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EMERGENCE OF CTX-M EXTENDED SPECTRUM β -LACTAMASE-PRODUCING *ESCHERICHIA COLI* IN BELGIUM

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Infections due to β -lactam resistant *Escherichia coli* strains that produce extended-spectrum β -lactamases (ESBL) of the CTX-M family are emerging in European countries such as the United Kingdom and Spain [1, 2, 3]. In these countries, community-acquired infections caused by these strains appear to be increasingly frequent and represent a therapeutic problem, due to their multiple resistance to several antibiotic classes, including penicillins, cephalosporins, aminoglycosides and fluoroquinolones. To our knowledge, such strains have not yet been described in Belgium. We report here the emergence and rapid increase in the prevalence of CTX-M producing *E. coli* clinical isolates from patients attending the Erasme hospital in Brussels, Belgium.

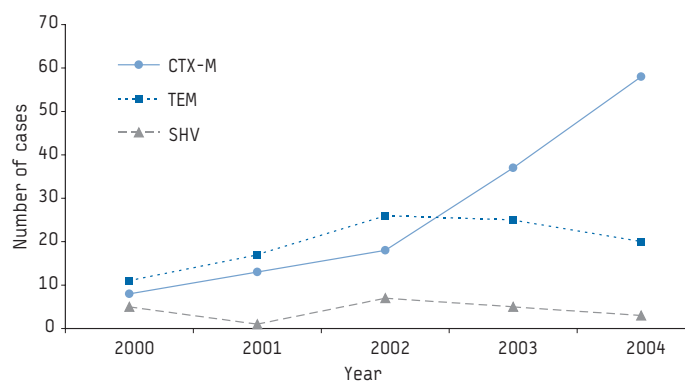
The Erasme hospital is an 850-bed acute care teaching hospital where ESBL-producing strains of *Klebsiella pneumoniae*, *Enterobacter aerogenes* and *Enterobacter cloacae* have caused therapeutic and infection control problems in the past decade [4,5]. Since 2000, based on systematic screening of all Enterobacteriaceae isolates for ESBL production by the double disk synergy test with ceftriaxone, ceftazidime and cefepime disks, the number of ESBL-producing *E. coli* clinical isolates detected annually has increased from 21 (0.92%) to 33 (1.25%) in 2001, 48 (1.85%) in 2002, 64 (2.34%) in 2003 and 87 (3.40%) in 2004 ($p < 0.001$). Patients with ESBL *E. coli* included 113 men and 140 women with a mean age of 61 (range: 0-94) and 66 (range: 18-94) years, respectively.

These isolates included screening isolates from rectal swabs (41%) and clinical isolates from urinary tract (35%), respiratory tract (8%), blood (1%) or other sites (15%). Co-resistance to other non- β lactam antibiotic classes was also commonly seen in ESBL-producing *E. coli* isolates, such as resistance to ciprofloxacin (64%), cotrimoxazole (54%), gentamicin (44%) and tobramycin (67%). Pulsed field gel electrophoresis typing of a subset of these isolates showed polyclonality with a predominance of sporadic cases and small clusters. Among case patients, 41% had community-acquired infection (positive culture in first 48 hours after admission), among whom 42% had been in-patients at the Erasme hospital in the previous five years. Hospital-acquired isolates originated from patients admitted to various hospital wards without time or space clustering.

ESBL-producing *E. coli* isolates were investigated by polymerase chain reaction for bla_{TEM} , bla_{SHV} and $\text{bla}_{\text{CTX-M}}$ genes and DNA sequencing. A majority (53%) contained CTX-M enzymes whereas the remainder contained genes for bla_{TEM} ESBL enzymes (38%) or other ESBL gene combinations (SHV alone or in combination with TEM) (9%). Particularly notable was the increasing proportion of isolates carrying $\text{bla}_{\text{CTX-M}}$ genes over the study period [FIGURE]. DNA sequencing revealed a diversity of CTX-M enzymes belonging to group 1 (76%), 2 (14%) and 9 (10%).

FIGURE

ESBL enzyme families detected by PCR analysis in ESBL-producing *E. coli*, Erasme Hospital, Brussels, Belgium, 2000-2004



Although not previously reported in Belgium, multi-resistant CTX-M producing *E. coli* have been detected at the Erasme hospital since 2000. Of note, their prevalence has increased over three fold during the past 4 years. Infections caused by such strains were a therapeutic challenge because the majority of these strains were also co-resistant to the major classes of antibiotics used for empirical therapy of community-acquired infections such as urinary tract or intra-abdominal infection. These observations raise several questions with direct therapeutic and infection control relevance. What are the relative contributions of community and institutional spread to this rising occurrence? What is the prevalence of community-acquired infection caused by these strains? What are the risk factors for acquiring these multi-resistant *E. coli* infections? Epidemiological studies should be undertaken to address these issues at the level of primary care, long-term care and acute care facilities in Belgium.

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BURKHOLDERIA PSEUDOMALLEI INFECTIONS IN FINNISH TOURISTS INJURED BY THE DECEMBER 2004 TSUNAMI IN THAILAND

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Burkholderia pseudomallei was isolated from three Finnish patients in January 2005. All three cases were in tourists who were visiting Khao Lak on the southwest coast of Thailand when the tsunami struck