MecA and PVL Gene Detection in Methicillin-Resistant Staphylococcus aureus Strains Isolated from Aborigine and Urban Poor Community in Perak

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ABSTRACT

BACKGROUND

Current global burden of CA-MRSA was difficult to estimate due to lack of studies on CA-MRSA prevalence from many parts of the world. In Malaysia, further epidemiological studies should be conducted to monitor the trends of MRSA infections in community settings especially less characterized populations such as aborigine and urban poor communities. Due to intrinsic and the acquired mechanism, like mecA, mecC or vanA, MRSA strain poses a high level of resistance to multiple antibiotics and often carries lukSF-PV genes which responsible for encoding the leukotoxin, PVL gene.
INTRODUCTION

*MecA* and *PVL* gene detection in Methicillin-resistant *Staphylococcus aureus* strains isolated from aborigine and urban poor community in Perak
To study the prevalence of mecA and PVL genes in MRSA isolates from aborigine and urban poor community in Perak.

01
To isolate and identify *S. aureus* from nasal swabs of healthy individuals

02
To detect the susceptibility of isolates against Cefoxitin using AST

03
To detect *mecA* and PVL gene from MRSA isolates using PCR
STUDY POPULATION

SAMPLES COLLECTION

LABORATORY MICROBIOLOGY

POLYMERASE CHAIN REACTION (PCR)

METHODOLOGY

Nasal swab of both anterior nares

Inclusion criteria & Consents

Nasal specimens collected using sterile swab in transport media

Bacterial Identification – rapid slide latex agglutination

Antibiotic Susceptibility Testing – Disc Diffusion Method

Cefoxitin

Aborigine

Urban Poor

Pos Raya, Simpang Pulai
Pos Kuala Mu, Sungai Siput

Flat Sri Conolly, Pasir Puteh
Pangsapuri Jalan Ashman Shah, Ipoh

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Detection of **mecA** gene

- Protocol described by Kondo et al. (2007)

Thermal cycle- 2 minutes at 94 °C as initial denaturation, 30 seconds denaturation at 94 °C, 1 minute annealing at 57°C and 1 minute extension at 72°C. Final extension was set for 2 minutes at 72 °C

Primer Seq:
Forward: 5'-TGCTATCCACCCTCAAACAGG-3'
Reverse: 5'-AACGTTGTAACCACCCCAAGA-3'

Detection of **PVL** gene


Thermal cycle- 2 minutes at 95 °C as initial denaturation, followed by 30 cycles of 1 minute denaturation at 95 °C, 1 minute annealing at 55 °C and 1 minute extension at 72°C. Final extension was set for 5 minutes at 72 °C

Primer Seq:
Forward: 5’-ATCATTAGGTAAAATGTCTGGACATGATCCA-3’
Reverse: 5’-GCATCAASTGTATTGGATAGCAAAAGC-3’

**METHODOLOGY**

**Methicillin-resistant Staphylococcus aureus** strains isolated from aborigine and urban poor community in Perak
### RESULTS

<table>
<thead>
<tr>
<th>Samples collection</th>
<th>ABORIGINE POPULATION</th>
<th>URBAN POOR POPULATION</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>234</td>
<td>238</td>
<td>472</td>
</tr>
<tr>
<td>Isolation of S. aureus</td>
<td>58 (24.78%)</td>
<td>36 (15.13%)</td>
<td>94 (19.92%)</td>
</tr>
<tr>
<td>Isolates mecA gene positive</td>
<td>3 (1.28%)</td>
<td>1 (0.42%)</td>
<td>4 (0.85%)</td>
</tr>
<tr>
<td>Isolates PVL gene positive</td>
<td>-</td>
<td>-</td>
<td>0</td>
</tr>
</tbody>
</table>

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CONCLUSION

01 Low prevalence of MRSA carriage rate from aborigine & urban poor community in Perak

02 Absence of PVL gene in isolates indicates lower number of serious infections & recurrences of SSTI

03 Increase public awareness of MRSA in community settings in Malaysia

04 PCR assay was rapid and accurate procedure for the detection of meca gene of MRSA


**REFERENCES**
Thank you