Herzegovina identified SHV-5 producers among ESBL-positive enterobacterial isolates.\(^5\) PER-1 ESBL has been identified in \(A.\) \(baumannii\) and \(P.\) \(aeruginosa\) in Turkey and Romania, and in \(P.\) \(stuartii\) in Italy.\(^6\) This report of PER-1 in an enterobacterial isolates from Kosovo may indicate that the \(bla_{\text{PER-1}}\) gene has spread in South Eastern Europe.

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Transparency declarations

None to declare.

References


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High prevalence of CTX-M-15-producing \textit{Klebsiella pneumoniae} among inpatients and outpatients with urinary tract infection in Southern India

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Keywords: Enterobacteriaceae, antimicrobial resistance, resistance mechanisms, \(\beta\)-lactams

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Sir,

The population of India of over one billion represents a potentially vast reservoir of antimicrobial resistance genes including those encoding extended-spectrum \(\beta\)-lactamasas (ESBLs). Occurrence of ESBL-producing Enterobacteriaceae has been described in India mostly using phenotypic detection methods alone. The present study was conducted to identify the occurrence of ESBL genes in urinary isolates of \textit{Klebsiella pneumoniae} collected in Southern India.

The study was conducted at two hospitals, one in Gulbarga and the other in Raichur, between July 2005 and March 2006. The two cities are \(~150\) km away from each other and have populations of \(~440\) 000 and 160 000, respectively. A total of 1288 non-duplicate urine specimens were collected from 642 inpatients and 646 outpatients. \textit{K. pneumoniae} was identified by standard biochemical tests including citrate, urease, indole, Voges–Proskauer, glucose and inositol. As a result, \textit{K. pneumoniae} was recovered from 270 of 1288 urinary specimens. Among them, 115 (43%) were from inpatients and 155 (57%) were from outpatients. ESBL production was confirmed in 260 (96%) isolates using the disc method defined by the CLSI (2007). All these isolates produced \(\geq 5\) mm increase in zone diameters with either cefotaxime or ceftazidime discs when clavulanic acid was added. They represented 95% and 97% of the inpatient and outpatient isolates, respectively. Of those, 255 isolates were resistant to cefotaxime and were assigned to phenotypic Group I, which was further classified into subgroups depending on susceptibility to ceftazidime and cefepime (Table 1). Another five isolates with resistance to ceftazidime but not to cefotaxime were assigned to phenotypic Group II. The remaining 10 non-ESBL-producing isolates susceptible to both ceftaxime and ceftazidime were assigned to phenotypic Group III. For non-\(\beta\)-lactam antimicrobials, 92% and 95% of the inpatient and outpatient isolates were resistant to ciprofloxacin, respectively. High rates of resistance to gentamicin (79% and 83% in inpatient and outpatient isolates, respectively) and amikacin (66% and 69% in inpatient and outpatient isolates, respectively) were also observed. Resistance to chloramphenicol, which is still commonly prescribed for infections caused by \textit{K. pneumoniae} in India, was observed in 90% and 92% of the inpatient and outpatient isolates, respectively. All the study isolates were susceptible to etrapenem, except for one isolate which was immediately resistant. No resistance to imipenem was identified.

A total of 35 isolates from all phenotypic groups and subgroups were subjected to PFGE analysis using restriction enzyme \(XbaI\) (New England Biolabs, Ipswich, MA, USA) and CHEF III DR electrophoresis system (Bio-Rad, Hercules, CA, USA). Forty-five percent of the isolates in the phenotypic Group I that were examined by PFGE belonged to pulsotype A (Table 1). This pulsotype was commonly observed regardless of the source hospitals or the patient locations. The isolates in the phenotypic Group II belonged to pulsotype D. A total of 60 isolates from various pulsotypes were then subjected to PCR analysis for the detection of \(bla_{\text{TEM}},\) \(bla_{\text{SHV}}\) and \(bla_{\text{CTX-M}},\) as described previously.\(^1,2\) All the isolates belonging to the
Phenotypic and genotypic characteristics of the *K. pneumoniae* clinical isolates

<table>
<thead>
<tr>
<th>Phenotypic</th>
<th>Antibiogram</th>
</tr>
</thead>
<tbody>
<tr>
<td>Group subgroup</td>
<td>No. of isolates (n = 270)</td>
</tr>
<tr>
<td>I a</td>
<td>155</td>
</tr>
<tr>
<td>b</td>
<td>71</td>
</tr>
<tr>
<td>c</td>
<td>18</td>
</tr>
<tr>
<td>d</td>
<td>7</td>
</tr>
<tr>
<td>e</td>
<td>4</td>
</tr>
<tr>
<td>II —</td>
<td>5</td>
</tr>
<tr>
<td>III —</td>
<td>10</td>
</tr>
</tbody>
</table>

CAZ, ceftazidime; CTX, cefotaxime; FEP, cefepime; FOX, cefoxitin; ETP, ertapenem; IPM, imipenem; CIP, ciprofloxacin; CHL, chloramphenicol; GEN, gentamicin; AMK, amikacin.

Susceptibility results were interpreted according to the CLSI criteria: R, resistant; I, intermediate; S, susceptible.

**Transparency declarations**

None to declare.

**References**


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**Daptomycin resistance in *Enterococcus faecalis* prosthetic valve endocarditis**

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