R054
Publication Only
Antimicrobials: Mechanisms of action and resistance

Multidrug-resistant *isolate producing CTX-M beta-lactamase as a cause of community-acquired infection in France*

*M. Naas[1], S. Bernusset[1], P. Dabi[1], P. Nordmann[2], **T. Naas**[3]*

[1]Bacteriology, LABM Bioclinic, Paris, France ; [2]Bacteriology, INSERM U914, Le Kremlin-Bicêtre, France ; [3]Bacteriology, Hopital de Bicetre APHP, Le Kremlin Bicêtre, France

Objectives: Extended-spectrum β-lactamases (ESBLs), mostly of CTX-M-type are increasingly isolated in Enterobacteriaceae worldwide. However, production of ESBLs is still uncommon among Shigella isolates, especially in France. We report the identification of a CTX-M-3–producing Shigella sonnei isolate associated with community-acquired infection in France.

Methods: Bacterial isolate was characterized by standard biochemical methods, disc diffusion, E-test susceptibility testing, and plasmid analysis. Antibiotic resistance genes were sought by PCR and sequencing.

Results: In September 2013, a community-serving microbiology laboratory (Paris metropolitan area, France) received stool specimen of a 6 year old boy with a diarrheae lasting already for two weeks. The patients history did not reveal any recent travel abroad, and no other case in his family nor in his school has been evidenced. Cultures of stool specimen from the child yielded S. sonnei. The strain was resistant to amoxicillin, ticarcillin, piperacillin, cephalothin, ceftriaxone, and cefotazim, co-trimoxazole and tetracyclin. It remained susceptible to ceftazidim, imipenem, cefoxitin, amikacin, gentamicin, netilmicin, tobramicin, nalidixic acid ans had an MIC for azithromycin of 3 mg/L. The strain was intermediately susceptible to amoxicillin/clavulanate, ticarcillin/clavulanate, and piperacillin/tazobactam. A cefotaxime/amoxicillin/clavulanate synergy test was positive suggesting the presence of an ESBL. PCR amplification followed by sequencing identified a $bla_{CTX-M-3}$ and bla_{TEM-1} genes. In addition, insertion sequence ISEcp1 was identified upstream of $bla_{CTX-M-3}$ gene. Plasmid analysis identified two plasmids (120, and 4 kb in size) in the S. sonnei strain. ESBL phenotype could be tranferred to E. coli by conjugation. Both ß-lactamase genes were carried by the 120-kb plasmid.

Conclusion: The emergence of CTX-M ESBL-producing strains of Shigella in patients with community-acquired infections in France may represent a growing threat to public health. It underlines that ESBL genes may spread among enterobacterial species responsible for severe community-acquired infections.