina Preventiva, Hospitales Universitarios Virgen Macarena y Virgen del Rocío, Seville, Spain Departamento de Medicina, Universidad de Sevilla, Seville, Spain jesusrb@us.es.

Abstract

OBJECTIVE:

Our objective was to evaluate the impact of low versus borderline MIC of piperacillin/tazobactam on the clinical outcomes of patients with bacteraemia caused by Enterobacteriaceae who were treated with that antimicrobial.

PATIENTS AND METHODS:

A prospective observational multicentre cohort study was conducted in 13 Spanish university hospitals. Patients >17 years old with bacteraemia due to Enterobacteriaceae who received empirical piperacillin/tazobactam treatment for at least 48 h were included. Outcome variables were clinical response at day 21, clinical response at end of treatment with piperacillin/tazobactam and all-cause 30 day mortality. Univariate and multivariate logistic regression analyses were performed.

RESULTS:

Overall, 275 patients were included in the analysis; 248 (90.2%) in the low MIC group (≤ 4 mg/L) and 27 (9.8%) in the borderline MIC group (8-16 mg/L). The biliary tract was the most common source of infection (48.4%) and *Escherichia coli* was the most frequent pathogen (63.3%). Crude 30 day mortality rates were 10.5% and 11.1% for the low MIC group and the borderline MIC group, respectively (relative risk = 1.06, 95% CI = 0.34-3.27, $P = 1$). Multivariate analysis of failure at day 21 and at end of treatment with piperacillin/tazobactam and 30 day mortality showed no trend towards increased clinical failure or mortality with borderline MICs (OR = 0.96, 95% CI = 0.18-4.88, $P = 0.96$; OR = 0.47, 95% CI = 0.10-2.26, $P = 0.35$; OR = 1.48, 95% CI = 0.33-6.68, $P = 0.6$).

CONCLUSIONS:

We did not find that higher piperacillin/tazobactam MIC within the susceptible or intermediate susceptibility range had a significant influence on the outcome for patients with bacteraemia due to Enterobacteriaceae.

© The Author 2015. Published by Oxford University Press on behalf of the British Society for Antimicrobial Chemotherapy. All rights reserved. For Permissions, please e-mail: journals.permissions@oup.com.

PMID:[26538507](https://pubmed.ncbi.nlm.nih.gov/26538507/)

DOI:[10.1093/jac/dkv362](https://doi.org/10.1093/jac/dkv362)

[PubMed - in process]