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Letter to the Editor

First case of infection by metallo-β-lactamase-producing *Pseudomonas aeruginosa* in Mato Grosso do Sul, Brazil

Dear Editor,

High-level carbapenem resistance in *Pseudomonas aeruginosa* is a recognized public health problem. Metallo-β-lactamase (MBL) is one of the most common resistance mechanisms in these microorganisms. The gene bla_{SPM-1}, which is the most frequent metallo-β-lactamase gene in Brazil, was first described in 2002[1] and has been found in different regions.[2] Until now there has been no record of carbapenemase enzyme production in *P. aeruginosa* isolated in Mato Grosso do Sul state. Here, we describe the first report of MBL-producing *P. aeruginosa* in this region.

A 52-year-old female patient who had been diagnosed with Chagas disease 23 years ago and underwent sigmoidectomy and ileostomy surgery (2012) was admitted to a University Hospital of Mato Grosso do Sul on August 28, 2013 for intestinal reconstruction.

Ten days after admission, the patient underwent enteronastomosis. Four days thereafter she presented surgical wound infection, which was treated with meropenem for 15 days. Despite this treatment, purulent fluid continued to drain. *Pseudomonas aeruginosa* was identified using the Vitek 2 compact system and presented resistance to the following antibiotics: ceftriaxone (MIC ≥ 64 μg/mL), ceftazidime (MIC = 32 μg/mL), imipenem (MIC ≥ 16 μg/mL), meropenem (MIC ≥ 16 μg/mL), and piperacillin-tazobactam (MIC > 128 μg/mL). This strain was susceptible to amikacin, gentamicin, ciprofloxacin, and colistin. Thus, meropenem used for her treatment was switched to ciprofloxacin, and the patient was discharged after 30 days of total hospitalization.

The bla_{SPM-1}, bla_{IMP-1}, bla_{SIM-1}, bla_{VIM-1}, and bla_{GIM-1} genes were investigated by multiplex polymerase chain reaction (PCR) using specific primers,[3] but only bla_{SPM-1} gene was detected. PCR conditions were as follows: denaturing step of 94 °C for 5 min, 35 cycles of 94 °C for 20 s, 53 °C for 45 s, 72° for 30 s, and a final incubation at 72 °C for 10 min.

Chagas disease has a chronic course, creating functional incompetence and surgical complications. Invasive procedures such as abdominal surgery and the use of intravascular devices are common risk factors for infection.[4] Moreover, antibiotic treatment can select for multidrug-resistant microorganisms, such as *P. aeruginosa*. Antibiotic resistance is a serious public health problem owing to therapeutic failure.[5]

In contrast to other regions, infection with metallo-β-lactamase producing *P. aeruginosa* is a rare event in the Midwest region of Brazil. The emergence of MBL in our hospital should prompt the clinical staff to reinforce infection control measures and seek treatment alternatives other than carbapenem antibiotics.

Conflicts of interest

The authors declare no conflicts of interest.

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REFERENCES

1. Toleman MA, Simm AM, Murphy TA, et al. Molecular characterization of SPM-1, a novel metallo-beta-lactamase isolated in Latin America: report from the SENTRY antimicrobial surveillance programme. J Antimicrob Chemother. 2002;50:673–9.
2. Sader HS, Castanheira M, Mendes RE, Toleman M, Walsh TR, Jones RN. Dissemination and diversity of metallo-β-lactamases in Latin America: report from the SENTRY Antimicrobial Surveillance Program. Int J Antimicrob Agents. 2005;25:57–61.
3. Mendes RE, Kiyota KA, Monteiro J, et al. Rapid detection and identification of metallo-beta-lactamase-encoding genes by multiplex real-time PCR assay and melt curve analysis. J Clin Microbiol. 2007;45:544–7.
4. Coura JR, Borges-Pereira J. Chagas disease. What is known and what should be improved: a systemic review. Rev Soc Bras Med Trop. 2012;45:286–96.

5. Gales AC, Jones RN, Sader HS. Contemporary activity of colistin and polymyxin B against a worldwide collection of Gram-negative pathogens: results from the SENTRY Antimicrobial Surveillance Program (2006–09). J Antimicrob Chemother. 2011;66:2070–4.

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