Detection Metallo-Beta-Lactamase Gene IMP-1 and IMP-2 of Pseudomonas aeruginosa Clinical Isolates In Sanglah Hospital Bali

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BACKGROUND

Pseudomonas aeruginosa is a pathogen frequently found as an agent of Hospital Acquired Infections. This bacterium is very easy to be resistant to several types of antibiotics through various mechanisms. Carbapenem such as Imipenem and Meropenem is a potential option for the therapy of this bacterium, but unfortunately P. aeruginosa has an ability in hydrolyzing these antibiotics through enzyme metallo-β-lactamases (MBLs). Recently, IMP and VIM, MBLs enzyme group are reported common from various countries, but no data is reported for these enzymes in Indonesia especially in Bali. In fact, the resistant data of P. aeruginosa against Carbapenem group antibiotics such as Meropenem and Imipenem is quite high in Sanglah General Hospital in 2014, which were 35% and 45%, respectively.

OBJECTIVE

To detect IMP-1 and IMP-2 genes of MDR P. aeruginosa isolates in Clinical Microbiology Laboratory, Sanglah General Hospital, Denpasar Bali, which are phenotypically resistant to antibiotics, Imipenem and Meropenem using PCR.

MATERIALS and METHODS

A total of 86 glycerol stock isolates of P. aeruginosa from clinical samples

Culture

All isolates were cultured on MacConkey Agar

Incubated aerobically at 35 ± 2°C C, 18 – 24 hour

Identification and Drug Susceptibility Test by VITEK-2 based on CLSI Standard

PCR

Bacterial genomic DNA was isolated from colonies by using Roche High PCR Template Isolation Kit (Roche Life Science, Indianapolis, USA)

performed PCR with primers 16sRNA, blaIMP1 and bla IMP2 for (Shibata et al), annealing temperature at 55°C for IMP-1 and 48 for IMP-2 and 16sRNA

Electrophoresis in agarose gel 1.5 %

RESULTS

Culture on MacConkey agar media

Colonies of P. aeruginosa

16sRNA Uniplex PCR of P. aeruginosa

There was no isolates positive for IMP-2 gene

IMP-1 and IMP-2 Gene Uniplex PCR

There was no isolates positive for IMP-2 gene

CONCLUSION

All isolates were subjected to PCR for detection of IMP-1 and IMP-2. The result showed that 9 isolates were positif IMP-gene (10.5%), but there was no isolates positive for IMP-2 gene. This study showed the similar condition with the MBL gene research studies from the other countries, especially for the gene IMP-1. Detection and molecular characterization of MBL-producing P. aeruginosa strains is very important for infection control purposes. Currently, this study is still continued for detection of another MBL genes.

REFERENCES


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