**Characterization of Mobile Elements Carrying Metallo-β-Lactamase Genes, blaIMP-1, blaIMP-16, blaSPM-1, blaVIM-2**

**from Latin American Medical Centres:** Report from the SENTRY Antimicrobial Surveillance Program

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**AMENDED ABSTRACT**

**BACKGROUND**

Screening for carbapenem resistance in Acinetobacter species from Latin America will identify the distribution and prevalence of metallo-β-lactamases (MßLs) among isolates of Acinetobacter species. The MßLs identified in Acinetobacter species so far are IMP, VIM, and SPM. It is important to note that the IMP-16 (5%) and IMP-1 (8/22) genes are carried within the class 1 integron, which has been previously described. The integron also contained the normal 3'-CS.

**OBJECTIVES**

The objectives of this study were to characterize the MßL genes isolated in Latin America, to identify their genetic context, and to determine whether they are carried within the class 1 integron.

**MATERIALS AND METHODS**

**Background**

Screening for carbapenem resistance in Acinetobacter species from Latin America will identify the distribution and prevalence of metallo-β-lactamases (MßLs) among isolates of Acinetobacter species. The MßLs identified in Acinetobacter species so far are IMP, VIM, and SPM. It is important to note that the IMP-16 (5%) and IMP-1 (8/22) genes are carried within the class 1 integron, which has been previously described. The integron also contained the normal 3'-CS.

**RESULTS**

**Antimicrobial resistance gene screening.** Among other selected pathogens, Acinetobacter spp. and Pseudomonas aeruginosa were analyzed for MßL genes. These data suggest MßLs are likely to be a significant clinical problem in Latin America, particularly in Brazil.

**COMMENTS**

- **Antimicrobial resistance gene screening.** Among other selected pathogens, Acinetobacter spp. and Pseudomonas aeruginosa were analyzed for MßL genes. These data suggest MßLs are likely to be a significant clinical problem in Latin America, particularly in Brazil.

**CONCLUSIONS**

- Four different MßLs (SPM-1, IMP-1, VIM, and IMP-16) were detected and characterized by the SENTRY Program among Pseudomonas spp. and Acinetobacter spp. strains isolated from Latin American medical centers.

- The prevalence of MßL-producing strains is extremely high in some of the medical centers evaluated by the SENTRY Program.

- The blaIMP-16 containing integron was found in Acinetobacter spp. strains with five different ribotypes, which demonstrates the mobility of this integron.

- The presence of mobile elements simultaneously carrying MßL and antيمicrobial resistances will be a concern for treatment because of the lack of effective treatment options for such multi-resistant isolates, and also the transfer of these integrons into susceptible hosts. These events may be enhanced by compromised infection control practices in some locations.

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**Table 1:** blaIMP-1 and blaIMP-16 gene prevalence in selected Latin American countries.

<table>
<thead>
<tr>
<th>Country</th>
<th>% of resident isolates</th>
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<tbody>
<tr>
<td>Brazil</td>
<td>98.3% (94/95)</td>
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<tr>
<td>Mexico</td>
<td>85.0% (37/44)</td>
</tr>
<tr>
<td>Chile</td>
<td>100.0% (50/50)</td>
</tr>
<tr>
<td>Venezuela</td>
<td>100.0% (50/50)</td>
</tr>
<tr>
<td>Argentina</td>
<td>95.9% (74/77)</td>
</tr>
<tr>
<td>Colombia</td>
<td>91.4% (31/34)</td>
</tr>
</tbody>
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**Figure 1:** Schematic representation of the MßL-producing strain found in Brazil.

**Figure 2:** Figure demonstrating the genetic context of the MßL-producing strain found in Brazil.

**Figure 3:** Schematic representation of the integron containing the MßL genes.